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Cut-over lands restocking naturally with white and Norway pine.

REPORT  
OF THE  
STATE FORESTER  
OF WISCONSIN

For 1907 and 1908

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MADISON, WIS.  
DEMOCRAT PRINTING COMPANY, STATE PRINTER  
1908

# STATE BOARD OF FORESTRY

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OFFICE OF THE STATE FORESTER,

MADISON, Wis., Dec. 1, 1908.

*State Board of Forestry.*

GENTLEMEN: I have the honor to submit herewith my report  
for 1907 and 1908.

Very respectfully,

E. M. GRIFFITH,

*State Forester.*

# Report of the State Forester

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## THE GROWING INTEREST IN FORESTRY.

Only a few years ago the word "forestry" was almost meaningless to the great majority of the people of this country and the few foresters of that time were apt to be looked upon smilingly as harmless cranks who could do little damage and less good. Then the proper word to express the extent of our forests was "inexhaustible" and the impression was general that the United States could supply the world with lumber for a great many years.

But the people of Wisconsin at least now know how the "inexhaustible" forests of our state have melted away before the axe of the lumberman, followed by fire, and the same thing has been going on in all parts of the country until at last we have awakened to the fact that we are only too liable to feel the very serious effects of a severe shortage of timber within our own lives.

To two men more than any others, belongs the credit of having at last focused the attention of the people upon the fearful damage which is being done to the whole country through forest destruction. These men are President Roosevelt and Gifford Pinchot, who is the head of the federal forest service. President Roosevelt has forcibly presented the matter to congress in several messages, and in May, 1908, called together at the White House in Washington, the governors of all the states, together with their advisers to consider the "Conservation of our natural resources." This was one of the most notable meetings ever held and the results will surely be far-reaching. Mr. Gifford Pinchot has been in charge of the forestry work of the government for ten years, and in that time the forest service has grown from a handful of men to several thousand and the national forests now comprise some 160 million acres.

However only a small portion of the timberlands of this country are owned by the government or the various states and the

really great results which should be accomplished can never be brought about until the lumbermen adopt forestry methods and place their business upon a permanent basis. The outlook in this direction is most encouraging, for at last the best lumbermen in the country are showing a keen interest in this great question and are expressing a willingness to co-operate with the various states and the federal government by cutting their forests under the common sense rules of forestry management. There can be no denial of the fact that lumbermen as a whole have done an enormous amount of damage to this country, for the destruction of the forests by axe and fire has been the direct cause of great areas left almost a barren waste for the settlers, stream flow so irregular and lessened to such an extent that navigation, irrigation and valuable water powers have been ruined, and in nearly all the timber states of the union the fearful havoc which has been wrought cannot be fully repaired for several generations, if at all. But up to within the last few years financial considerations have obliged many lumbermen to operate in the most wasteful manner and therefore they are perfectly right in saying that they should not be obliged to bear the whole cost of conserving our forests. Our government and the states themselves are largely to blame, for if laws had been passed twenty years ago limiting the cutting to the mature timber and compelling the piling and burning of the slash all lumbermen would have been placed upon an equal footing, then business would have proved just as profitable and the whole country, through the enforcement of these two simple and common sense regulations, would now be enjoying enormous forest wealth instead of facing a severe shortage of timber within the next few years.

It is one of President Roosevelt's greatest achievements that he has brought the question so forcibly and convincingly to the attention of the whole country and the support which he is receiving from lumber companies, railroads and hundreds of societies and commercial bodies shows that the American people are prepared to do all in their power to repair the damage which has been done, and that, too, at once and in no half hearted spirit.

President Eliot of Harvard in speaking before the Massachusetts Wholesale Lumber association in Boston said: "Thirty-six years ago I said in one of our annual reports that the profession of forester would become of great importance in the near



future. It has become so. The warnings which are now being given in regard to the rapid disappearance of the timber are drawn from human history, from the fate of nations which were great and whose power has gone with their forests." Continuing he told of a visit to north Africa, at one time the granary of the Roman Empire, but now a barren and desolate waste because of the destruction of its trees, and he claimed the fate of Palestine was similar. In contrast he referred to Switzerland, crediting the preservation of its independence to the preservation of its forests.

Mr. W. B. Mershon, one of the most successful lumbermen in Michigan, is quoted as follows in the American Lumberman of June 6, 1908:

"I think the proposition of Georgian bay lumbermen to restrict the output of the mills 25 per cent the current year is a good thing. Trees should not be cut wantonly nor faster than there is legitimate use for them.

"Some years ago fifteen or twenty of us bought the Wigleton property on the Ludington division of the Pere Marquette, west of Reed City, about 1,700 acres of land where W. D. Wing had been conducting a lumber operation a number of years. We bought it for the trout stream. About all the timber that was considered worth anything at that time had been taken off; a few young pine were growing around the little lakes and on the plains socalled scrub oak or red oak was growing but not of much size. Had we at that time planted the land with norway pine the property would have been worth \$100,000 today, for the scrub oaks in the eighteen or twenty years we have owned the property have become of good size, big enough to make railroad ties and the little pines that were around the lakes have now developed into practically merchantable timber, and the forest growth has developed to such an extent that a photograph taken of the locality shows a wonderful improvement over one taken of the same place years ago. Three years ago we put out 5,000 norway and white pine trees on this property and two years ago we put out 15,000 more. The norways are hard to get but white pines are easily obtained. This year another planting was made, so that our total for three years is 51,000. Those planted two years ago have grown well. This is forestry undertaken by a few gentlemen who chipped in, so to speak, to defray expenses.

"The Au Sable forest farm purchased a couple of years ago

by a few gentlemen, on the north branch of the Au Sable river, has just completed its first year planting. About thirty-five acres have been prepared so as to enable us to plant 71,000 trees this year. Of course we had to take out the logs and rubbish that might cause fire among the seedlings. We put out 12,000 more trees in temporary beds for transplanting next year and we hope by another year to have sufficient land cleared up so we can put out 100,000 trees, and two years from now we hope to make our annual planting pretty nearly 1,000,000 trees. We estimate that 4,000,000 trees will be required to reforest our property there. Norway is really what should be planted. We have fifteen pounds of norway seed planted this year and estimate 70,000 seedlings to the pound, but we should have liked to have gotten three times this quantity. We have also put out 1,200 basswood and 1,000 black ash on the flats, for we have a lot of rich bottom lands. We are also experimenting some in growing cauliflower and have made a planting of cherry trees, not that we expect any revenue from this, excepting the revenue of satisfaction that follows doing something for the future and for the benefit of mankind in general.

“Fire has to be guarded against and we have plowed fire breaks twenty feet wide around the planted section and are now engaged in fencing 160 acres on which this planting is made to keep the cattle out. This being done we shall follow by putting fire breaks around the entire property just as fast as possible and keep a crew of men at work there all summer. The railroad sets a pile of fires. When I was up on the north branch last week fires were burning fiercely and it was a shame to see the destruction of young growth that was taking place. White pine and norway trees eight and ten feet high were being consumed by the fires set by the railroads, though they had escaped other fires for years. This was on account of no protection or provision for protection being made by the state or private owners.”

Many prominent lumbermen and lumber associations throughout the country have endorsed the principles of forestry, but at the same time have pointed out that competing lumbermen must be placed by law upon an equal footing in those protective measures which are required.

Mr. R. A. Long, President of the Long-Bell Lumber Company of Kansas City, is a lumberman who has made a very care-

ful study of the subject and he is quoted as follows in the American Lumberman of May 16, 1908:

“‘Conservation and the perpetuity of our forests and unremunerative prices for lumber can not travel the same road. Low prices of any commodity mean neglect and waste. This proposition is demonstrated by the conditions existing today, when, because of the low prices prevailing, the logs making a low grade lumber and constituting at least 20 percent of the forests are left in the woods to rot or be burned, and must be so left.’

“Mr. Long sees as one of the fundamental conditions under which forestry methods can be adopted the securing of stable values and market conditions. To bring about such stability it will be necessary in some way to bring about co-operation, which is now forbidden by the antitrust laws; and to be entirely successful this co-operation must include not only lumbermen and timber owners but the state and national governments.

“To this end Mr. Long suggests that lumbering operations, so far as conservation and reforestation are concerned, should be conducted under government control; that no more timber should be cut than is necessary to supply the current demand; only trees of a certain size should be cut; that seed trees, properly distributed, should be left, and that the young crop should be protected from fires and other elements of destruction. Whatever is to be done should be done quickly, for Mr. Long says the time is fast approaching when our forests will be so nearly gone, when the destruction will be so nearly completed, that it will be too late for any plan of natural reproduction to be effective.

“Mr. Long’s paper is a strong one, and it is commended to lumbermen and others who wish to get a comprehensive view of the lumber and timber situation and of the possible remedies for the admitted evils which lie in the present methods of exploitation.”

The question has frequently been raised of late as to whether under the general police power of the state the cutting of timber can be restricted upon private holdings, and the most interesting decision is that which has been handed down by the Supreme Court of Maine, which is given with comments, in the American Lumberman of March 28, 1908, as follows:

“Not long ago a gentleman interested in a theoretical way in forestry and the preservation of the timber resources of the

United States, after considering the fact that 70 to 75 percent of the timber of the United States is in the hands of individuals and therefore under control, so far as control is possible, of the states and not of the national government; after pondering the legal questions involved, bearing in mind laxity of state authority, the rivalry of states in the utilization of their natural resources and the hostility of individuals to legislation which will affect their private interests, confessed to despair of anything being accomplished in the way of forest preservation except the protection of what government timber remains. Acquirement by the national government of timber lands sufficient to produce a supply of lumber for the future he acknowledged to be beyond the ability of even so wealthy a government as ours and he did not believe the states could be depended upon or expected to adopt the necessary measures within their own boundaries.

"It has been questioned that the states have the right, even in the exercise of their so-called police power, to do more in regulation of timber cutting than to demand that cutting shall be so done as not to endanger adjoining property. Fire laws are conceded to be within the province of the state and in some have been adopted with success, but actually to limit cutting by the individual, to say to the timber owner he shall cut only such and such trees or trees in such a class or shall not cut at all, has commonly been thought to be beyond the power of the commonwealth. But Maine does not think so and a decision by the supreme court of that state, handed down two weeks ago, is enlightening. Six of the judges concurred in the opinion while only one dissented and he not on the merits of the question.

"The constitution of Maine requires the state supreme court to pass in advance upon the constitutionality of measures proposed to be adopted by the legislature upon request of that body. The questions proposed by the Maine senate during the session of 1907 were in the following form, which covered every phase of the proposed legislation :

"The justices of the supreme judicial court are hereby requested to give to the senate, according to the provision of the constitution in this behalf, their opinion on the following questions, to-wit:

"In order to promote the common welfare of the people of Maine by preventing or diminishing injurious droughts and freshets, and by protecting, preserving and maintaining the natural water supply of the springs, streams, ponds and lakes and of the lands, and by preventing or diminishing injurious erosion of the land and the filling up of the

rivers, ponds and lakes, and, as an efficient means necessary to this end, has the legislature power under the constitution

1. By public general law to regulate or restrict the cutting or destruction of small trees growing on wild or uncultivated land by the owner thereof without compensation therefor to such owner;

2. To prohibit, restrict or regulate the wanton, wasteful or unnecessary cutting or destruction of small trees growing on any wild or uncultivated land by the owner thereof, without compensation therefor to such owner, in case such small trees are of equal or greater actual value standing and remaining for their future growth than for immediate cutting, and such trees are not intended or sought to be cut for the purpose of clearing and improving such land for use or occupation in agriculture, mining, quarrying, manufacturing or business or for pleasure purposes or for a building site; or

3. In such manner to regulate or restrict the cutting or destruction of trees growing on wild or uncultivated lands by the owners thereof as to preserve or enhance the value of such lands and trees thereon and protect and promote the interests of such owners and the common welfare of the people?

4. Is such regulation of the control, management or use of private property a taking thereof for public uses for which compensation must be made?

“The opinion on the above questions is exhaustive, entering fully into matters of constitutionality and of the common law. It abounds in citations of decisions by courts of Maine and other states and of the supreme court of the United States.

“The decision begins as follows: ‘We find the legislature has by the constitution “full power to make and establish all reasonable laws and regulations for the defense and benefit of this state, not repugnant to this constitution nor that of the United States.”’

“Following, the court quotes a decision of the United States supreme court which has to do with the fourteenth amendment of the constitution of the United States, as follows: ‘But neither the amendment, broad and comprehensive as it is, nor any other amendment, was designed to interfere with the power of the state, sometimes termed its “police power,” to prescribe regulations to promote the health, peace, morals, education and good order of its people, and to legislate so as to increase the industries of the state, develop its resources and add to its wealth and prosperity.’

“The constitutional provision prohibiting the taking of private property for public uses without just compensation is decided

by the Maine court not to be violated in this case. The decision closed as follows:

Regarding the question submitted, in the light of the doctrine above stated (being that of Maine and Massachusetts at least), we do not think the proposed legislation would operate to "take" private property within the inhibition of the constitution. While it might restrict the owner of wild and uncultivated lands in his use of them, might delay his taking some of the product, might delay his anticipated profits and even thereby might cause him some loss of profit, it would nevertheless leave him his lands, their product and increase, untouched, and without diminution of title, estate or quantity. He would still have large measure of control and large opportunity to realize values. He might suffer delay but not deprivation. While the use might be restricted it would not be appropriated or "taken."

The foregoing considerations lead us to the opinion at present that the proposed legislation for the purposes and with the limitations named in the senate order, would be within the legislative power and would not operate as a taking of private property for which compensation must be made.

"It is evident that if this decision be good law and as such be concurred in by the courts of other states and the supreme court of the United States, to which it must be referred, the states have it in their power to preserve their forest resources, even where held in private hands. They can say to any timber owner, 'you must cut your timber so as not to destroy the forest but so as to perpetuate it for the use of another generation. You must handle your timber with reference not only to your own needs and wishes but with reference to the future.' To that end a minimum limit of size can be fixed as to trees which may be cut, and loggers can be required so to carry on their business as not to injure small and growing timber, and to clean up debris after their work is done. The police power of the state, which is intended to promote and protect the well-being of the people of the state as a whole, is thus extended to cover a business which has usually been felt to be thoroughly individual and subject to no control whatsoever."

Acting upon this decision of the supreme court of Maine, Mr. F. S. Zacharie of Louisiana has prepared a measure at the request of Governor Blanchard which is reported from Vicksburg, Mississippi, as follows:

"Timber owners in this section are greatly interested in the act F. S. Zacharie has prepared in Louisiana, at the suggestion of

Governor Blanchard, and carrying out the recommendation of the governor in his last message, an act intended to protect the timber resources of Louisiana, which will be introduced at an early day, and he supports this act with arguments showing that it is constitutional, practical and to the advantage of the state. Those interested say that only a fraction has been done that ought to be done for the protection of timber in states still heavily wooded like Mississippi and Louisiana and in which the work of felling the forests and selling the timber is being pushed so rapidly.

“Mr. Zacharie’s bill on this subject is the most radical yet proposed, insisting upon the absolute right to control and supervise on the part of the state over all natural products. It prohibits the felling, cutting down, girdling or deadening, whether upon public or private lands, of the smaller and younger timber less than twelve inches in diameter at the base and punishes any violation of the law. An exception is made in the case of clearing ground for the erection of houses.

“Mr. Zacharie argues strongly in favor of the right of the state, under power, to step in and regulate the cutting of timber on private lands. He justifies this on the legal principle that the state has a right to compel owners of property to so use it as not to injure the property of others. This rule is the basis of the laws fixing fire limits in a state, the building regulations as to height, ventilation, plumbing, security against fires, all of which interfere more or less with the owner’s control of his private property. Similar is the legal provision in regard to the protection of song and other birds, game, fish, etc. All these laws protecting private property in the interests of the general public have been passed upon as constitutional, fair and just, and the argument is made, why should not a prohibition of the waste of the forest wealth be equally fair and justifiable?

“Mr. Zacharie quotes a number of judicial decisions bearing upon the subject, all of which declare that the state has the right in the public interest to step in and prevent the exhaustion of natural resources, especially when such exhaustion may cause the public loss or inconvenience, and in several decisions the wooded lands are referred to as being the property which the state can interfere to protect, and which the purchaser takes cum onere, subject to the burden of governmental control, regulation and restriction.”

This decision of the Maine court is most important and far-reaching and was considered at length by President Roosevelt when addressing the governors of the states at the Conservation Conference, he said:

“We are coming to recognize as never before the right of the nation to guard its own future in the essential matter of natural resources. In the past we have admitted the right of the individual to injure the future of the republic for his own present profit. The time has come for a change. As a people we have the right and the duty, second to none other but the right and duty of obeying the moral law, of requiring and doing justice, to protect ourselves and our children against the wasteful development of our natural resources, whether that waste is caused by the actual destruction of such resources or by making them impossible of development hereafter.

“Any right thinking father earnestly desires and strives to leave his son both an untarnished name and a reasonable equipment for the struggle of life. So this nation as a whole should earnestly desire and strive to leave to the next generation the national honor unstained and the national resources unexhausted. There are signs that both the nation and the states are waking to a realization of this great truth. On March 10, 1908, the supreme court of Maine rendered an exceedingly important judicial decision. This opinion was rendered in response to questions as to the right of the legislature to restrict the cutting of trees on private land for the prevention of droughts and floods, the preservation of the natural water supply, and the prevention of the erosion of such lands, and the consequent filling up of rivers, ponds, and lakes. The forests and water powers of Maine constitute the larger part of her wealth and form the basis of her industrial life, and the question submitted by the Maine senate to the supreme court and the answer of the supreme court alike bear testimony to the wisdom of the people of Maine, and clearly define a policy of conservation of natural resources, the adoption of which is of vital importance, not merely to Maine, but to the whole country. (Applause.)

“Such a policy will preserve soil, forests, water power as a heritage for the children and the children’s children of the men and women of this generation; for any enactment that provides for the wise utilization of the forests, whether in public or private ownership, and for the conservation of the water resources



of the country, must necessarily be legislation that will promote both private and public welfare; for flood prevention, water power development, preservation of the soil, and improvement of navigable rivers are all promoted by such a policy of forest conservation.

“The opinion of the Maine supreme bench sets forth unequivocally the principle that the property rights of the individual are subordinate to the rights of the community, and especially that the waste of wild timber land derived originally from the state, involving as it would the impoverishment of the state and its people and thereby defeating one great purpose of government, may properly be prevented by state restrictions.

“The court says that there are two reasons why the right of the public to control and limit the use of private property is peculiarly applicable to property in land: ‘First, such property is not the result of productive labor, but is derived solely from the state itself, the original owner; second, the amount of land being incapable of increase, if the owners of large tracts can waste them at will without state restriction, the state and its people may be helplessly impoverished and one great purpose of government defeated. \* \* \* We do not think the proposed legislation would operate to “take” private property within the inhibition of the constitution. While it might restrict the owner of wild and uncultivated lands in his use of them, might delay his taking some of the product, might delay his anticipated profits and even thereby might cause him some loss of profit, it would nevertheless leave him his lands, their product and increase, untouched, and without diminution of title, estate or quantity. He would still have large measure of control and large opportunity to realize values. He might suffer delay but not deprivation. \* \* \* The proposed legislation \* \* \* would be within the legislative power and would not operate as a taking of private property for which compensation must be made.”

Governor Davidson in addressing the Conference said, in speaking of conditions in Wisconsin:

“To no state in the Union is the question of conservation of natural resources more vitally important than to the state of Wisconsin. Only a few decades ago, the northern and eastern parts of Wisconsin were one broad forest, broken only by occasional stretches of prairie land. Pine, hemlock, oak, and

maple grew in such abundance that it was the state's proud boast that Wisconsin alone could supply the whole country with timber for a century. Amid its great forests were swamps and hundreds of small lakes, from which deep, swift streams rushed to form the rivers that added their volume to the Mississippi. But, with its great forest wealth and its immense water power, Wisconsin, like its sister states, lived only in the immediate present.

"Great lumber companies, inspired only by an enthusiasm and a greed which knew no bounds, attacked these forests, engaging in a mad race each to strip its territory, to market its lumber first, and then to move forward and continue the destruction. No tree was regarded as too small to escape cutting. Trunks six inches in diameter were cut for lumber. Millions of young trees and saplings, which were too small to have any commercial value, were crushed by falling timber, or were cut to make room for logging roads. Those that escaped the ax of the loggers fell victims to forest fires, the destruction by which can only be counted by the millions of dollars—a further melancholy evidence of the carelessness with which our forest tracts were guarded.

"Today we are beginning to feel the penalty for this indifference. Our proud position as the greatest timber state of the Union has passed to others. Thousands of acres of land of no value for agriculture have been rendered bare and practically worthless; our swamps are drying up, and as a consequence many of our streams have shrunk to but a small proportion of their former size. The destruction of our forests has taken from us that great regulator of the streams, for with no forests to protect the head water of rivers and to detain the water upon the soil, we have frequent freshets and floods and are confronted with the problem of dealing with rapidly rising and falling stream volume—a condition which has already rendered many of our one time valuable water powers practically worthless.

"Wisconsin has, however, awakened to its duty to the public; it created the first state forest commission ever appointed by any of the states, and this commission has already developed into a Board whose labors are characterized by a continuous and progressive policy of forest administration. Vast tracts of public lands have been made into state forest reserves. Agriculturally profitable land has been sold and the proceeds used

to extend the resources in less-fertile soil. The United States government has added a large tract, aimed to protect the head waters of our large rivers; while lumber companies, at last recognizing the state's wise policy, have dedicated several thousand acres to the forest reserves. Wisconsin has acquired over 300,000 acres, and this acreage is constantly being extended. It has been the policy to concentrate these holdings in counties having the greatest number of lakes feeding into large streams, and in some counties the state now holds ten per cent of the entire land area.

“For the further protection of its water powers, the legislature has authorized corporations to erect series of reservoirs on certain streams, thus producing a uniform water flow throughout the season. The location of such reservoirs and dams, the height of dams, the amount of land which shall be overflowed, and the time and manner in which the stored water shall be released, is determined by the State Board of Forestry; and the law also provides that holders of such storage reservoirs shall be permitted to charge reasonable tolls for water used, provided a certain previously agreed upon storage capacity is realized—such tolls not to exceed a net annual return of 6 per cent on the cash capital actually paid in. The capital of companies such as these, and the rates charged, are under the strict regulation and supervision of the State Railroad Commission.

“Forestry is a new science in America, and no country has greater need for the adoption of its teachings. The state and national governments still possess millions of acres of rich forests, a part of which should be preserved for the benefit of future generations. The public forests must be protected for the benefit of the public, enlarged as conditions permit. When timber shall have ceased to be possible for fuel purposes, when coal beds have approached exhaustion, it is in our great forest tracts that we will find conservators of the substitute for fuel—water power—and, in addition, such forest tracts will rank as a most prolific source of public revenue.”

Governor Davidson was one of the committee of five governors who drew up the following strong resolutions which were adopted by the Conservation Conference:

“We, the Governors of the states and territories of the United

States of America, in conference assembled, do hereby declare the conviction that the great prosperity of our country rests upon the abundant resources of the land chosen by our forefathers for their homes and where they laid the foundation for this great nation.

“We look upon these resources as a heritage to make use of in establishing and promoting the comfort, prosperity, and happiness of the American people, but not to be wasted, deteriorated, or needlessly destroyed.

“We agree that our country’s future is involved in this; that the great natural resources supply the material basis upon which our civilization must continue to depend, and upon which the perpetuity of the nation itself rests.

“We agree, in the light of facts brought to our knowledge and from information received from sources which we cannot doubt, that this material basis is threatened with exhaustion. Even as each succeeding generation, from the birth of the nation, has performed its part in promoting the progress and development of the republic, so do we in this generation recognize it as a high duty to perform our part, and this duty, in large degree, lies in the adoption of measures for the conservation of the natural wealth of the country.

“We declare our firm conviction that this conservation of our natural resources is a subject of transcendent importance, which should engage unremittingly the attention of the nation, the states, and the people in earnest co-operation. These natural resources include the land on which we live, and which yields our food; the living waters which fertilize the soil, supply power, and form great avenues of commerce; the forests which yield the materials for our homes, prevent erosion of the soil, and conserve the navigation and other uses of our streams; and the minerals which form the basis of our industrial life, and supply us with heat, light, and power.

“We agree that the land should be so used that erosion and soil wash should cease, that there should be reclamation of arid and semi-arid regions by means of irrigation; that the waters should be so conserved and used as to promote navigation, to enable the arid regions to be reclaimed by irrigation, and to develop power in the interests of the people; that the forests, which regulate our rivers, support our industries, and promote the fertility and productiveness of the soil, should be preserved

and perpetuated; that the minerals found so abundantly beneath the surface should be so used as to prolong their utility; that the beauty, healthfulness, and habitability of our country should be preserved and increased; that the sources of national wealth exist for the benefit of the people, and that the monopoly thereof should not be tolerated.

“We commend the wise forethought of the President in sounding the note of warning as to the waste and exhaustion of the natural resources of the country, and signify our appreciation of his action in calling this Conference to consider the same, and to seek remedies therefor through cooperation of the Nation and the states.

“We agree that this co-operation should find expression in suitable action by the Congress within the limits of, and co-extension with the national jurisdiction of the subject, and, complementary thereto, by the legislatures of the several States within the limits of, and co-extensive with, their jurisdiction.

“We declare the conviction that in the use of the natural resources our independent States are interdependent and bound together by ties of mutual benefits, responsibilities, and duties.

“We agree in the wisdom of future conferences between the President, members of Congress, and the governors of the States on the conservation of our natural resources with the view of continued co-operation and action on the lines suggested. And to this end we advise that from time to time, as in his judgment may seem wise, the President call the governors of the states, members of Congress, and others into conference.

“We agree that further action is advisable to ascertain the present condition of our natural resources, and to promote the conservation of the same. And to that end we recommend the appointment by each State of a commission on the conservation of natural resources, to co-operate with each other and with any similar commission on behalf of the Federal Government.

“We urge the continuation and extension of forest policies adapted to secure the husbanding and removal of our diminishing timber supply, the prevention of soil erosion, the protection of headwaters, and the maintenance of the purity and navigability of our streams. We recognize that the private ownership of forest lands entails responsibilities in the interests of all the people, and we favor the enactment of laws looking to the protection and replacement of privately owned forests.

"We recognize in our waters a most valuable asset of the people of the United States, and we recommend the enactment of laws looking to the conservation of water resources for irrigation, water supply, power, and navigation, to the end that navigable and other streams may be fully utilized for every purpose.

"We especially urge on the Federal Congress the immediate adoption of a wise, active, and thorough waterway policy, providing for the prompt improvement of our streams and conservation of their watersheds required for the uses of commerce and the protection of the interests of our people.

"We recommend the enactment of laws looking to the prevention of waste in the mining and extraction of coal, oil, gas and other minerals with a view to their wise conservation for the use of the people, and to the protection of human life in the mines.

"Let us conserve the foundations of our prosperity.

"Respectfully submitted,

"NEWTON C. BLANCHARD.

"JOHN F. FORT.

"J. O. DAVIDSON.

"JOHN C. CUTLER.

"M. F. ANSEL."

These few quotations might be multiplied by hundreds and to a forester who has worked through the days of cold indifference it is tremendously encouraging to find at last the country is wide awake to the destruction of the forests and to a realization that methods of ample use without abuse must prevail in the future.

#### STATE FOREST POLICY.

The question is often asked as to just what is the forestry policy of Wisconsin and for what we are working. In reply it can easily be shown that for certain reasons which will be explained, the main work which Wisconsin should do in forestry is clearly defined.

In many states the demand for forestry comes almost entirely from the rapid destruction of the forests and the feeling that the state must take a hand in conserving the timberlands. This, of course, in itself is a most important reason for establishing state forest reserves, but in Wisconsin in addition to the ques-





When the forests are removed on the headwaters, the floods follow.



tion of providing a future supply of timber, there is the even more important necessity of protecting the headwaters of the important rivers, which means also the conservation of the water powers and navigation as well. In order to make clear the connection between forests and streams, the following is taken from the report of this office for 1906:

Many people do not understand in just what way forests preserve and regulate stream flow, and they imagine that it is brought about largely through the influence of forests in causing and increasing rainfall. In the arid plains, where for months the soil is parched dry, the cooling influence of great bodies of forest have unquestionably a slight effect in causing rainfall. But in Wisconsin, surrounded as we are on the east and north by great lakes, the influence of the forest in causing or increasing rainfall is probably so very slight that it need not here be taken into consideration. However, everywhere and under all conditions, the forest acts as a great sponge in holding moisture and giving it off gradually, thus saving forested countries from the disastrous effects of floods at one season and low water at another. Anyone who will go into the dense forest in early spring will find the snow melting slowly when it has long since disappeared in the open country. The melting snow and the falling rain in the forest, work down slowly through the humus and soil and are carried by the roots to some depth, often to underground channels, to appear weeks or months later in the form of springs or in small streams. Thus, streams which rise in forested regions have a fairly even flow throughout the year, while others, rising in regions where the timber has been destroyed, have violent floods in the spring while the snows are melting, or during a rainy season, and shrink to a mere trickle of water during hot, dry months.

This most important function of the forest in regulating stream flow is so well known in foreign countries, where the forests have been intelligently managed for hundreds of years, that in many sections the owner of forests on an important watershed is prohibited by law from clean cutting it. He is allowed to cut conservatively under the advice and management of the forestry department, but it is wisely held that no person has the right to destroy forests on an important watershed, thus causing floods and jeopardizing the property of so many others.

In this country the most careful records have been taken for

ten years of stream flow in forested and non-forested watersheds in the San Bernardino mountains of California, and the results are most interesting, as will be seen from the following tables.

ANNUAL RAIN-FALL AND RUN-OFF ON FORESTED AND NON-FORESTED CATCHMENT AREAS IN THE SAN BERNARDINO MOUNTAINS, CALIFORNIA.

Area of catchment basin.	Condition as to cover.	Precipitation.	Run-off per square mile.	Run-off in percentage of precipitation.
Sq. miles.		Inches.	Acre feet.	Percent.
0.70	Forested .....	46	731	28
1.05	Forested .....	46	756	30
1.47	Forested .....	46	904	36
.53	Non-forested .....	33	1,192	69

It will be noted from the above that the run-off in the non-forested basin was 69%, while in the forested basins it was only from 28 to 36%, a tremendous gain for the streams protected by forests. But still more instructive is the following table:

RAPIDITY OF DECREASE IN RUN-OFF AFTER THE CLOSE OF THE RAINY SEASON.

Area of catchment basin.	Condition as to cover.	Precipitation.	April run-off per square mile.	May run-off per square mile.	June run-off per square mile.
Sq. miles.		Inches.	Acre feet.	Acre feet.	Acre feet.
0.70	Forested .....	1.6	153-	66-	25-
1.05	Forested .....	1.6	146-	70-	30-
1.47	Forested .....	1.6	166-	74-	30-
.53	Non-forested .....	1	56-	2-	0

This table shows the wonderful influence that forests have in regulating and sustaining stream flow. The second month after the rain had ceased to fall, the forested areas were giving off from 66 to 74 acre feet and the non-forested only 2. In June, three months after the rain had ceased to fall, the forested areas were still showing from 25 to 30 acre feet, while the flow from the non-forested area had entirely ceased.

The water powers of our rivers are one of the most valuable assets of the state but, as can readily be seen, unless the forests at the headwaters of these rivers are protected, the melting snows in the spring will cause freshets for a few weeks and then during the summer months the water will be so low that mills using water power must either shut down entirely or else run

only a portion of the time. The development of the water powers of Wisconsin is in its infancy and as the lumber industry dies out and we look more and more to manufacturing, all water powers, large and small, will become increasingly valuable and the necessity of protecting them more apparent.

Under "Wisconsin Valley Improvement Company" the work of establishing reservoirs on the headwaters of the Wisconsin river is explained, but in order to keep these reservoirs from filling with silt and losing their great usefulness, the surrounding forests must be carefully conserved under intelligent forestry methods. This, then, is the chief and foremost forestry policy of the state, viz.: To maintain adequate forest reserves on the headquarters of our most important rivers. Second, to in time secure a steady and permanent supply of timber which will help to keep within the state many industries depending upon the forests for their raw material. Such a policy will not interfere in the least with the best development of northern Wisconsin, though it may interfere with the profits and arouse the opposition of land speculators who wish to make it appear that all cut-over sandy lands are a very Garden of Eden for the prospective settler. It is not the policy of the state to purchase good, agricultural lands for the forest reserve, and where even fairly good lands are found within the permanent reserves, they will be sold to bona fide settlers, for this office is as much interested as anyone in getting such men in. They can be depended upon for work from time to time, especially during the winter months, their farms will act as fire breaks, and the gain in many ways should be mutual both to the settler and the state.

This office is buying lands bordering upon the shores of the beautiful lakes in northern Wisconsin and it should be the policy of the state to own and protect such sites, both for the pleasure they will afford to the citizens of the state, and also because such lands are important both for raising timber and as being directly upon the watersheds. It will be seen that the permanence of stream flow in our splendid network of rivers, the future value of the many water powers, the possible navigability of the rivers, and also their use in irrigation, are all absolutely dependent upon maintaining the forest cover on the headwaters. This means that the state must own adequate forest reserves, for, as repeatedly stated in previous reports and articles, a small reserve is only a plaything and its influence would be

insignificant in the great area of cut-over lands on the headwaters of the rivers. In Oneida, Vilas and Iron counties there is one of the most remarkable lake regions in the world, and these lakes comprise the headwaters of the Wisconsin and east branch of the Chippewa, two rivers which have some of the largest and most valuable water powers in the state. These chains of lakes are in themselves natural reservoirs, but as previously explained, in order that their great usefulness may be retained, it is necessary that the surrounding forests should be protected. The area to be protected is a large one and the state should acquire in this region a forest reserve of approximately 400,000 acres. Of course, the land cannot be purchased in a day, but in such a case, the truest economy is to act promptly before all the young timber is cut or destroyed by fire, for then the state would be buying nearly a desert, which would require a very large expenditure to reforest.

#### FOREST RESERVES.

Chapter 264, Laws 1905, provides that the forest reserve lands which are scattering or agricultural may be sold and the proceeds used for purchasing other lands to be added to the permanent forest reserves. This office in carrying out this policy of the state has had the forest reserve lands in the following counties cruised, appraised, and classified: Burnett, Douglas, Florence, Rusk, Langlade, Lincoln, Marinette, Oneida, Polk, Price, Sawyer, Vilas, and Washburn, leaving similar work to be done on the lands in Ashland, Bayfield, Forest, and Iron. Upon the request of this office, the land commissioners advertised and placed on sale all the forest reserve lands in Douglas, Lincoln, Marinette, and Washburn, and also all the lands in Burnett, with the exception of those along the St. Croix and Clam rivers.

On Oct. 16, 1908, the area of forest reserve lands in the various counties was as follows:

	1906.	1908.		1906.	1908.
Ashland.....	4,941	4,941	Marinette.....	4,783	4,087-
Bayfield.....	4,768	4,608-	Oneida.....	35,719	49,939+
Burnett.....	25,828	17,835-	Polk.....	1,520	1,320-
Douglas.....	7,029	8,230+*	Price.....	27,634	27,634
Florence.....	3,762	3,762	Rusk.....	3,404	3,404
Forest.....	35,656	35,656	Sawyer.....	12,317	12,317
Iron.....	26,039	29,174+	Vilas.....	15,142	31,576+
Langlade.....	2,700	2,700	Washburn.....	12,497	11,264-
Lincoln.....	10,326	5,126-	Total.....	234,065	253,573+

Note. + indicates increase in acreage since 1906 on account of purchases.

- indicates decrease in acreage since 1906 on account of sales.

\*Although 3,519 acres have been sold in Douglas county, the original acreage has been increased by grant and purchase.

When general business conditions improve, the agricultural and scattering lands in several other counties will be advertised and placed upon the market.

#### PURCHASE AND SALE OF FOREST RESERVE LANDS.

The policy of the state to sell the forest reserve lands which are scattering and agricultural, the proceeds going into a forest reserve fund which is used for the purchase of other lands more valuable for forestry purposes than for agriculture, and so located that they will form important additions to the permanent reserves, is a most important one and is based on the sound common sense idea that every acre of land should be used for the purpose to which it is best adapted.

Creating a forest reserve fund in this way was a very wise and practical plan, as it has so far placed the work of building up a forest reserve upon a self supporting basis, and in substance, is very similar to the plan which has made possible the great work of the Federal Government in reclaiming by irrigation the arid lands of the west.

As will be noticed from the table under "Forest Reserves," the main purchases of lands as additions to the forest reserves have been as follows: Oneida, 14,338 acres; Vilas, 16,727 acres; Iron, 2,815 acres. The purchases in Oneida have amounted to \$46,034, or an average of \$3.21 per acre; Vilas, \$41,523, or \$2.48 per acre; and Iron, \$11,033, or \$3.91 per acre. These lands have nearly all been acquired from large lumber companies and for the most part are cut-over lands, as will be patent from the price paid, but over a very considerable area the young growth which is coming up is fairly satisfactory, though

a great deal of planting will have to be done on the areas which have been severely burned, and which are not restocking naturally.

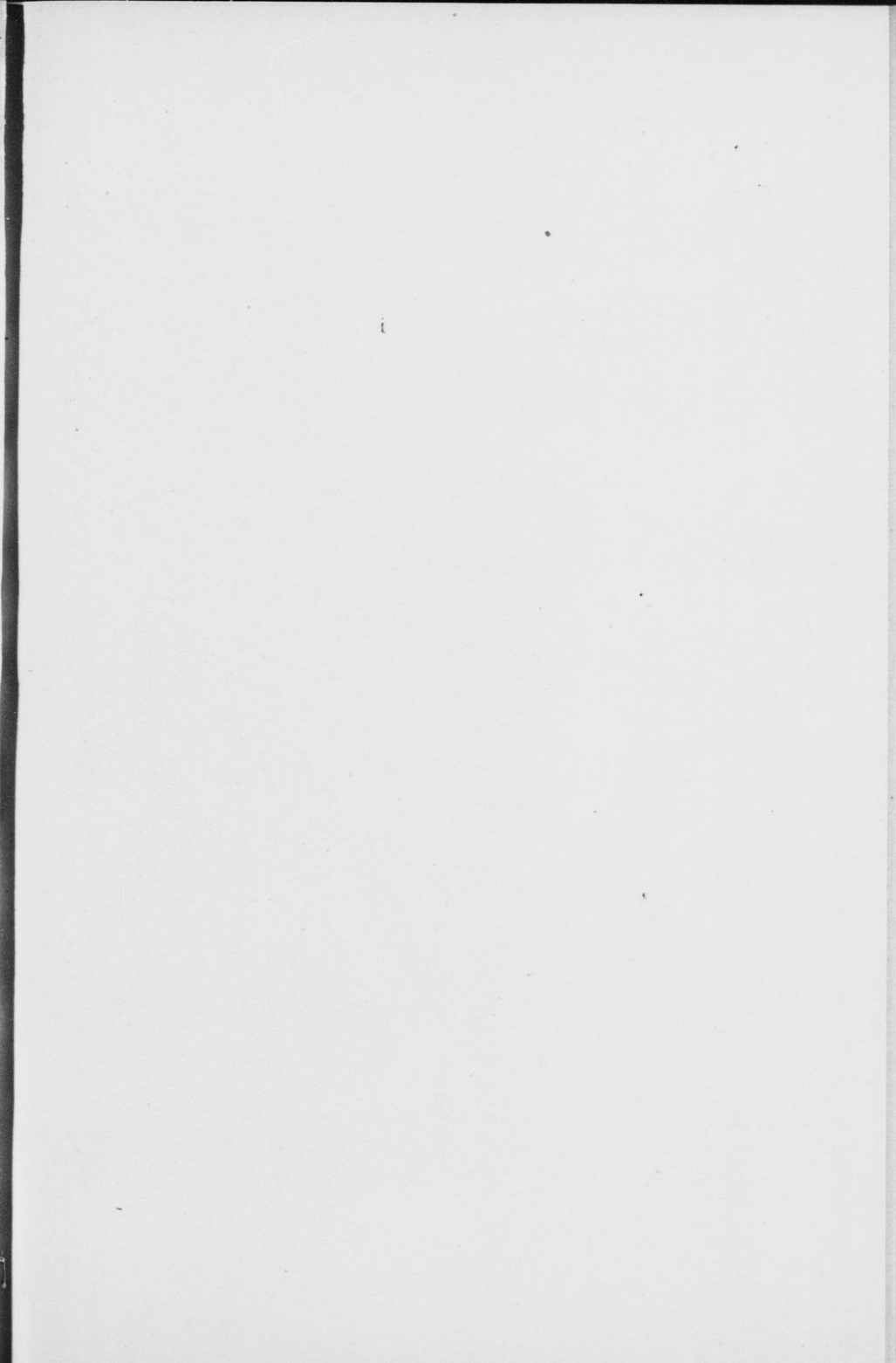
Many of the largest owners of lands in these counties are also part owners or interested in water powers or plants using the powers, and such men are naturally glad to see the state acquire adequate forest reserves which will protect the headwaters of the rivers and so safeguard the water powers for all time. This is very fortunate for the state, as it is thereby enabled to purchase large, compact holdings at a reasonable price without being compelled to resort to condemnation proceedings.

This office has prepared a map showing the ownership of the greater part of the lands which the state should eventually own in order to consolidate its holdings and at the same time have adequate reserves which will really protect the head waters of the rivers and yield in time a large amount of timber and a steadily increasing income to the state.

The amount of money which will accrue to the forest reserve fund through the sale of scattering and agricultural lands within the reserves will not be sufficient to purchase the lands which the state must own, though very considerable purchases have been and will be made with this fund. It is, of course, well understood that a forest reserve nearly adequate to the needs of the state cannot be built up in a day, and that a state cannot always do all that is best at once, but at the same time, any policy which would mean delay in acquiring these lands for the forest reserve would in the end entail a very heavy loss upon the whole state. These lands in the hands of owners whose only interest in them is speculative are rapidly and constantly deteriorating through the all destroying influence of the forest fires which are allowed to burn over them uncontrolled, every few years.

For a few years after the lands have been logged the fires are very severe, until finally the slash which feeds them is largely consumed, and then usually comes the popple under which the young pine or other valuable growth gets a start, as this is nature's own method of restocking logged and burned over lands.

But sooner or later a dry season comes and forest fires destroy in a few hours what it has, perhaps, taken years to grow. The very severe fires following the logging operations had





Fire line by means of which a fire can be prevented from spreading.



burned nearly all the humus and fertility out of the soil, but the popple, which covered the blackened ground with its heavy fall of leaves had been again making humus and so partially repairing the great loss. But now comes the fire again, the humus is again destroyed and the land is swept bare of all growth, more desolate and unproductive than it was before. This rotation of destruction, slow recovery by nature, and destruction again and again, has been going on in northern Wisconsin ever since the first logging operations, until we have several million acres of land not suitable for agriculture, which have been reduced to such barrenness and poverty of soil fertility that they will hardly support any tree growth, even the poorest and least exacting. Fortunately, most of the lands which the state must purchase in Oneida, Vilas, and Iron counties have only been cut over within the last ten to fifteen years and so have reached the stage where most of the slash has been consumed and the young growth is now coming up. Of course, much of the soil fertility has been lost, but the lands have not reached such a state of barrenness that they will not restock naturally, though such will be the case if they are not protected from forest fires. The state must own these lands and by employing rangers, building fire lines, etc., protect them from forest fires, for until this is done they will continue to deteriorate. Such being the case, it would be the worst form of economy to delay the purchase of these lands any longer than is absolutely necessary, and as the forest reserve fund is not sufficient to make such large purchases, other means must be found. As the value of the forest reserves will increase as the years go on, the ideal plan would be for the state to issue, say, \$10,000,000 in fifty year bonds bearing a low rate of interest, as by that time the income from reserves of, say, 2,500,000 acres would be so great that there would be little trouble in paying off the principal, while the interest could be met in various ways by special taxes. But such a bond issue is impossible under the Constitution of Wisconsin, as the state is prohibited from having any bonded indebtedness in excess of \$100,000. After having carefully considered ways and means, the following plan is recommended:

(1) That the legislature by act shall authorize the State Board of Forestry to issue certificates of indebtedness in a sum not to exceed \$2,000,000 on the lands owned by the state and within the forest reserves, such certificates to run for a period

not to exceed twenty years and to bear interest at a rate not to exceed five per cent.

(2) That the legislature provide for a reasonable tax upon the owners of all water powers on streams whose headwaters are protected by the forest reserves, and that the proceeds of such tax shall be used only for paying off the principal and interest of the above loan. The Supreme Court has held that such certificates of indebtedness are not a bond issue or a public debt, and in 1851 the legislature of this state passed an act authorizing the issuing of scrip, or certificates of indebtedness, in aid of the Fox and Wisconsin river improvement. These certificates were secured in part by lands which had been granted to the State of Wisconsin by the United States for the furtherance of the improvement of these rivers. Mr. Frank L. Gilbert, Attorney General, to whom the above plan was submitted, says: "I am, therefore, of the opinion that the plan suggested by you, of issuing certificates based upon the land held by the state as forest reserves and not constituting a liability upon the property of the people of the state, would not violate our Constitution and would be legal." If the legislature will authorize the State Board of Forestry to issue such certificates, it is believed that a loan of at least \$1,000,000 can be secured, to run twenty years, if not paid off before that time, and at a rate not to exceed five per cent.

#### RE-APPRAISAL OF FOREST RESERVE LANDS.

All the state lands were appraised in 1903 before this office was established, and it was not until 1905 that the state lands north of town 33 were made part of the state forest reserve. The law of 1905 provided that the scattering and agricultural lands might be sold and the proceeds used for the purchase of other lands to consolidate and extend the permanent forest reserves. Before any such lands were offered for sale, this office deemed it advisable to have them looked over by competent cruisers and it was found that in many cases the old appraisals were very untrustworthy. The values which had been placed upon the lands in some counties were found to be both too high for certain descriptions and too low for others. As a result of the re-examination of the lands which were to be sold, the prices were increased on many descriptions very materially so that the

state has received much greater returns than if they had been sold on the basis of the old appraisals. As the law now stands, the land commissioners can increase the appraisal of any description over the amount fixed in 1903, but cannot lower the price, and as a natural result many descriptions cannot be sold. Also, in several instances, timber trespass has been committed on state lands and the trespasser has settled in full. Naturally where the amount of timber so taken and settled for is large, the value of the description is greatly lessened, and yet, under the law it cannot be sold for less than the old appraisal.

At present the machinery for the advertisement and sale of agricultural and scattered lands is rather cumbersome. After the state board of forestry has examined the lands in any county, they recommend to the land commissioners the descriptions which should be sold. Then the land commissioners must meet to take action in the matter and if favorable, they must advertise the lands and hold the sale. There is apparently no good reason why two boards should be obliged to act in such a matter, for, of course, the land commissioners are governed by the recommendation of the forestry board and simply carry out their wishes. The forestry board purchases lands as an addition to the forest reserves and they could as easily take charge of sales. It is recommended that a law be passed authorizing the state board of forestry to advertise and sell to the highest bidder, for cash, such lands as it may deem advisable, and that the board may fix the minimum price at which such lands may be sold and may reduce the appraisal if the value of any description is lessened through forest fires, timber trespass, the sale of mature timber, or a railroad right of way, or for any other good and sufficient reason.

#### BRULE RIVER FOREST RESERVE.

In 1905 the legislature enacted a law declaring it to be the policy of the state to establish a forest reserve along the Brule river in Douglas county, and also prohibiting the building or maintaining of any dams on that river or its tributaries. The passage of this act led Mr. F. Weyerhaeuser of St. Paul, and his associates in the Nebagamon Lumber Company to present to the state in September, 1907, some 4,320 acres of land along the Brule river, to be used for all time as part of the forest

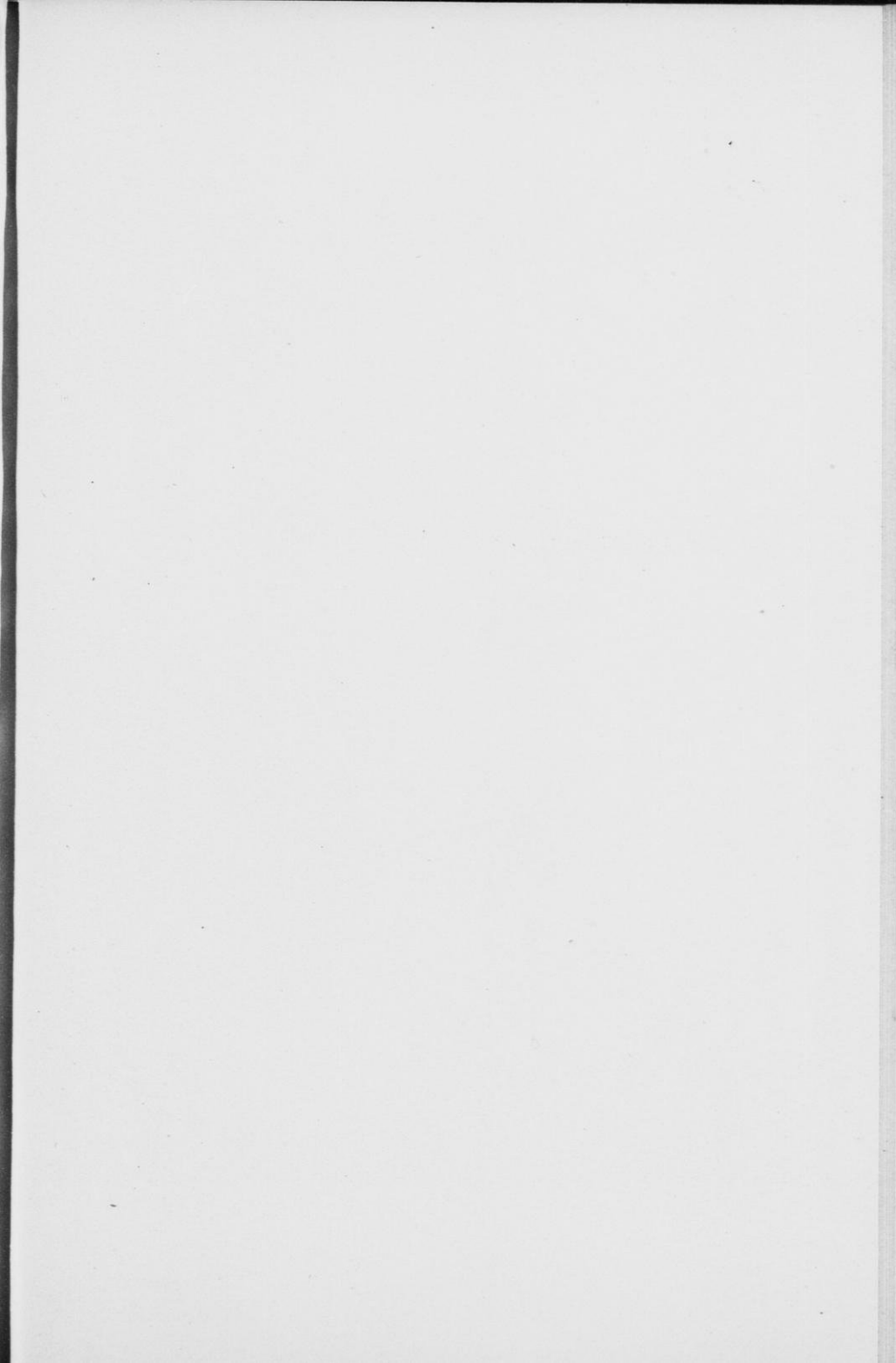
reserve. It was a most gracious gift and it is to be hoped that many Wisconsin lumbermen will show an equal interest in the work.

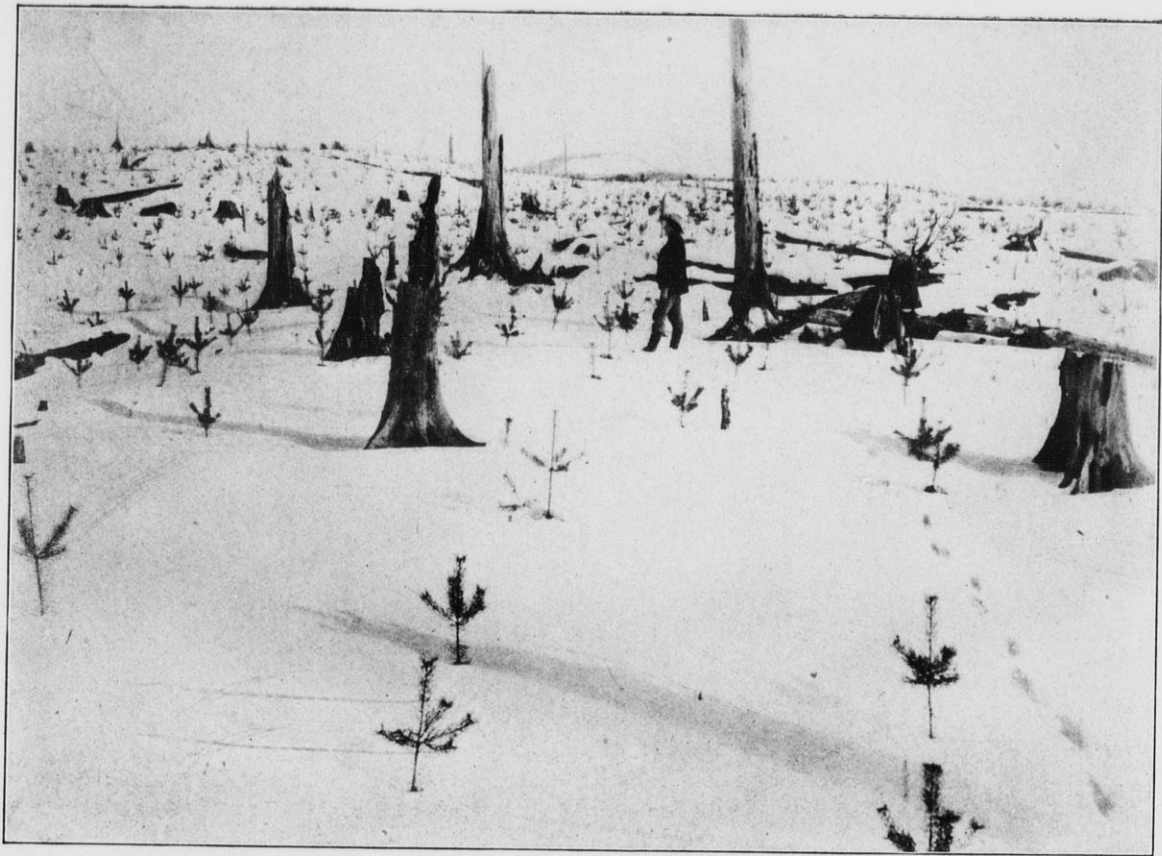
This office has removed the old dams in the main river and some public spirited citizens raised funds for clearing out the driftwood and old logs, so that now the trout fishing in the river should be much better.

All the lands which it will be necessary for the state to acquire in order to consolidate the forest reserve have been cruised and appraised, and it is hoped that the coming legislature will provide funds for the purchase of these lands and the proper care and management of the reserve. A number of families from St. Paul, Duluth, Ashland, and Milwaukee have summer cottages on the river and much of the finest timber has been owned and protected by them for many years. At the same time there is a large amount of cut-over land, including practically all that given to the state by the Nebagamon Lumber Company, which is not restocking sufficiently well by natural means and, therefore, must be planted. Before this is done, however, the state must acquire the necessary lands to consolidate the reserve, so that through control of the lands, construction of fire lines, etc., it can protect the lands which are to be planted, from forest fires. The Brule is one of the most beautiful rivers in the country and with the expenditure of a very reasonable amount of money the state can acquire a forest reserve which for beauty, good trout fishing, and as an outing place for the people, especially in the northwestern part of the state, will be unexcelled.

#### LECTURES ON FORESTRY.

During the winter of 1907-08 a course of sixteen lectures on forestry was given at the University of Wisconsin to one hundred and eighty-four students. These lectures were intended only as a general introduction to the subject of forestry and it should be understood that they in no sense prepared the student for practical work in the field. The time may come when it will seem advisable to provide a well equipped forestry school at the University in order to provide well trained foresters for work in the state, and this will doubtless be the case when lumber companies and timberland owners in general adopt forestry methods. That which would be of more value at the present





Burned, sandy lands in the New York State forest reserve planted with Scotch pine.

time, however, is a school for rangers where young men who have worked in saw mills and lumber camps could be trained for positions as forest rangers, foremen in charge of lumbering operations, and expert cruisers. The state within a few years will require an increasing number of well trained forest rangers on the reserves, and it is believed that lumber companies and timberland owners will be only too glad to secure the services of men who not only understand the practical details of lumbering, cruising, and surveying, but who have had training in forestry methods as well. Such a school should be located in the northern part of the state in the forest reserve so that all the instruction could be given on the ground. Pennsylvania has such a school for rangers, and it has proved very efficient in supplying thoroughly trained rangers for work on their state forest reserves.

#### REFORESTATION.

Before any reforestation is undertaken by the state the forest reserves should be blocked up so that fire lines can be constructed and the reserves protected from forest fires. Planting at the present time before that is done or the proper organization secured, would be attended with great risks as even a very slight surface fire would kill all the young seedlings. The main reserves will be in the lake region of Oneida, Vilas and Iron counties, and it will be a comparatively easy matter to clear fire lines so as to connect many of the lakes and thus divide the reserve into many compartments, so that if a forest fire does start in one it can be blocked at the fire line and thus prevented from spreading into other compartments. In the hundreds of miles of old rights of way which were built by the lumber companies for their steam logging roads, we have splendid fire lines already made. It is the intention of this office to use many of these within the reserves as wagon roads and to keep them free from grass, brush, and all other inflammable material.

When the reserves are blocked up, the state will employ a considerable number of rangers and cabins will be built for them at certain points so that they will be able to readily cover all portions of the reserve. These men will have charge, under the supervision of the assistant state forester and a head ranger, of all logging and planting operations, road and trail building, etc., and when the system is organized the state should begin

at once the work of planting such cut-over and burned lands within the reserve as are not restocking naturally. Large nurseries should be made at several points in the reserves, so that the state can raise its own plants at the lowest possible cost, and it is recommended that where the state has more plants than are needed on the reserves in any particular year, they should be sold at cost to individuals and corporations who wish to reforest their denuded lands.

#### NATURAL REPRODUCTION.

Natural reproduction, especially of pine, on the cut-over lands of northern Wisconsin is surprisingly good where forest fires have not run, but unfortunately such sections are the exception rather than the rule, and the fires of 1908 have destroyed thousands of acres of the most promising young growth. It may be said in general that over large areas natural reproduction is not complete, that is, there are blanks which have not restocked and which must be planted artificially in order to get an even stand, but every acre naturally reforested is a direct saving in time, labor, and money.

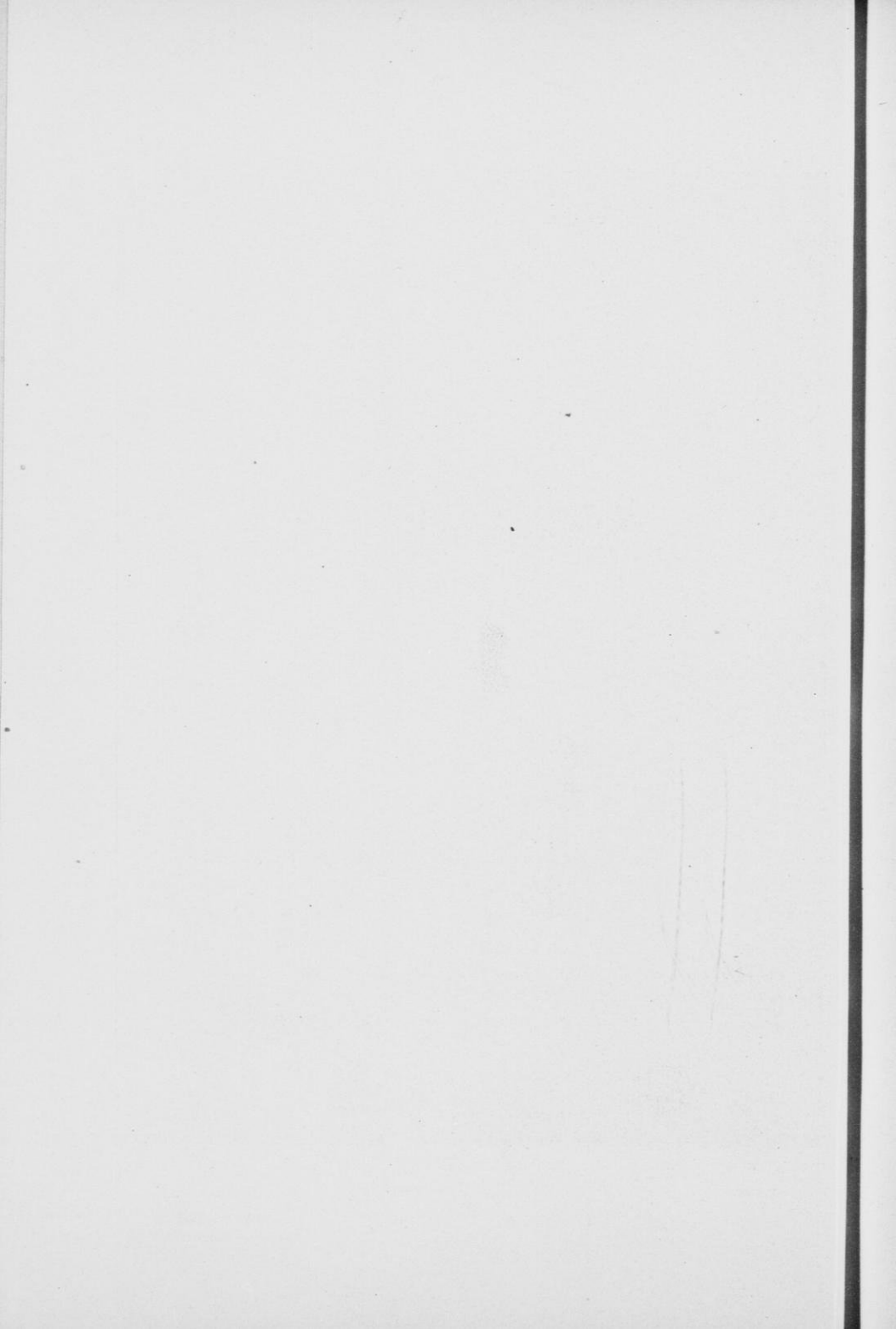
The value of such young growth together with the loss of soil fertility has led this office to repeatedly warn settlers in northern Wisconsin of the enormous annual loss caused by surface fires which they were apt to look upon as of little or no consequence. A great deal more attention is paid to such fires than in the past, but still there are even some town boards who object to fire wardens "wasting time and money" in putting out fires which are burning on cut-over lands, and such men seem to think that no damage is being done unless merchantable timber is being destroyed. Each year thousands of acres of not only pine seedlings, but also young timber which has been growing for from ten to twenty years is burned over and is a total loss, and there is nothing which can be cut and saved, as is the case with merchantable timber. The value of young growth is none the less real because it is prospective, and if Wisconsin is to have forests in the future, together with the industries dependent upon them, the forest fire problem must be solved so that the new forests with which nature is trying to reclothe the cut-over and barren lands will be carefully protected.





7349

The older trees are reproducing themselves.



## WOODLOTS.

The woodlot is of no less importance to the farmer in the southern part of the state than it is to the northern farmer who, perhaps, derives his largest and surest revenue from his woodlot. It is a valuable asset to any farm and daily growing more so, as the prices of timber continually rise with the decrease of the supply. With a good woodlot, a farmer may be entirely independent of the lumber market and may even derive a steady income from the sale of poles, posts, fuel, bark etc.; but it is a great mistake to think that a woodlot will take care of itself. With a very little thought and labor, a woodlot may be improving all the time instead of becoming less valuable.

It is poor management to take the best trees from your woodlot every year, leaving the poorer trees and less valuable species to develop and reproduce themselves. Ordinarily, the first thing to be done is to clean up the woodlot. Take out the trees that are dead, dying, suppressed or over mature. They are taking up room and not yielding any profit. Take out the less desirable species, and the large crowned trees that are taking up enough space for several other trees. However, do not open up the woodlot too rapidly, as the soil will dry out and grass may obtain a foothold. If the blanks formed by taking out trees do not restock by self sown seed from the best species still standing, sow seed yourself or plant with young seedlings obtained from a nurseryman or a forest near by. If the woodlot is open and park like, any sod that has been allowed to form must be destroyed. If there is no young timber to be injured, the grass may be burned off; otherwise, it must be plowed under; or seed cannot reach the soil and germinate. In an open woodlot that has no young growth, grazing does little harm, but a permanent woodlot should have young growth and no grass, and cattle, sheep and even horses should be rigorously excluded.

It is difficult to advise definitely as to what species should be encouraged, as so much depends on the character of the land and its location. If possible, the woodlot should be on the highest land on the farm that is not arable, so that it will hold the snow water like a great sponge until the hot months, when the moisture will sink to the cultivated fields on a lower level.

White pine is one of the best trees in Wisconsin. The timber will always be in demand and it is a good species to plant. Hardwoods can be grown easily by gathering nuts or acorns in the woods and planting them in the ground to a depth of from one and one-half to three inches.

If a farmer wishes to grow timber, he should look out for quality, but if he is growing trees for cordwood, he will look out for quantity. In both cases the stand must be kept dense, so that the trees will grow rapidly in height, instead of forming side branches. If the stand is not kept dense, there will be too much side light, which causes the dormant buds under the bark to develop into branches, and this means knots and, hence, poor lumber. A well stocked, even-aged forest will have the greatest amount of timber to the acre and if quantity is desired, the timber should be thinned out as soon as such thinnings will pay for themselves, before the stand has become so dense that there is a fierce struggle for existence, which lessens in general the increase in wood, although it results in the survival of the fittest. That is, such thinnings allow the trees to gain in diameter more rapidly, which makes quantity of wood, while if the stand had been kept dense and the struggle allowed to go on until the trees had attained their height growth, the surviving trees would have very long, clear trunks, which, after thinning, would increase rapidly in diameter with little tendency to form side branches.

If a woodlot is not too large, it may pay to do some pruning. With pine or other conifers, it is a comparatively simple matter, as the limbs can be cut off cleanly, close to the bark, with a sharp ax, as high as a man can reach. Pruning hardwoods is more difficult and less satisfactory and should not be undertaken unless there is certainty that it will pay. Pruning should be done only when the trees are young, so that the wounds will heal rapidly, and only to the trees that are to be allowed to mature.

In cutting, protect the young growth in every possible way. Do your cutting in deep snow, if possible, with this end in view. Dry tops, brush and defective wood should be burned in wet weather, so that they will not be left to feed a fire in dry weather. Fire, above all things, should be guarded against. A fire that will not injure mature timber will destroy young growth, thus doing inestimable damage, and will sometimes

burn off the humus or forest soil that is necessary for the development of young growth. A very large percentage of the forest fires in this state are caused by farmers who are clearing or burning for pasture and much greater care should be exercised by them.

I am often asked whether it would be a paying investment to start a timber plantation or woodlot from the beginning, and my answer is emphatically, yes. For years it has been thought that no timber growth but that which was mature was of any value. The growing scarcity of timber and its increasing value has brought about a change. There must be young growth for years before there can be mature timber, and even though a man may not live to see his timber plantation grown into mature, merchantable timber, he will live to see it have a money value as young growth, and will get returns from his thinnings in comparatively few years. The return on a woodlot as a long time investment may be estimated at from four to six per cent on the principal invested.

Under the present laws especially, is it wise to start plantations. Nearly every farm has some waste land that is not used for either field or meadow, perhaps because it is too steep and hilly, or of broken and uneven surface, or sandy, gravelly or even stony. The state has now made it possible for the owners of such land to put it under a valuable crop and hold it exempt from taxation for a period of thirty years, through the enactment of a law known as Chapter 592 of the laws of 1907.

In view of the great public benefit that will result from the cultivation of timber trees, any owner of land is permitted to set apart a portion, not exceeding forty acres, and to plant it with timber trees, not less than 1,200 to the acre, and be exempted from taxation for thirty years from the time of planting. This exemption does not apply to lands that are worth more than ten dollars an acre, nor to those that are within two miles of any incorporated city or village, but the state forester may nullify the latter condition by a written approval. The trees must be kept alive and in a healthy condition, but after they have been planted ten years, they may be thinned out, but 600 must be left upon each acre. This privilege extends to corporations and co-partnerships as well as to individuals.

A great many kinds of trees will do well in this state. Five of the best native trees are the white pine, Norway pine, white

spruce, hemlock and basswood. The young plants may be raised from seed or purchased from a nurseryman or even taken up in the woods.

If only a few hundred plants are desired, it is usually cheaper and easier to buy them from a nurseryman than to raise them; but if several thousand are needed, it will be cheaper to raise them from seed. In many localities, the seedlings can be transplanted from wild land.

Forest planting must be done by simple and cheap methods. It is not necessary to plow and harrow the planting site but it is best if the land to be planted has been used for field crops. Preparation and cultivation of the soil improve the early growth of the trees.

Trees should be planted with the least possible exposure of the roots, as the rootlets of the plants will dry out if exposed to the air for even a short time. Conifers are particularly sensitive and require more care than broad-leaf trees. The best time to plant is in the early spring before growth has begun, as soon as possible after the frost is out of the ground, and cool, damp days are much better than sunny, windy weather.

As a rule, seedlings from one to three years old, which are from four to seven inches high, are best for planting. The great mistake that most people make in collecting wild seedlings is to take up large plants that have their root systems so well developed that they cannot be removed from the ground without injury and the plants do not thrive after being transplanted.

If wild seedlings are growing in a fine, deep leaf mould, they can be drawn from the ground very easily; if they are growing in sod, the ground should be loosened around each plant, which can then be lifted and gently shaken free of the earth that adheres to the roots. The roots should then be plunged into a pail of "puddle," a mixture of earth and water about as thick as cream, which keeps the rootlets from drying out through exposure to the air; or, if many plants are to be taken and to a considerable distance, the roots should be dipped in water and the plants bound together in bunches of a hundred or more, and each bunch be kept moist at the roots by a covering of wet burlap or moss or fresh earth. Seedlings that are received from a nurseryman will come packed in a similar way, and the roots of these, also, should immediately be plunged into a pail of puddle

If the plants are to be set in prepared ground, a furrow can be plowed for them; if in unprepared ground, holes should be made with a mattock. The depth and width of the holes or furrows should be made according to the character and size of the root system of the plant and the plants should be placed from two to three inches deeper than they originally stood. The distance apart of the plants will depend on the species planted and the object to be attained. When the plant has been set, it is of the greatest importance to press the earth firmly about the roots, so that all air spaces are filled, but it should not be packed so hard that water will not readily soak in. Two inches of soil at the top should be left very loose to retain moisture, and in dry localities it is well to leave a slight depression around the collar of the plant to collect any moisture that may fall.

#### WHITE PINE (*Pinus strobus*).

White pine is the most valuable timber tree in Wisconsin and is also a good species for ornamental planting in parks and yards. If land is protected from fire, white pine will extend itself rapidly by natural seeding and it can be recommended for re-foresting burned and cut-over areas generally throughout its economic planting range.

#### HABITS AND GROWTH.

White pine grows naturally and best in a cool climate on a fresh, light, deep, and sandy soil with a porous subsoil. It readily adapts itself to both dry and moist soils, for it is found on the poorest and driest sand and on steep, rocky slopes, and also on moist clay flats and river bottoms, provided the latter are not continuously wet. It is capable of disputing possession with hardwoods, even on fresh, medium-heavy clay and loam soils.

White pine can endure considerable shade for a number of years, but as it becomes older it requires more and more light for its development, and after it is 40 or 50 years old the crown demands full sunlight. On this account white pine is best grown in mixture with slower growing hardwoods or other conifers which will not overtop or shade it from above.

In artificial plantations or on abandoned farms which have been reforested naturally, white pine usually grows much faster than in the forest, especially during the early years. Records of plantations in New England show that the average growth of the larger trees ranges from one-fourth to one-third of an inch in diameter annually. It is possible in the eastern portion of the United States to produce saw timber in from sixty to seventy years. Smaller trees suitable for box boards and match blocks can be produced in thirty or forty years.

Owing to the thinness of its bark, young pine is very susceptible to injury by fire, which must be most carefully excluded from plantations; but between the fifth and twentieth years the greatest cause of injury to the white pine is a weevil which in the grub stage mines in the terminal shoot and causes a crooked stem. Repeated attacks make the tree unmerchantable.

#### ECONOMIC USES.

The wood of the white pine is soft, light, straight grained, and easily worked, and will not warp. It was formerly used to a great extent for general construction, but on account of its growing scarcity and high price it has been largely superseded for this purpose by other woods. The better grades of this lumber are still used in naval construction—for decking, interior finishing, and spars.

Second-growth white pine is used principally for low-grade lumber, match blocks, box boards, wooden ware, and straight-staved cooperage. Where a demand for this material exists, white pine on non-agricultural lands will prove of economic value. Wherever there is a market for small material, white pine will prove the most profitable conifer that can be grown on poor soils.

Within its range of economic planting white pine forms a very satisfactory windbreak or shelterbelt.

#### METHODS OF PROPAGATION.

White pine reproduces only from seed. Plantations should be started from nursery-grown stock rather than from seed, which usually gives unsatisfactory results.



If the trees are to be grown in a home nursery, the seed may be purchased, but a large saving may be made by collecting it in the neighborhood, if this can be done. Cones should be gathered during the latter part of August or in September, before they begin to open. They may be picked from standing trees, or from felled trees if lumbering operations are being conducted nearby. When gathered, the cones should be spread out on a sheet or floor, where they will be exposed to the sun, yet protected from wind and rain. Within a week they will open and allow the seed to drop out. A thorough stirring will separate the seed; after which the cones may be raked away. One bushel of cones will yield from one-half a pound to one pound of clean seed, which will average from 29,000 to 30,000 seeds per pound. Seeds may be stored over winter by placing in small sacks and hanging the sacks in a cold, dry place.

The most successful method of raising seedlings is by sowing the seed in nursery beds. Seed beds should be composed of fine, loose, fairly fertile soil, moderately moist but always well drained. The soil must not be too rich; otherwise the seedlings will suffer when transplanted to the less favorable conditions of the permanent site.

A convenient size for seed beds is 4 by 12 feet, with a path about 18 inches wide between the beds, so that the plants can be weeded and cared for with ease. The seed should be sown in drills, 4 to 6 inches apart, and lightly covered with fine earth. Sowing should not begin until the ground is warm enough to cause rapid germination. Seed may be safely sown at the time garden vegetables are planted. After a seed bed is sown the surface should be "firmed" with a board or light roller.

The plants will begin to appear in from three to five weeks. Like other conifers, they will require partial shade during the first season, but subsequently can endure full sunlight, especially in New England. A shade frame of lath supported 18 inches above the bed will serve the purpose.

One pound of white pine seed is sufficient to sow 500 linear feet of seed drill, or about 200 square feet of seed beds, with drills 6 inches apart. Even with proper care some seed may fail to germinate promptly, but about 10,000 plants may be expected for every pound of fertile seed sown. White pine seed retains its vitality for several years, and when kept in cold,

dry storage a fair percentage has been known to germinate after five years. Fresh seed, however, is always to be preferred.

Two years after sowing, the seedlings should be transplanted in the spring from the seed beds to nursery rows, in order to develop a good, fibrous root system. They may be set out 3 inches apart, in rows from 12 to 18 inches apart. The roots should be set slightly deeper than they were before. The best method of transplanting is to open a shallow trench of the proper depth with a spade and set the plants by hand, carefully covering the roots of each plant with fine soil and gently firming it. Transplants, if thoroughly cultivated and weeded, will be ready for final planting at the beginning of the fourth season. At this age they should be 6 to 9 inches in height and have a well-developed system of fibrous roots.

#### PLANTING.

White pine seedlings should be planted on a permanent site in the early spring when the ground is dry enough to work. In most cases the site will not need preparation previous to planting.

#### NORWAY PINE (*Pinus resinosa*).

Norway pine is second only to white pine in its value as a timber tree.

#### FORM AND SIZE.

The red, or Norway, pine generally attains a height of between 70 and 90 feet, and a diameter of 2 or rarely 3 feet. When grown in the open, the tree is relatively short, and branched close to the ground. In the forest the stem is commonly clear for 40 to 60 feet, and the crown is short and open, but broad-spreading.

The distinguishing features of red pine are its thin, scaly, reddish-brown bark, and its slender and flexible leaves 5 to 6 inches long in clusters of two.

#### RANGE.

The natural range of the red pine is along the northern border of the United States as far west as Minnesota, and southward



When a tree has too much side light, it will form branches.



through the Northern states to eastern Massachusetts, the mountains of Pennsylvania and northeastern Ohio. It reaches its best development in the northern portion of Michigan, Wisconsin, and Minnesota.

The red pine is adapted for planting throughout most of the northeastern part of the United States. It will not do well where droughts are frequent or severe.

#### SILVICAL QUALITIES.

The red pine grows best on sandy loam soil, well drained and of moderate fertility, but it also thrives on poor sands when other conditions are favorable. The tree is very intolerant of shade at all ages and therefore suitable for pure plantations only, or for mixtures in which the other species are distinctly slower growing. Its rate of growth is fairly rapid. Measurements made in several New England plantations show an average height of 35 feet and diameter of 6 inches at 30 years of age.

Red pine suffers little from insects or disease. It is moderately fire-resistant and quite free from destructive fungi. When young, the tree is sometimes injured by a white grub which feeds on the tender roots, but the mature tree has few enemies.

#### ECONOMIC USES.

The wood is somewhat like white pine, though a little heavier, harder, and stronger. It is only moderately durable. It is distinctly valuable for all kinds of house lumber, and when chemically treated makes good posts and ties. In most of its qualities it compares with the shortleaf pine of the South, and with western yellow pine.

#### PROPAGATION.

Red pine grows only from seed. While the trees do not produce large quantities of seed, and seed years occur at intervals of from two to four years, there is usually a sufficient natural reproduction wherever there are old trees.

The seeds ripen in the fall of the second year after the flowers appear, and may then be gathered and kept over winter in any cool, dry place.

The seeds should be planted in the spring in well-prepared beds, either in drills about 5 inches apart extending across the beds, or broadcast, and covered lightly with earth well pulverized and pressed down firmly. When the seedlings are two years old they may be transplanted to nursery rows, or set in their permanent places in the plantation.

It is desirable to keep the nursery beds moderately moist, for if too dry the plants will either die or send their roots so deep in search of water that they will be difficult to transplant.

One pound of seed contains about 75,000 grains, and, under average conditions will plant about 400 lineal feet in drills, or 100 square feet broadcast.

The young seedling develops a strong taproot, but later produces several stout laterals which firmly anchor the mature tree, unless the soil be very shallow.

#### PLANTING.

For planting red pine it is best to use seedlings two or three years old which have been raised in nursery beds.

The young trees should be set out in the spring, late in April or early in May. They may be planted in furrows or in holes made with a spade, mattock, or planting bar. As a rule, the proper spacing is 4 feet each way, although this will vary in different localities.

It is usually advisable to plant red pine pure, though on good soil sugar maple, beech, or elm might be mixed with it. Any associate must be of slower growth than the red pine, or the latter will be overtopped and suppressed. Mixture with white pine has generally proved satisfactory.

#### CULTIVATION AND CARE.

If red pine is planted on cut-over lands, more rapid-growing species such as jack pine, aspen, and birch must be prevented from choking it out. No cultivation is needed, and the protection necessary is from fire and grazing.

The red pine, being intolerant of shade, very readily clears itself of its lower branches when close-grown, and never requires pruning.

HEMLOCK (*Tsuga Canadensis*).

Hemlock ranks third among the important trees of Wisconsin. It is valuable not only for lumber, but also as material for paper pulp, and the bark is of value in the tanning of hides. There are a great many paper and pulp mills in this state and the demand for hemlock is very great.

## FORM AND SIZE.

A conical evergreen tree which is usually from sixty to seventy feet in height with a diameter of from sixteen to twenty-four inches, and a maximum height of one hundred feet and a diameter of four feet. The hemlock is one of the most beautiful cone bearing trees.

## RANGE.

It is found from Nova Scotia to Minnesota, Michigan, and Wisconsin, extending southward to Georgia and Alabama, and reaching its largest size on the mountains of North Carolina and Tennessee.

## HABITS AND GROWTH.

It does well on steep slopes and rocky banks but reaches its best development along streams and in low, moist situations. Its reproductive power is usually very poor but in Wisconsin the young growth is fairly abundant where fires have been kept out. The growth is slow but it is able to withstand very dense shade. Its root system is extensive, but shallow, and the old trees are liable to die when the forest is opened up too rapidly.

## ECONOMIC USES.

Hemlock forms a large percentage of the pulpwood which is used in making paper in Wisconsin, and the amount of spruce in the state is so small that hemlock in the near future must furnish the bulk of the raw material for the paper mills. The astringent inner bark forms the bulk of the material used in tanning leather and is constantly becoming more valuable, as the hemlock forests in the east are exhausted.

## METHODS OF PROPAGATION.

The seeds of the hemlock, although they are produced in great abundance, do not germinate freely in open situations or on ground which has recently been burned over, and the young seedlings grow slowly, plants under favorable conditions being not more than three or four inches high at the end of the fourth season. Seeding will not be found satisfactory and young plants should either be purchased from some reliable nursery or grown from seed in the home nursery. The nursery should be located on fertile, fairly moist soil, and the plants must be protected from drying out. They should be transplanted in the nursery when two years old.

## PLANTING.

When four years old, the trees should be planted, being careful to space them not more than four feet apart each way, so that they will afford shade to each other and grow up with long, clean stems, free from limbs. Its ability to withstand very dense shade makes it particularly adaptable for planting in mixture with other species, notably the spruces and hardwoods. After planting, no cultivation is required.

BASSWOOD (*Tilia Americana*).

Basswood is one of the most valuable hardwoods in the state and is of fairly rapid growth.

## FORM AND SIZE.

The basswood is a forest tree which often attains a height of 70 to 80 feet, and a diameter of 2 feet. Under favorable conditions it may be considerably larger. When grown free the tree bears a large, compact crown, which makes a dense shade; in the forest it has a straight stem with but few branches, which are closely clustered at the top. The inner bark (bast), from which the tree gets its name, is fibrous and tough.



## SILVICAL QUALITIES.

The basswood is best suited to deep, rich, river bottom soils, and to cool situations. While it will maintain itself on poorer uplands, it is recommended for planting only where the soil is moist and well drained and where droughts are infrequent. It is, in general, a hardy tree. It is moderately tolerant of shade, and the seedlings require some protection from the hot sun. In dry situations it is subject to injury from the sun's heat.

The rate of growth is fairly rapid during early age, being about the same as that of red oak and Norway maple. After attaining maturity the trunk frequently becomes hollow.

The basswood is sometimes attacked by insects, which denude it of leaves or bore into the bark, but serious damage is not frequent. The European species are much more liable to insect injury than the native basswood, and are much less desirable trees generally.

## ECONOMIC USES.

The light brown wood is soft, straight-grained, and easily worked, but not durable. It is often sold under the name of whitewood, and is largely used for house lumber, woodenware, carriage bodies, panel works, trunks, and paper pulp.

Its large crown and dense foliage render it desirable for planting along roadsides and about the home, and also for low shelterbelts throughout the greater part of its range. Its flowers which yield great quantities of fine honey, lend it a great value for bee keepers.

## PROPAGATION.

The basswood reproduces freely both by seed and by sprout. The seed ripen in September or early October, and may easily be collected while attached to their large wings or bracts. They should be separated from the wings and planted at once in nursery beds, as alternate freezing and thawing during the winter rots and loosens the seed coat and causes early germination. If it is impracticable to plant in the fall, they may be kept over winter in a cool, dry place between layers of sand.

The basswood is one of the most prolific among our native trees in sprouts from the stumps, and hence this method of renewing an old stand is recommended. To secure vigorous sprouts the trees should be felled between November and March and the stumps cut low. Sprouts then start close to the ground, where they can soon develop a root system of their own and become self-supporting. All but two or three of the sprouts should be removed at the end of the first season. Under favorable conditions a sprout grows only about a foot the first year.

The basswood seedling develops a single stout root, but this is soon replaced by a number of lateral roots which give the tree a strong hold upon the ground.

#### PLANTING.

In planting the basswood it is best to use one-year-old seedlings, which should be set out as soon as the frost is out of the ground and before the leaves unfold. As a rule it is advisable to space the trees about 5 feet apart each way.

Basswood does well when planted in pure stands, but it is also of value in mixture with white or red pine (on good soil), or with white elm, white oak, red oak, maple, or hickories.

#### CARE AFTER PLANTING.

In most situations to which basswood is adapted, little cultivation is needed, since the heavy crowns and rapid growth of the young trees will soon form dense cover, which will exclude grass and weeds and furnish the proper soil conditions. Where the undergrowth is very rank, however, it is necessary to clear out the weeds in order to give the trees growing space.

Cattle have an especial fondness for basswood boughs and foliage, so that the young trees must be carefully protected from them.

The plantation should be carefully guarded from fire, and should be allowed to assume the character of a forest as soon as it can.

#### WHITE SPRUCE (*Picea alba*).

White spruce is a valuable tree for the manufacture of pulp and the young trees are ornamental on lawns and in parks.

## FORM AND SIZE.

The white spruce develops a straight, conical, undivided trunk with small, slender branches. Forest-grown trees are usually from sixty to seventy feet in height with a maximum height of one hundred and fifty and a diameter of three feet.

This species is indigenous to North America and is found from Newfoundland to Hudson bay and Alaska, southward to Maine, New York and Michigan, west to South Dakota, Montana and British Columbia.

## HABITS AND GROWTH.

The white spruce does not demand a rich soil, though it grows more rapidly on the better soils. It does well in a fresh, shallow, moderately porous soil, whether fertile or not, and will thrive with considerable moisture. It should not be grown on a very dry, sandy soil and will not stand severe droughts. The rate of growth is slow until a diameter of about five inches is attained, but after that there is a rapid rise in both diameter and height growth. The root system is rather shallow and, therefore, the tree is liable to be thrown by very heavy winds when grown in the open. The foliage of the white spruce is rich and beautiful but the odor of the crushed needles is rather unpleasant. No other spruce grows more luxuriantly or is more ornamental.

## ECONOMIC USES.

White spruce is one of the most valuable trees in the United States. Its wood is extremely useful for building purposes, and as the raw material used in the manufacture of newspaper, it is without a rival. Wisconsin through its splendid water powers has many paper mills and, therefore, the growing of white or red spruce should yield a handsome return, as there will always be a market for such choice pulpwood.

## METHOD OF PROPAGATION.

White spruce produces some seed almost every year but heavy seeding occurs once in about eight years. Where only a small amount of planting is to be done, the best plan is to purchase two to three year old seedlings from some reliable nursery.

When it is desired to establish large plantations, reliable seeds should be purchased and the seedlings grown in a home nursery. The nursery should be located on fertile, well drained soil, preferably a sandy loam, and the beds should be carefully prepared by working the ground thoroughly.

#### PLANTING.

When the plants are grown in a home nursery, they may be set out when two years old but it is better to transplant them at this age into nursery rows, as transplanted stock is always more hardy and vigorous. Plant at three years in the permanent site, spacing the trees from four to six feet apart each way. After planting, no cultivation of any sort is required. White spruce is extremely tolerant of shade and, therefore, is well adapted for planting with other species, especially hardwoods, or to fill in blanks in a forest.

Any farmer who contemplates planting trees of particular species may write to the Forest Service, Washington, D. C., and get a list of "Forest Planting Leaflets" for the different species, any of which will be sent to him free of charge upon application.

#### WASTE IN LUMBERING.

It is a fair statement that there is probably no other large industry in the United States in which there is such a large percentage of waste as in lumbering, and one of the most important problems for lumbermen and foresters is the closest possible utilization of all waste. A modern saw mill utilizes nearly everything for which there is a market but many small mills are far from up to date in this respect and still continue to destroy an enormous amount of good material in slab piles or burners.

Still the aggregate waste in the saw mills is insignificant in comparison to that which goes on in the lumbering operations in the woods all the time, and for which a practical remedy must be found if our forest resources are to be conserved as they should be.

Lumbering methods have improved in some respects in the last few years and now most operators demand that stumps be cut low, that timber be sawed instead of felled with the axe and that most of the saw log timber in the tops shall be saved, but



A heavy ground fire which destroyed most of the timber and all the surface soil.



the following causes of loss (which are only a few) are still far too general:

1. The sawing crew will often saw logs from a tree before they have measured the merchantable trunk or "bole" of the tree. The distance from the stump to the end of the merchantable length in the top may be forty feet, and if the sawyers cut two sixteen foot logs they will waste eight feet in the top. If the length had been measured before sawing they would have seen that the way to completely utilize the forty feet of merchantable timber would be to saw, say, one sixteen and two twelve foot logs. This failure to carry the sawing to the farthest possible point in the tops not only means the aggregate loss of an enormous amount of good timber, but also that such big tops make fuel upon which a forest fire can, and often does spread to uncontrollable proportions.

2. Hemlock is one of the most useful and necessary trees in Wisconsin, furnishing, as it does, timber, pulpwood and bark for tanning purposes and the supply is so small that its various uses should be utilized to the fullest possible extent. Yet it is the exception rather than the rule to find the material in the tops which is not suitable for sawlogs, worked up into pulpwood or the bark peeled and saved for tanning purposes. The paper mills can well afford to give enough for hemlock wood pulp to more than pay all the cost of working up the tops and it would be of great benefit to the timberland owners to cut up the tops, as they would thus get rid of the greater part of their hemlock slash.

All hemlock should be cut in the spring, when the bark can be peeled, as the bark is of almost as much value as the timber. This applies with double force where hemlock is being cut for paper mills, for in peeling the timber the great loss of wood, often amounting to from 15% to 20% when the bark is removed in the paper mills, will be done away with.

3. In addition to the above specific cases of waste, which are given merely as examples, there are the usual methods of lumbering that are so wasteful, viz.: leaving logs and skids in the woods, cutting young growth for a bedding on sleigh roads, breaking young timber in felling large trees, and cutting small pine and other valuable trees for car stakes. These are all more or less inexcusable and can easily be remedied by closer and more intelligent supervision of logging operations.

In addition there is the important problem of working out methods of securing by-products from the material which is now wasted. If some commercially valuable process can be found for extracting turpentine from pine tops and wood alcohol from the tops of other species, it will be a wonderful boon to the lumber industry and at the same time largely solve the problem of our worst forest fires, as the slash will be worked up to a very great extent if not used entirely.

In the same way, if turpentine can be made from pine stumps, it will mean more to the development of northern Wisconsin than any other one thing, for it is the pine stumps which discourage the settler and make the work of clearing a farm so expensive. The national Forest Service is working to solve these problems and it is hoped that Wisconsin will be in a position to assist within the next year.

#### PILING AND BURNING SLASH.

It is a matter of common knowledge among lumbermen that only a portion of the once magnificent forests of northern Wisconsin was ever utilized, and that not to exceed forty per cent of the timber ever reached the saw mills. This was due to the fact that in the early logging operations only the choicest trees were cut and forest fires, fed by the highly inflammable pine slash which was not disposed of in any way, were so fierce that nearly all the remaining trees were destroyed. This was particularly true where the forest was composed almost exclusively of pine, for in such cases more timber was cut, thereby making more slash, and also the strong influence of hardwoods in checking the spread of forest fires was lacking. It is often asked why it is that Wisconsin has suffered so much more through forest fires than old lumber states, such as Maine and New York. The reason is that in these states the forest was composed of many species and the pine was scattered through the hardwoods, so that in the early operations only a tree here and there was taken, the opening thus made in the forest was quickly closed up by new growth and the comparatively small amount of slash was scattered. But in Wisconsin, especially in the northern portion, the pine occurred in large and fairly solid bodies and the cutting was so heavy that an enormous amount of slash was left on the ground to become



as dry as tinder in the hot sun of summer and only needing a spark to start a fire so fierce that all remaining timber, as well as the leaf mould and in places even the soil itself, was totally destroyed. The result, as we all know, is that great stretches were left almost a barren waste and the fires followed year after year, but gradually became less and less as the last of the old slash was consumed. Leaving slash all through a forest is simply a standing invitation to a total loss from fires and one of the laws which is most urgently needed is that all slash must be piled and burned. If such a law had been enforced from the time logging operations commenced in Wisconsin, there is no doubt that we would now have splendid forests in all sections of the state, and that many large saw mills and industries dependent upon the forests for their raw material which left the state when the forests were destroyed would still be in operation here and employing a large amount of labor. That is the point which so many people do not seem to realize, that the loss of the forests means the loss of great industries to the whole state and that when lumber companies are allowed to cut and slash its forests so that they are rapidly destroyed through the axe followed by fire, and often with only forty per cent of the timber utilized; that a frightful economic loss is the result which will usually take generations to repair.

Neither lumber companies nor any industry or set of individuals should be allowed by law to so wreck and ruin vast areas of our country, for it is not only the loss of the forests and the industries dependent thereon, but, as a rule, the destruction of the forests results in floods followed by periods of low water, navigation seriously impaired, the value of water powers greatly lessened and a flow so irregular that it is of little value for the great uses of irrigation. At the same time, the lumbermen are perfectly right in saying that they are not "undesirable citizens," that their business is a legitimate one and that they should not be called upon to bear the whole cost of forest conservation. As pointed out under "Taxation of Timberlands," Wisconsin by exempting growing timber from taxation should assist the owner in conserving the forests and not continue the present practice of taxing timber to death.

In the same way, it is felt that if the lumbermen had to bear the whole cost of piling and burning slash, it would be

hardly fair, but, as a matter of fact, all the people would help bear the small expense through the added cost of lumber. This office has worked and is still working to have similar laws passed in Michigan and Minnesota so that practically all the lumbermen of the lake states shall be placed upon an equal footing. Piling and burning slash is not an untried experiment. It was enforced nearly ten years ago in the Black Hills of South Dakota where lumber and mining companies were cutting on government land, was always extremely successful, and done at a reasonable cost. Since that time it has been adopted in all logging operations on the National Forests and by many large timberland owners in various parts of the country. Mr. F. E. Weyerhaeuser of St. Paul, the largest lumberman in the country, in an address delivered before the American Forest Congress in 1905, stated that the two main obstacles to the general adoption of conservative forestry methods by lumber companies were taxes and fire, and after speaking of unjust taxation, said:

“The next obstacle, more important because harder to overcome, is fire. I am frank enough to say that in this matter lumbermen themselves are largely responsible, sometimes even to the extent of fighting reform. For example: Two years ago a bill was proposed in Minnesota providing for the burning of slashings. Because of the opposition of the lumbermen it was never reported out of the committee. Since then the government has required the burning of slashings on the Leech Lake Indian Reservation. The wise and moderate regulations suggested by the Bureau of Forestry were introduced with complete success. A wisely drawn bill presented to the legislature today would be supported by the best of lumbermen.”

In Wisconsin the lumber companies operating upon the Lac du Flambeau and La Pointe Indian reservations have been obliged to pile and burn their slash for several years and there is absolutely no reason why it should not be required by law in all the northern part of the state. The slash should be piled in compact piles and away from the standing timber as the cutting proceeds and, whenever possible, it should be burned at once. This can oftentimes be done with pine tops, but where it is not possible, the slash should be burned not later than the next spring when the fire will not run and

before the surrounding country has become dangerously dry. The best plan is to have pilers who are not expected to do anything but look after the slash and in this way the swampers will be saved a lot of work. This kind of work is new to most logging crews and the cost at first depends largely upon the skill of the camp foreman in planning the logging operations so that the slash will not have to be rehandled and at the same time it will be out of the way of the teams in skidding. Where the foremen have had experience, it is often done for from twelve to fourteen cents per thousand feet of logs, but, on the average, it should be done for not to exceed twenty-five cents, which is by no means an excessive cost when one takes into consideration the fact that the remaining timber is thus practically insured from destructive fires. The ground is left free from the usual amount of inflammable material, so that if fires do occur, they are only surface fires, which are easily put out and do a comparatively small amount of damage. If the cutting has been conservative, only the mature timber being taken and the small trees saved for future growth, a most important start has been made in handling the tract for continued and successive crops of timber. If it is absolutely essential that on account of existing contracts or for any other reason, all the timber must be cut, then large limby trees, which will not produce good timber, should be left for seeding purposes, and, if they are well distributed, the ground in a few years will be covered with a valuable young growth.

#### SUMMARY OF FOREST FIRES IN WISCONSIN IN 1906 AND 1907.

Both 1906 and 1907 were years of plentiful rains, especially during the spring, summer and fall months and therefore the damage from forest fires was relatively small.

No large amounts of merchantable timber were destroyed and the chief loss was to young second growth, the prospective value of which the settlers in northern Wisconsin do not begin to appreciate.

The chief causes of forest fires and the enormous loss which they entail upon the whole state are so fully treated in the report of the forest fires for 1908 that they need not be explained here, but following is a summary of the forest fires for both 1906 and 1907:

1906.

County.	No. of fires.	Acres burned.	Amount of timber destroyed.	Other loss.	Cost of service.
Ashland .....	2	12	Second growth tamarack and hemlock.	1 house and barn	\$7 50
Barron.....	1	1,300	Second growth.....	1 house, \$300.....	
Bayfield ..	2	15	Jack pine.....	.....	22 55
Burnett.....	1	15	Jack pine.....	.....	14 00
Chippewa...	3	20	45 eds. pine, oak and maple.	Hay: 4 barns; 2 houses.	11 00
Clark .....			.....	.....	7 25
Douglas.....	14	603	Some oak and jack pine; 50 M. ft. black pine; 500 eds. lath bolts.	1 house; 1 barn..	104 90
Dunn.....	1	160	.....	.....	8 50
Eau Claire..	10	400	.....	.....	6 00
Florence... ..	4	1,990	Maple and birch; 200 M. ft. hemlock.	1 barn; 1 team; farm machinery; pulpwood, \$2.140.	44 00
Forest .....	3	2,120	25 M. logs, 200 eds. wood; cedar logs and standing timber, Jones Lbr. Co., \$5,000; cedar logs and standing timber, Menominee Bay Lbr. Co., \$3,000.	5 horses; logging outfit, \$1,200.	52 75
Iron .....	3	1	.....	.....	
Jackson.....	14	13,740	Second growth pine and oak.	1 traction engine; 1 log shanty.	62 11
Langlade... ..	4	13	4 acres timber.....	1 barn, \$200.....	37 50
Lincoln.....	4	225	Timber worth \$1,423.....	.....	14 00
Marathon ..	2	6	.....	.....	15 00
Marinette ..	15	5,553	Cedar and tamarack; 5 M. ft. jack pine; 500 M. ft. hemlock; pulpwood; logs.	1 log house; 1 house; logging camp; 1 school house, \$600; 1 house, \$800.	100 90
Oconto.....	8	257	Second growth pine, hardwood and hemlock; 12 eds. tam. bark.	30 posts; 250 rds. log fence.	73 50
Oneida.....	7	800	10 acres hardwood, sawed logs.	Town building, \$75; boarding house and ice house, \$600.	64 25
Polk .....	2	3,200	Jack pine saplings, 75 M. ft. natural timber.	Fencing.....	18 80
Portage.....	8	3,390	Oak and oak saplings....	.....	32 00
Price.....	4	88	3 acres birch and cedar; 10 eds. birch and maple; 1 M. ft. sawed logs.	2 eds. Balsam; 2 buildings.	27 47
Rusk.....	4	340	Few Norway pines.....	1 old log barn....	10 75

## 1906—Continued.

County.	No. of fires.	Acres burned.	Amount of timber destroyed	Other loss.	Cost of service.
Sawyer.....	1	.....	.....	.....	\$21 00
Taylor.....	.....	.....	.....	.....	18 00
Vilas.....	.....	.....	.....	.....	49 00
Washburn..	2	1,500	50 M. ft. Jack pine.....	.....	22 50
Waupaca....	.....	.....	.....	.....	10 00
Wood.....	1	4	Jack pine.....	.....	23 25
Total	120	35 779	.....	.....	\$878 28

1907.

County.	No. of fires	Acres burned.	Amount of timber destroyed.	Other loss.	Cost of service.
Ashland .....					\$5 00
Barron.....	1	9	\$150 of Norway pine. Old slashings.		4 50
Bayfield.....	5	880	Old slashings—second growth hardwood and hemlock.		41 50
Burnett.....	9	5,265	Jack pine.....	2 houses; 1 granary.	43 70
Chippewa...	1	40	Hardwood.....		8 00
Clark.....	6	3,700	Underbrush—slashings.		18 20
Douglas.....	13	3,073	100 acres old slashings: 1,620 acres Jack pine; 25 acres birch and maple; 10 M. ft. birch; 15 M. ft. maple; 500 cds. wood; 15 M. ft. basswood.		66 25
Dunn.....	9	2,140	Jack pine—second growth oak and basswood.		58 60
Eau Claire..	10	300			30 50
Florence....	5	320	Second growth Jack pine; hemlock; birch.	Fence, \$10; 5 cds. wood.	76 00
Forest.....	6	164	80 acres hardwood; 20 acres wood and pulp; 25 cds. wood.	\$200. wood and pulp.	46 50
Iron.....					101 00
Jackson.....	5	1,300	Young pine; oak brush..		18 15
Langlade...	6	10	Maple and birch.....		21 25
Lincoln.....	1	1			36 00
Marathon...	15	135	20 acres hemlock; 80 acres hardwood and hemlock; cedar cordwood.	Haystacks.....	18 50
Marinette ..	35	1,030	15 acres hardwood, beech and maple; 10 acres small oak; 5 acres hardwood; 250 acres small jack pine; 300 acres dry timber.	Camp of J. W. Wells; 2 horses; hay and wood	312 08
Monroe.....	1	350	Second pine and oak.....	Fences.....	
Oconto.....	11	379	20 M. ft. hemlock; 6 M. ft. hardwood; 40 M. logs; 4 acres green timber; 25 acres slashing.	C. & N. W. car...	93 00
Oneida.....	15	1,935	8,500 ft. jack pine; second growth pine and hardwood; 25 M. ft. pine; \$50 worth of spruce, tamarack and birch.		208 12
Polk.....	6	3,851	5 M. ft. jack pine.....		44 65
Portage.....	8	765	Second growth oak.....	40 tons hay.....	38 50
Price.....	12	695	4 acres green timber; 800 acres burned over; 50 M. ft. hemlock, birch, basswood and maple.		48 25

## 1907—Continued.

County.	No. of acres.	Acres burned.	Amount of timber burned.	Other loss.	Cost of service.
Rusk.....	5	375	Elm, hemlock, birch and balsam: 10 M. ft. Norway pine.	Logs and mill. \$6,000; 2 barns.	\$34 15
Sawyer.....	1	23,040	Small pine and poplar.....		309 58
Shawano.....	8	328	Hemlock, basswood and hardwood. About \$200 worth.		61 25
Taylor.....	3	140	Second growth maple, poplar, birch, hemlock, pine and balsam.		86 28
Vilas.....	3	110	Birch and pine.....	500 cords 4 ft. cd. wood.	54 25
Washburn..	12	2,240	25 M. ft. pine.....	Hay stack.....	48 25
Waupaca ...	3			Logging camp...	63 25
Wood.....	3	1,703			
Total..	215	54,278			\$1,995 26

## SUMMARY OF FOREST FIRES IN WISCONSIN IN 1908.

As if in mockery of the efforts of the State and Nation to conserve the remaining timber supply of the commonwealth, the fire fiend swept through northern Wisconsin during four months of 1908 and left a trail of desolation in its destruction of millions of feet of mature and young timber, of farmers' and settlers' homes and barns, of schoolhouses, of bridges, and thousands of men exhausted by their work in attempting to stay its progress. The heavy toll also included one life lost while the victim was fighting fire. Measured by the standard of dollars and cents, the fires partially destroyed merchantable timber and property valued at \$2,996,975; the damage to the future forests of our prosperous state—millions of acres of small but thrifty growth of pine and hardwoods having been swept over by the flames—being valued at \$6,047,060, making a total loss to the state of approximately \$9,000,000. Nature's work of years in reforestation over millions of acres was quickly nullified, and where the fire burned the humus and left nothing but the baked sub-soil it will be many years before nature can repair the damage.

Wisconsin has been the scene of many big forest fires in previous years, several of which were attended with great loss of life, as in the Peshtigo fire of 1871 and the so-called Phillips fire of 1894. In the fires of the latter year, however, the condition of the soil was such as to partially protect the timber. Up to that time hemlock had not been cut heavily, and where the pine had been taken off the remaining hemlock retained much moisture. The cutting of the hemlock in recent years has removed the protection of moisture afforded by that species. The fires of 1908 covered a greater acreage than those which are part of the history of the state, though they were fortunately not accompanied by the loss of life that was reported in the other memorable conflagrations. But the damage both real and estimated, which resulted from the latest fires was none the less disastrous when considered from either the view of the forester or the lumberman. The billions of young trees that fell prey to the flames formed an asset that was alike valuable to the individual and the state. It was not only a calamity to the state but to the nation as well, for the young timber which was destroyed would in a comparatively few years have assured a



forest growth sufficient to protect largely the headwaters and regulate the flow of the Wisconsin, St. Croix and Chippewa rivers, all three important streams which furnish power to many industries within the state and give their surplus to the great Mississippi river.

Wisconsin is peculiarly susceptible to forest fires, as are all the older of the states where lumbering has been carried on for generations. The methods of lumber operations so far as the utilization of the timber itself is concerned have improved in the last decade, but practically no steps have been taken by the lumbermen to lessen the fire hazard. As has been the custom for years, the waste of the tree is left on the ground when the logs are removed, either to rot or to form food for fires. In periods of drought it requires but a spark from a locomotive stack or from the pipe or cigar or camp fire of a trespasser to start a roaring, seething sheet of flame in these choppings or slashings that sweeps everything before it and which humans cannot successfully stay. Thousands of these slashings covering 40, 80, 160 or more acres are to be found in the northern counties of the state. Where they lie in proximity to a railroad or where a settler has gone in to clear up the land and make a home for himself, the danger from fire is heavily increased and timber nearby is likely to be damaged at any time. Fires burn these slashings periodically, but there is always fuel for the flames in the underbrush which springs up in rank growth. Of such frequency are these fires that the ordinary citizen comes to look upon them as an evil not unmixed with good. The farmer considers the burning over of the choppings as an easy means of clearing the land of old logs and tree tops for the settler and the consequent enhancement of property values through the bringing about of more widely extended farming. The fallacy of this method of reasoning is apparent when we realize that even surface fires destroy the humus, which is nature's fertilizer, and that the annual fires in northern Wisconsin have reduced thousands upon thousands of acres to a condition approaching that of a desert.

It was not until late in August that the real seriousness of the fires became generally known or realized. No rain had fallen for weeks; swamps were beginning to dry out; streams became rivulets, and rivers ran low, causing a cessation of work where water power was depended upon; the underbrush was dry and

parched, even in the dense forest growths where moisture is usually retained the humus was dry and the trees themselves showed evidence of the drought; the slashings were nothing but a mass of dry wood and shriveled leaves awaiting only a spark of fire to ignite and spread destruction. Fires did start, and under the conditions it is remarkable that not even greater damage was done.

Early in September fires prevailed in nearly every one of the thirty-two counties in the northern part of Wisconsin. The smoke, combined with that ascending from the fires in Michigan, hung like a pall over the surrounding country, impeding navigation on the lakes and extended as far south as Chicago. Thousands of men were kept busy day and night attempting to control the fires that were eating their way through the soil covering or at times, when the flames became so fierce, being fed by the slash, that they leaped to the crowns of the trees and spread through the timber like a veritable demon, jumping fire trails, back fired patches and even wide streams, carrying all before it to destruction. Farmers and settlers who had watched the burnings of slashings with but poorly concealed satisfaction became alarmed when the flames threatened to wipe out their crops, homes and outbuildings. In dozens of small communities the on-sweep of the flames meant destruction of not only property but human life as well, and the entire population turned out to battle with the common enemy, while railroad cars to which locomotives with steam up were attached were held in readiness to carry the women and children to safety. The men who faced the loss of homes and property alone know the mental anguish they suffered, to say nothing of the physical torture they endured in fighting for their all. The towns in many counties were put to heavy expense in paying the gangs of men sent out to battle with the flames, though the expenditures so made do not truly represent the number of men so employed, as thousands volunteered their services and were aided by logging and mill crews. In more than one instance the fires had reached the outskirts of a town and there seemed no hope of holding them in check when the rain came and accomplished what the towns-people had failed to do.

Between July 4th and October 26th only a trace of rain was reported in any county affected by the fires. On the last date mentioned—a Saturday afternoon—when fires were raging over

thousands of acres, a heavy rain began falling in the lower tier of counties and by the same night or the next day the rain was general over the northern half of the state. The showers were heavy and at several points where weather statistics are kept the rain gauge showed a precipitation of slightly more than four inches. This rain was effective in extinguishing the fires in the slashings, which had been ablaze for weeks, but it did not serve the purpose of putting out the ground fires. The soil was so dry because of the long period without water that, when rain fell, it was immediately absorbed and little, if any, trace of the downpour was evident on the surface. Within two weeks after the rain, fires were again burning in the same territory as before. They were not fresh outbreaks but rather a continuation of the former fires which had smoldered in the humus instead of being completely extinguished. Following the rain came warm weather which served further to dry out the soil. The foliage in the hardwood belt littered the ground, and in addition the winds blew down considerable timber which was burned about the stumps and roots by the ground fires as well as much of the young growth which had been killed by the flames and heat. That collection of debris on the surface offered even greater fuel for the flames than before, and during the week of October 12-19 the aggregate damage to commercial timber was largely increased. Rain again fell in the burned district on October 19, 20, and 21, and the fall was heavy enough to end most of the fires. Some were burning, however, late in October, but they were not of a serious character.

Figures revealing the area burned over, the losses suffered by the lumbermen and farmers, and the estimated cost of fighting the fires convey but partially to the reader the story of Wisconsin's loss. Reports made to the State Forester of Wisconsin, by the fire wardens of the state show that 1,209,432 acres were burned over by the 1,435 individual fires which came to the attention of the wardens. No small percentage of this acreage was young growth pine, hemlock, spruce and hardwoods, some of it nearing merchantable size, while the percentage of mature timber burned was also large. It is estimated that 499,495,791 feet of merchantable timber was burned, and, placing a low stumpage value on that timber, it was worth \$2,996,975. Estimating that 50 per cent of the timber will be saved the loss will be \$1,498,488. In addition, farm houses, lands, live stock,

school houses, bridges and other private and public improvements to the value of \$149,454 were destroyed. In the attached tabulation a summary of the ravages of the fires by counties is given.

As is shown in the attached tabulation, 1,435 fires were reported by the wardens. Of this large number fully 60 per cent were started by farmers burning brush or clearing pasture lands or by settlers clearing their holdings of logs and stumps. About 15 per cent were due to sparks from locomotives. The remaining 25 per cent is attributed to various causes such as carelessness of hunters and campers, logging crews, trespassers, berry pickers, Indians, travelers along the public highways, and lightning.

While the value of the stumpage damaged is given at \$2,996,975 a certain part of the timber will not be a total loss, and it will not be until several years have elapsed that the individual owners of timber will definitely know their losses. This is explained by the fact that where the white pine, birch, and basswood can be logged during the winter of 1908-'09 and the logs either put into the water or manufactured the damaged timber will not be a total loss.

To leave these species in the woods would mean that the worms would get into and eat the pine, and the sap would discolor the hardwood logs and make them valueless for lumber. The damaged timber of other species can be left in the woods for several seasons without deteriorating to the point of becoming unfit for saw logs, though in the case of hemlock much of the valuable bark cannot be peeled and a portion of the value of the timber will thus be lost. The burden of loss will fall most heavily upon the holders of small tracts of timber who have no means of caring for their logs or getting them sawed. Most of the larger tracts are held by lumber companies in a position to log all the burned timber and manufacture practically all that was damaged. Unless these concerns should buy the timber of the small holders, the latter will lose much in the aggregate. Even where the lumber companies are able to care for all their damaged timber they will sustain a financial loss on their operations because of the fires through the increased cost of logging and the relatively low prices which the lumber will bring in comparison with the prices of a year ago or the prospective higher prices of next year. To reach some of the



The results of a severe forest fire in Vilas County, Wisconsin September, 1908.



timber will necessitate on the part of a number of companies a considerable outlay for new, or extensions to old, logging roads and the building of additional camps. Much of the timber that was damaged would not have been cut for three or four or possibly a number of years longer, and it would surely have increased enormously in value in that period. Practically every one of the large companies was put to much expense in sending out gangs of men to protect their timber, camps, plants, or yards and stocks. One big concern employed 1,000 men day and night for nearly a week in fighting fires which threatened to destroy its sawmill, and a low estimate of the cost to that company in fighting fire is \$10,000. Other companies expended from \$500 to \$3,000 each in guarding their properties from annihilation.

The largest losses incurred by timber owners were in Chippewa, Douglas, Florence, Iron, Langlade, Lincoln, Marathon, Marinette, Oconto, Oneida, Price, Rusk, Sawyer and Vilas Counties. Practically 97 per cent of the damage to commercial timber was done by the fires in those fourteen counties. Altogether the area burned over in the counties named was 995,971 acres, on which 470,487,000 feet of timber, with a stumpage value of \$2,822,922, was damaged. In Oneida County one concern alone suffered damage to 50,000,000 feet of white pine timber it was holding. The Indians on the Bad River Indian reservation in the northern part of Ashland County, as wards of the federal government, also lost heavily by fires, the amount burned being estimated at over 150,000,000 feet. The lumber company cutting the timber on the reservation by contract would, under ordinary conditions, put in about 50,000,000 feet during the season, but owing to the damage by fire more than double that amount will have to be logged during the winter of 1908-09. Another loser by the fires was the state of Wisconsin upon whose reserves there is much young growth. The state is now having its lands which contain heavy timber cruised and expects to lose 50 per cent of its former value. Approximately 20,000 acres of state forest reserve lands containing young timber were burned over, and, as the young growth was unusually good in many sections, the loss amounts to at least \$150,000.

The setback to the natural reforestation of thousands of acres of land due to the fires is a feature that has been considered by

the men who have the welfare of the forests at heart. On hundreds of acres burned over were growths ranging from mere seedlings five or six inches high to sturdy saplings, and, in some instances, trees that in ten or fifteen years' time would have attained sufficient size to warrant cutting. Not only was this growth killed, but it was subsequently thrown to the ground by the winds. This mass of thrown young trees will by decay and drying out form excellent fuel for fires of another season and, once the fire shall attack it, the soil and seeds of another growth will be consumed and the acreage added to the millions of barren acres in northern Wisconsin. What this young growth would have been worth in a few years it is difficult even to approximate; had it not been destroyed and had grown to maturity its value would be in the millions.

The expense to the townships in fighting fires—the cost of the fire warden system of the state being borne by the townships—was considerable, no less than \$43,850 having been expended for the hiring of men to work under the direction of the fire wardens. Had not hundreds of men volunteered their services the cost to the townships would have been triple the amount named. An additional \$55,820 was spent by lumber companies in fighting fires, though undoubtedly a far greater outlay was made than the figures of the fire wardens would indicate. More than 11,000 men were engaged in the protective work during the siege of the flames, and that many of these men escaped with their lives after being hemmed in by fire while at work was due to their daring. The men who fought faithfully endured such heat as only a forest fire can create, and the smoke at times was stifling. It was impossible for the fighters to see objects at any great distance and they were thus hampered in their work. Practically every method known to woodsmen was employed to check the spread of the flames, such as back firing from trails, roads or streams, cutting down of dead timber, trenching to prevent the spread of fire in the humus, using water when available to saturate the ground, shoveling of fresh earth over the leaf mold, clearing paths or trails on crests of hills, and plowing furrows where there was danger of the fire sweeping over farm land. All these methods were found effective, except when the fire ran in the tops of the trees and jumped across roads or streams, sometimes a distance of fifty feet or more.

That the fires gained such headway was not due to any laxness



on the part of the fire wardens of the state, many of whom worked day and night. They also endeavored to prevent the starting of fires by the farmers and settlers by the posting of notices giving warning that a dangerously dry time existed and forbidding the setting of any fire on any land except for warming the person or cooking food. Other wardens, not satisfied with the mere posting of notices, sent warnings by mail or telephone or served a personal warning on the settlers in their district. In one township advertising the warning in a newspaper was resorted to; that township suffered little from fire. Despite these warnings settlers and farmers started fires on their lands and the fires left unattended, particularly at night, quickly spread to adjoining land or timber. The attitude of many of the settlers to the fire was one of indifference except where their own property was endangered. The law of the state declares a violation of the warning against setting fires a misdemeanor punishable by a fine or imprisonment in lieu of a fine. But the law does not always work to the advantage of the state, as was shown in a recent case where five offenders were arraigned in court and the trifling fine of \$5 imposed upon each defendant. The fines were paid promptly and the settlers asserted that the fires which they had started had saved them many times the fine in the expense of clearing their lands. As the law now stands the maximum fine of \$100 is provided, but no minimum is fixed. It is proposed to appeal to the legislature to fix a minimum fine of \$50, so that the fine will be large enough to cause observance of the law. The present law also opens a way for the bringing of a civil action for the collection of double the amount of damage suffered "if the fires occurred through wilfulness, malice or negligence." It is believed that suits will be brought this winter where evidence has been obtained against responsible parties. Another change which the legislature will be asked to make in the state fire warden law is the forbidding of the starting of any fire, except in the winter, unless the permission of the local fire warden be obtained in advance.

One of the fires in Oneida county—that which damaged 50,000,000 feet of timber—is thought to have been started by two men who were ejected from a railroad train. The men were put off the train at night and in order to keep warm they set fire to some old ties on the right of way. Section hands on their way to work the next morning covered up the ties with dirt and

apparently smothered the blaze. Subsequently sparks from the smoldering ties were carried into the underbrush close to the track, and although railroad hands were quickly on the scene and attempted to check the fire, it got beyond their control and the immense amount of damaged followed.

The railroads contributed largely to the number of fires which were started. At various points on the Chicago & Northwestern railway, Chicago, Milwaukee & St. Paul railway, Wisconsin Central railway and the Minneapolis, St. Paul & Sault Ste. Marie railway (Soo line) it was evident to observers that small fires started either on one side or the other of the right of way and had run into the timber abutting on the railroad. These fires had not crossed the right of way, as the underbrush and timber on one side had been untouched by the flames. The railroads gave assistance in fighting some of the fires near their properties by detailing gangs of section hands, operating special trains to carry squads of men and by running tank cars filled with water to aid in establishing fire lines.

Commencing in June the state board of forestry had appointed a practical engineer to examine all locomotives operating on the railroads in the northern part of the state and when the fires broke out, the locomotives were in much better condition than they had ever been before.

The chief trouble is that the railroads do not employ enough men in the round houses to keep the locomotives in perfect condition. The state inspector would frequently find that although the spark arresters were in excellent shape, there were large holes around the pipes caused by hurried and temporary repairs. It is a difficult problem but it is felt that the ultimate solution will be a hood over or in the smoke stack, which should absolutely stop the escape of all sparks.

The failure of the courts to properly uphold the fire wardens by the imposition of no more than nominal fines on offenders, was not the least of the handicaps to a full observance of the fire warden law. Some of the town boards neglected to provide a fund by taxation for the payment of the men called out by the fire warden in cases of emergency, or declined to promptly pay the men when so employed. The result was that, where funds were lacking, no ready response to the call for assistance was had. Again, in many of the sparsely settled towns the board in a spirit of economy in having town roads built had the young

timber that was cut on the lines of the roadbed piled on either side instead of burning the debris. The litter became as dry as tinder during the drought and not only formed a constant menace in itself but also eliminated an advantageous point for fighting a fire by starting a back fire. The igniting by the warden of a back fire of the brush heaps on one side of the road would mean the firing by sparks of the brush piled on the other side of the road. The attention of the town boards has already been called to the matter, and it is hoped that future mistakes of the kind will be avoided.

In the special reports which were asked of the fire wardens as to the amount of damage which had been done a request was made for suggestions as to the best way of preventing fires. One of the significant, if not correctly phrased suggestions, was the following made by the warden in Chelsea township, Taylor County:

“Children ought to get some lessons in school regarding forest fires and the value of timber lands and forests, and then they know when older.”

The fires of 1908 were not without their lesson to the lumbermen and owners of stumpage in northern Wisconsin. Not only did they suffer a heavy monetary loss, but they were awakened to a sense of duty in devising means of preventing such devastation in future years. Before another season shall be at hand it is expected that an efficient fire patrol, patterned along the lines of the association in the state of Washington, will have been organized and by a system of guards will locate and extinguish fires in their incipiency. If this be done the fire hazard in Wisconsin will be minimized, and the Badger state will be enabled to replenish its forests for all time.

## REPORT OF FOREST FIRES IN WISCONSIN FROM JANUARY, 1908, TO NOVEMBER, 1908.

Counties.	Fires since January 1.	Acres burned over.	Merchantable timber destroyed, (feet)	Value of timber destroyed.	Value of young growth destroyed.	Value of improvements destroyed.	Value of live stock killed.	Number of men employed.	Expense to the counties.	Expense to timber owners.
Ashland.....	38	14, 818	13, 791	883	\$74, 090	\$1, 580		778	\$1, 548	\$3, 525
Adams.....	3	300			1, 500	42				
Barron.....	6	4, 280			21, 400					
Bayfield.....	66	43, 178	5, 790, 000	34, 740	215, 890	1, 000		80		
Burnett.....	23	10, 680	177, 000	1, 082	53, 300	1, 062		327	1, 393	1, 004
Chippewa.....	22	28, 460	12, 220, 000	73, 320	142, 300	1, 170		19	207	1, 150
Clark.....	24	8, 345	400, 000	2, 400	41, 725			143	591	600
Douglas.....	91	61, 268	2, 377, 000	14, 262	306, 340	23, 460		147	21	300
Dunn.....	4	250			1, 250	150		467	3, 490	1, 700
Eau Claire.....	12	2, 500			12, 500			30	5	
Florence.....	11	78, 240	18, 199, 000	109, 194	391, 200	5, 700	850	155	807	390
Forest.....	71	46, 150	6, 215, 000	37, 290	230, 750	2, 700	250	847	1, 882	2, 280
Iron.....	28	54, 248	32, 000, 000	192, 000	271, 240	9, 500		405	1, 371	2, 850
Jackson.....	13	1, 580			7, 800			36	37	
Juneau.....	3	2, 000	10, 000	60	10, 000			20	10	
Langlade.....	79	36, 640	5, 775, 000	34, 650	183, 200	700		749	2, 645	2, 637
Lincoln.....	70	57, 091	49, 675, 000	298, 050	285, 455	10		805	3, 924	6, 600
Marathon.....	113	53, 380	40, 470, 000	242, 820	266, 900		15	532	2, 929	4, 750
Marinette.....	74	100, 090	25, 725, 000	154, 350	500, 450			284	1, 114	2, 500
Oconto.....	85	52, 574	23, 100, 000	138, 000	262, 870	5, 550		1, 298	1, 121	6, 610
Oneida.....	79	79, 678	36, 336, 000	218, 016	398, 390	5, 175		553	3, 788	3, 833
Polk.....	18	8, 720	77, 000	462	43, 600	370		39	117	135
Portage.....	19	1, 278	70, 000	420	6, 380			50	76	75
Price.....	80	164, 278	113, 910, 000	683, 460	821, 390	54, 010	450	819	4, 998	4, 232
Rusk.....	76	70, 680	27, 975, 000	167, 850	359, 400	2, 805		629	2, 550	1, 540
Shawyer.....	32	87, 560	31, 285, 000	187, 710	437, 800	2, 500		286	2, 301	1, 836
Shawano.....	91	17, 072	9, 976, 000	59, 856	83, 360	1, 750		582	1, 919	3, 225
Taylor.....	55	26, 975	3, 610, 000	21, 660	134, 875	4, 730	20	486	1, 042	3, 138
Vilas.....	54	71, 784	51, 440, 000	308, 640	358, 920	4, 130		274	3, 413	700
Washburn.....	42	14, 800	2, 415, 000	14, 490	74, 000			44	45	
Waupaca.....	3	1, 000			5, 000	250		40		
Wood.....	41	9, 555	255, 000	1, 530	47, 775	2, 150		279	412	300
Total.....	1, 435	1, 209, 432	499, 495, 791	\$2, 996, 975	\$6, 047, 060	\$149, 454	\$890	11, 241	\$43, 850	\$55, 820

## FOREST FIRE PATROLS.

As previously stated, the town fire wardens are doing a most valuable work both in preventing and putting out forest fires, and the railroads now appreciate that it is fully as much to their interest as to the state's to protect the timberlands along their lines, and they are working to put a stop to the fires for which they have been responsible.

Of course, it is a self evident fact that in localities where there is the most timber, the settlers are few. There are frequently five or six townships, or over 100,000 acres, in such sparsely settled towns, and when a fire occurs, the fire wardens have only a few settlers, living perhaps miles apart, to help them. The town fire warden system is an excellent one as far as it goes but it does not go half far enough, for the fundamental point should be not to let fires start in the first place, and town boards are averse to spending much money in the way of preventive measures.

A well organized and capable force of patrols or rangers is the proper way to handle the forest fire problem, for in no other thing is the old saying so true, that "an ounce of prevention is worth a pound of cure." This office proposed to some of the lumber companies early in the summer of 1908, that a patrol system should be formed to protect the timberlands in northern Wisconsin and if the work had been organized at that time, it is believed that a very considerable part of the heavy loss in September last could have been prevented.

The tremendous fire losses of 1908 have been more than sufficient to prove that if our remaining merchantable timber and the young growth, which must form the future forests, is to be saved, it is high time that the people of the state awoke to the situation and took energetic steps to stop this fearful loss which is largely so easily preventable.

In October the American Immigration Company of Chippewa Falls, which controls a very large amount of land, both timbered and cut-over, at the request of this office took active steps to arrange a meeting of timberland owners of northern Wisconsin, so that plans for more adequate fire protection could be discussed. The invitation met with a ready response from many lumbermen and owners of timberlands and the first meeting was held at the Eau Claire club November 17th.

The fire losses of 1908 were discussed, also the various ways in which the present fire warden law had proved itself weak, the need of patrolling timberlands in order to prevent fires from starting and the vital necessity of compelling by law the piling and burning of slash. After these and other similar matters had been talked over fully, it was voted that the chairman of the meeting, Mr. J. T. Barber of Eau Claire, appoint a committee of five, of which the chairman should be one, to carefully consider the questions of forest fire patrols and the piling and burning of slash, and to report their recommendations at a second meeting of timberland owners to be held not later than December 1st.

The chairman appointed the following gentlemen as members of the committee: W. H. Bundy, Rice Lake; G. D. Jones, Wausau; George E. Foster, Mellen, and Guy Nash, Grand Rapids. The committee met immediately and organized by electing Mr. J. T. Barber chairman and then adjourned subject to the call of the chairman.

On November 27th the committee again met and prepared their report, which was presented at a meeting of the timberland owners in the Eau Claire club on December 1st. The report was unanimously adopted and is here given in full, as it marks a splendid step forward on the part of our lumbermen in co-operating to conserve for wise use the forest resources of Wisconsin:

Your committee, to whom was submitted the very serious question of dealing with timber fires, with instructions to report recommendations at this meeting, beg leave to report.

The committee wishes to say that it has been greatly assisted by the State Forester, Mr. Griffith, and has confined its considerations largely to plans recommended by him, with such modifications as seem to it advisable.

We recommend that the fire warden law be entirely revised and enlarged to include a system of patrol for the forest section during the dry season. We think the law should provide for an annual tax of two (2) cents or two and one-half ( $2\frac{1}{2}$ ) cents per acre upon all wild and unimproved lands, to be paid into the State treasury, and to constitute a forest fire fund.

Divide the timber portion of Wisconsin into not less than five districts to be in charge of an assistant inspector, and each district subdivided into patrol districts, each one containing not

less than thirty-six (36) sections, and the whole organization to be in charge of one head inspector with headquarters at some convenient point.

The assistant inspectors and patrols should be employed from April first to November first, but it probably would be found advisable to retain the services of the head inspector throughout the year.

The assistant inspector at the head of each district should familiarize himself with the conditions in each subdivision, and should supervise all the work of the patrols, reporting to the head inspector as to the fire risk in each county, the amount of available help in case of necessity, and the protective measures which should be taken.

The patrols should be appointed fire wardens to give them all the authority of law, and should post or cause to be posted all fire notices sent to them by the state fire warden, get in close touch with all settlers, campers, etc., in their section, and instruct them fully in regard to the provisions of the law and the danger from forest fires.

All payments on account of the expense of maintaining and operating this system, should be made by the state, through the state board of forestry, which board should have the power of appointment of the inspector, assistant inspectors, and patrols.

This law should include a provision for the burning of slashings, limbs, tops and refuse left by operators on any of the forest lands in the section mentioned, and should provide as follows: Any person or corporation who shall cut or cause to be cut any logs, bolts, pulp wood, ties, poles, posts, or other forest products, in any of the counties designated in this state, shall pile the tops and refuse as the cutting proceeds and shall within one year from such cutting and felling, but not during dangerously dry weather, burn all such piles of refuse and tops, and in such burning all reasonable care shall be taken not to damage standing timber or adjoining property; provided the state fire warden shall be given authority to suspend the operation of this section when, in his judgment, the operator causing such refuse, has been prevented by weather conditions, or other causes beyond his control, from burning such refuse without endangering other property; provided, further, that the term "burning" shall be construed to mean

the destruction by fire of so much of such slashings as would become easily combustible material and dangerous in event they were not so destroyed.

Any person or corporation who violates any of the provisions in regard to the burning of slashings, refuse, etc., shall be guilty of a misdemeanor and shall, on conviction therefor, be punished by a fine of not less than fifty (50) cents nor more than two dollars (\$2.00) per thousand feet, log scale for all timber; not less than twenty-five (25) cents, nor more than one dollar (\$1.00) per cord for all bolts, pulp wood, cord wood or bark; and not less than ten per cent (10%), nor more than fifty per cent (50%) of the full cash value of other forest products cut and removed from such land.

In case any person or corporation fails to properly pile and burn the tops and refuse, the state board of forestry may, in its discretion, cause the same to be done, and the expense thereof shall be a lien on the timber or other forest products cut from the land on which the tops and refuse are situated or cut, and shall also be a lien upon the land itself. Proceedings for the enforcement of such lien shall be instituted by the district attorney of the county in which the cutting was done, at the request of the state board of forestry and in the name of the State of Wisconsin as claimant; and costs shall be recovered in the usual manner. The claim for any lien shall be filed by the state fire warden, or under his direction by any of his assistants, inspectors, assistant inspectors, patrols or fire wardens, in the district in which the expense occurred, in the office of the clerk of the district court, in the county in which the claim arose.

The present fire warden system should be maintained and all town fire wardens should be subordinate, in times of service, to the inspector, assistant inspectors, or patrols, in the section of country covered thereby.

No fires shall be set from April first to November first, except for warming the person or cooking food, without the permission of the fire warden, either in writing or by posted notice in the usual manner for posting fire notices.

The laws pertaining to the inspectors, assistant inspectors, patrols and fire wardens, and all laws with reference to forest fires, should be read by the town clerks at the annual town meetings, and should also be published in one or more newspapers in each county, twice a year, once in April and again in August.



The town fire wardens and those assisting them, should be paid not less than fifteen (15) cents, nor more than twenty-five (25) cents per hour, for the time actually employed in posting notices, removing special warning notices, fighting fires, warning settlers, calling out citizens, making arrests, and carrying out any measures for the prevention or extinguishing of forest fires.

The town board should have authority to pay for services under the provisions hereof, in sum not exceeding one hundred dollars (\$100) for each thirty-six (36) sections, in any one year. In case the town board and fire warden cannot agree on the amount to be paid, or in event the amount agreed upon is in excess of one hundred dollars (\$100), as herein provided, the facts should be submitted to the state fire warden, who should have authority to hold hearings and summon witnesses, and his decision as to the amount to be paid by the town shall be final.

Section 4405a should be amended to read: "Every person violating any provision of this section shall be punished by a fine of not less than twenty-five dollars (\$25), nor more than one hundred dollars (\$100) or by imprisonment" etc.

Section 4406 should be amended to read: "Any person who shall build a fire on any lands in this state not his own or under his control, except as hereinafter provided, shall, before leaving the same, totally extinguish it, and upon failure to do so, shall be punished by a fine of not less than twenty-five dollars (\$25) nor more than one hundred dollars (\$100), or by imprisonment in the county jail not exceeding one month, or by both such fine and imprisonment, and shall be liable to the town for all expense incurred in checking or extinguishing such fire. Any person who shall negligently or wilfully set fire to, or assist another to set fire on any land, whereby such land is injured or endangered, or shall wilfully or negligently suffer any fire on his own land to escape beyond the limits thereof, to the injury of the land of another, shall be punished as hereinbefore provided, and be liable to the person injured for all damage that may be caused by such fires, and to the town for all expense incurred in checking or extinguishing such fires."

Respectfully submitted,

J. T. BARBER,  
*Chairman.*

The ultimate success of the patrol system will, of course, depend almost wholly on the character of the men appointed and the manner in which they are organized. They should be thorough woodsmen, young enough to be active and able to stand long hours of hard work, who can use a compass, run lines, and where possible, it would be well to select men who have had actual experience in fighting forest fires. The cost of two to two and one-half cents per acre per annum is a low insurance and there is no question that the patrol would save enough valuable timber and young growth in two or three years to cover the cost of the service for many years. The loss from forest fires in Wisconsin for 1908 alone is over \$9,000,000 and this would pay all costs of such a patrol system for nearly fifty years.

This plan of protecting timberlands by means of a patrol through all the dry season is not a new and untried experiment, for with certain modifications to meet our American conditions, it is the same plan which has done so much to build up the wonderful forests of Germany and France; it has been put into successful practice by the lumbermen of Maine and Washington; and since the United States Forest Service has taken charge of the national forests and the ranger system been perfected, the losses from forest fires have been lessened to a wonderful extent.

The patrols in northern Wisconsin would be able, by being constantly on the ground, to enforce the law against settlers or others burning brush during a dangerously dry time, and this alone would be worth their employment, for, as shown by the reports of the town fire wardens, burning brush is the cause of over sixty per cent of the forest fires. Town fire wardens are human and it is difficult for them to enforce the law against their neighbors as rigidly as it should be. There is often, also, a great deal of local jealousy aroused in the election of a town board and a feeling of political expediency frequently has great weight when it comes to enforcing the law against some farmer who has considerable influence. For this and other reasons the patrols appointed should not be local men and by enforcing the law impartially, it is believed that they will receive the ready support of most of the settlers in the northern towns, for many of the settlers have lost heavily through the criminal carelessness of their neighbors. The patrols would also be able to look after all camping, fishing and hunting parties, and see

that the law providing that all camp fires must be extinguished when they are left, is enforced.

A plan by which all guides should be licensed by the state and also sworn in as game and fire wardens, is outlined in another part of this report, and it is felt that if this is done, the patrols and guides working together can greatly lessen the number of fires for which campers and sportsmen have been responsible. The average man from the city who goes into the woods is ignorant about how to build a camp fire, and is inclined to use a fallen tree or butt as a back log, which, of course, is a very dangerous practice, as the fire works into the log and will often smoulder for days to burst out in case a heavy wind springs up.

A good portion of the time while the patrols are on duty, there will be little if any danger from forest fires, and then they should be employed in clearing out old logging roads and making trails, as these will be of great value as fire lines to prevent the spread of fire or as vantage points from which to backfire in case of necessity. A patrol, knowing his district thoroughly and with cleaned roads and trails from which to work, can do more with half a dozen men than an army of fire fighters who are rushed into a section of country that they do not know and where the roads are choked with inflammable material. Wherever the expense is justified, a telephone system should be installed by the owners of the land so that the patrols can easily keep in touch with each other and summon help in the shortest possible time.

The fact should not be lost sight of that it is more important to protect the young pine and other valuable timber which is now coming up on our northern cut-over lands, than the mature saw-log timber, for in case of a forest fire the later can oftentimes be logged at once and so saved, while the least surface fire running through young growth, usually means a total loss. It at least seems peculiar that while many railroads, lumber companies, and other big timberland owners are planting, others allow young pine which has come up on their lands naturally and which is perhaps ten to twenty years old, and so worth a very considerable sum per acre, to be destroyed by fire without making an effort to save it. There is, of course, a great deal of land in northern Wisconsin which is fertile and will make good farms, and no forester of experience would advocate that such land should be kept under timber, but there are also enor-

mous areas of poor, sandy and rocky soils, which are absolutely unsuited for agriculture and the only use to which they can profitably be put is growing timber. The trouble heretofore has been that these lands have been bought and sold as a speculative venture, with the idea that settlers might buy them or that they could be used for a cattle or sheep ranch. There is ample evidence to show that they are not suited to either purpose and they have been handed around from one land gambler to another, a prey to forest fires and thus losing soil fertility, until in some sections they are rapidly approaching the condition of a desert.

The action of the timberland owners in advocating a forest fire patrol, which will be largely paid for by themselves, and the compulsory piling and burning of all slash, shows that they are keenly alive to the situation, and that in order to save our present and prospective forests and make northern Wisconsin attractive to settlers, strong protective measures must be taken and that all must work together. At the meeting in Eau Claire, December first, the committee was instructed to prepare articles of incorporation for a Timberland Owners' association, and it is the plan to have the association advise frequently and fully with the state board of forestry on all matters pertaining to the forests, protection to our rivers, etc. Such co-operation between the state and the men who own the great bulk of the timberlands of Wisconsin, is a tremendous step forward and will surely lead to much better understanding on both sides and a working out of the practical measures by which the natural resources of Wisconsin can be truly conserved.

#### FORESTRY AND THE RAILROADS.

Within the last two years there has been a steadily increasing interest in forestry on the part of the railroads, and in the last year the C. & N. W. railroad has withdrawn all its timberlands in Wisconsin from sale and the United States Forest Service has examined the lands and is making a preliminary working plan in order that the plan of cutting may be systematic and so as to insure successive yields of timber. Now that many of the largest eastern and southern railroads are planting trees so as to be sure of a future supply of ties, bridge and construction timber, etc., it is certainly the dictate of common sense for railroads owning timberlands to adopt some well defined plan for

their care and management. Railroad officials, however, are very similar to other human beings and are inclined not to appreciate the necessity of a future supply of timber till their lands are stripped and they are compelled to plant. The C. & N. W. officials have been far sighted in this matter and it is to be hoped that the other roads will show as sound judgment.

In the past the railroads have been responsible for many forest fires, especially in the northern part of the state where extensive areas of timberland have been burned over. The legislature in 1905 passed a law providing that all railroads should equip their engines with spark arresters, keep the right of way clear of grass, brush, and other inflammable material, instruct the section crews to extinguish all forest fires caused by the railroads, and to post such warning notices as are furnished them by the state forester. At first the railroads did not pay much attention to this law and, therefore, a practical engineer was appointed by this office as an inspector to see that the spark arresters in use by the locomotives were kept in good condition, and the rights of way free from dangerously inflammable matter. At the same time the question of the strict enforcement of the law was again taken up with the railroads. The officials of the C. & N. W. offered to arrange meetings at which all the section men on the northern divisions would be present and that the state forester should explain the provisions of the law and just what was required of the men.

The first meeting was held at Antigo, August 11th, 1908. Three hundred section men and other railroad employes were present, and the second meeting was at Ironwood on the following day, attended by about one hundred and twenty men. These meetings were extremely important, not so much on account of what was actually done, as they were largely preliminary, but because it was the first time in the history of Wisconsin, so far as I am aware, that the officials of a railroad and the state met to discuss means for protecting the forests, and it also showed a fine spirit of wishing to co-operate on the part of the railroad. The following is a portion of the address given by the state forester at these meetings:

“The three main objects for which the state forest reserves have been established are as follows: 1. To protect the headwaters of our important rivers and thus preserve the water-powers upon which the future welfare of the state so largely de-

pend. 2. Through wise use, to conserve the timber on the reserve lands, so that industries depending upon the forests for their raw material can be supplied in the future. 3. To preserve the beautiful lake region of northern Wisconsin, so that it may not lose its wonderful value as a summer resort, not only for the people of Wisconsin but the whole Mississippi valley as well.

“The railroads are also directly interested in all these things, for the preservation and protection of the rivers, waterpowers, and forests, means freight, and the building up of a resort region means a constantly increasing passenger business.

“Wisconsin, as I have said, now owns within its forest reserves some 300,000 acres, but expects to increase this to about 2,500,000 acres, which will mean the expenditure of a very large sum and as the railroads will be directly benefited by such reserves, they should be willing to co-operate with the state in every reasonable way to the end that they may be safeguarded from forest fires.

“As previously stated, the settlers by burning brush in clearing land, cause 60% of all the forest fires in the state. In order to prevent as far as possible the enormous annual loss from forest fires, I have appointed over 300 town fire wardens in the northern part of the state. These men are paid by the towns in which they serve for the time actually employed in preventing and fighting forest fires, posting the laws, warning notices, etc. They have the power to call upon any citizen for aid in case of a fire, have the power of sheriffs to arrest without a warrant and best of all, can absolutely forbid the setting of any fires in a dangerously dry time. They are doing a great deal of good in stopping fires before they gain a strong headway, but still more in arousing public opinion against the criminal loss in forest fires and to the value of the young growth which is coming up on cut-over lands.

“The hunters and campers are harder to deal with, as they are usually far off in the woods away from all towns. However, on the back of each hunting license is a warning against leaving camp fires burning, and I hope that a law may be passed compelling all guides to be licensed and to be sworn in as fire wardens, so that they will be responsible for their parties, who are often people from the cities and do not realize the danger from forest fires.



An improvement cutting; large trees cut and young growth encouraged.





I am also trying to have the lumber companies and large timberland owners form forest fire associations. Such associations would appoint and pay their own men, who would patrol during the dry months and see that no fires were started. The cost would be divided among the owners of the land and should not exceed three cents per acre and per year. I would gladly appoint such patrols as state fire wardens in order that they might have full power and authority.

“You will see from this that we are working, and will keep on working, to put a stop to the fires which are caused by settlers, campers and hunters and that we are not singling out the railroads, but are only asking you to co-operate with us and do your part.

“Now, let us see how the railroads cause forest fires and if there is any reasonable remedy at hand. First and foremost are the locomotives, and though I understand that there are only a few engineers here, I want to say a few words to them. The law requires that locomotives must be provided with nettings, so that sparks or cinders cannot escape. Our inspector, who is here today and who is examining all locomotives in use in the northern part of the state, sometimes finds holes in the front end and ashpan nettings, and often that the ashpan nettings are too light to stay down in place or hold their shape. The nettings are not the most serious matter, however, but rather the holes around the steam pipes, stand pipe, blower, pump exhaust and around the edges of the smoke box and deflector plate. Such holes in many cases are big enough to let large sparks escape and they are sometimes ‘repaired’ by driving in spikes, etc. Head ends are supposed to be frequently inspected by the railroads but often this is a farce, as the inspector looks in through the peephole and, as you know, the inspection cannot be done properly without opening up the front end. The railroads should co-operate with the state in this work and have a man in each roundhouse to devote all his time to inspecting engines and see to it that they are in perfect condition. An engine which throws sparks or drops hot coals along the right of way in dry weather is too dangerous a thing to be allowed in the timber regions of northern Wisconsin.

“The train crews, when they find a fire burning on or near to the right of way, should make it an absolute rule to notify the agent or operator at the next station, so that the nearest section

crew can be sent to the fire at once. Fires set by the engines are due to a very large extent either to the failure of section crews to keep the right of way free from grass and weeds, or failing to cut them until late in the summer when the grass and brush outside the right of way are dry, so that a fire will spread rapidly unless very carefully watched. Grass and weeds should be cut from about the 15th of July to the 1st of August, when the farmers are haying and fires will not run. Care, of course, should be taken not to do this work too early, for then a second cutting will be necessary, but, on the other hand, some section men leave this work until well into September, which is very dangerous, for as a rule the adjoining forests and fields are extremely dry and a destructive forest fire is only too likely to occur.

“Another cause of fire along the railroad lines, which seems absolutely unnecessary, is the burning of old ties during the dry summer months. I have taken this matter up with the railroads several times and have always asked that no ties should be burned until after snow falls, so that the fire could not spread. Possibly this may seem unreasonable to you, but we know that a number of bad fires have started on your own road within the last two years from burning ties. A pile of old ties, as you know, makes a very hot fire, and a slight wind is apt to carry sparks to adjoining dry grass or timber. Of course, if one man stayed by each pile of ties until the fire was absolutely out and all danger over, it would be different, but I know how busy you section men often are and as a result we have frequently found ties burning and the section men working up around a bend in the track where they could not possibly see a forest fire until it was under full headway. Mr. Cantillon tells me that the C. & N. W. will probably give orders within a short time that no ties are to be burned in northern Wisconsin until after snow falls, and that in some sections the ties may be picked up.

“Remember that for the future prosperity of your state and the business of your road, it is extremely important that you should do all in your power to keep forest fires from burning on cut-over land as well as in saw log timber. A forester, being trained to it, is always looking for young growth and I know that to many of you there may not seem to be much value in cut-over lands which are covered with popple. There is an old saying among lumbermen, which you will hear even today, that

pine never follows pine and that some other species always comes up when the pine is cut. It is no wonder that most lumbermen think so, for such fearfully destructive forest fires followed in the slash of the lumbering operations that all the young pine was destroyed and even the seed in the ground consumed. Where fires are not allowed to run, pine will always follow pine and if any of you will take the trouble to walk through the popple growth which is coming up on the cut-over and burned over land, you will find thousands of young white and Norway pine coming up. Many of them may be only a few inches high, but finally they will overtop the popple and form fine forests, if we can only keep the fires out.

“In conclusion, let me say that I hope all the railroad men in the northern part of Wisconsin will take an active interest in this work, for if we can protect the forests from fires we will have a considerable supply of timber for many years to come, make permanent the immensely valuable waterpowers of the state and build up a resort region among our beautiful lakes which will attract thousands of people from all parts of the country, and bring prosperity to the state, the railroads and their employes.”

On August 13th a meeting was held with the section men of the C., St. P., M. & O. at Spooner, some one hundred being present. Since that time, and largely as a result of the meetings, the C. & N. W., C., M. & St. P., and W. C. have issued orders that no ties should be burned until after snow falls, and it is expected that the other roads in the state will follow suit.

This office has requested that all grass and brush along the rights of way should be cut about July 15th, as then the grass on the surrounding lands is green so that the fire will not spread. At the same time, this is late enough so that there will not be a second growth of grass and brush, but on account of fire spreading it is unsafe to leave this work until September, as has often been done in the past. The C. & N. W. and C., M. & St. P. have both named officials to work with the state inspector to see that the locomotives are kept in such condition that they will not set fires.

This opportunity is taken to extend to the railroad officials and especially to those of the C. & N. W., the appreciation of this office for their hearty co-operation. Only two roads have

appeared to in any way wish to block the work, and it is to be hoped that they will not compel the passage of much more stringent laws.

LAW SHOULD COVER EVERY POSSIBLE CONTINGENCY.

The legislature as a general thing, and often rightly, are opposed to passing laws which give a very broad authority to any board or department, and yet, as far as the experience of this office goes, the forestry laws fail in not being broad enough. The average business man often grows extremely impatient with the technicality of the law which gives lawyers the chance to find holes through which their clients can escape, and if the state departments are to be held accountable for enforcing many laws which safeguard the interests of the state, such laws should be most carefully drawn and considered in committee, so that they will come as near as possible to covering every contingency that will arise. It is especially difficult to enforce the laws in new state work, such as forestry, and this office has been frequently handicapped by a failure of the laws to be general enough, so that the lawyers have been able to find the "but" or "if" which would not oblige their client to obey in that particular case. Such omissions will be called to the attention of the joint committee on forestry in the legislature, with a recommendation that the law be made so broad in every particular that the board can enforce the spirit as well as the letter of the law.

One instance may be quoted as illustrating the above point: The railroads in the past have been responsible for a large number of forest fires which have done in the aggregate an enormous amount of damage, especially to timberlands in the northern part of the state. One of the chief causes has been that the locomotives were not equipped with efficient spark arresters and, therefore, the following law was passed in 1905:

**Engines in forest land; burning weeds, etc.** SECTION 17. It shall be unlawful for any logging locomotive, donkey or threshing engine, railway locomotive and all other engines, boilers and locomotives operated in, through or near, forest, brush or grass land, which do not burn oil as fuel, to be operated without a netting of steel or iron wires so constructed as to give the most practicable protection against the escape of sparks, cinders or fire from the smoke stacks thereof, and each such engine shall be provided with adequate devices to prevent the escape

of fire from ash pans and fire boxes. Every railroad company shall, at least once in each year, as far as practicable, cut and burn or remove from its right of way all grass and weeds and burn and remove therefrom all brush, logs, refuse material and debris within a reasonable time, and whenever fires are set for such purpose shall take proper care to prevent the escape thereof from the right of way. No railroad company shall permit its employes to deposit fire, live coals or ashes upon their tracks, outside of the yard limits, except they be immediately extinguished. Engineers, conductors or trainmen who discover that fences or other material along the right of way or on lands adjacent to the railroad are burning or in danger from fire shall report the same to the agent or person in charge at their next stopping place at which there shall be a telegraph station. Railroad companies shall give particular instructions to their section employes for the prevention and prompt extinguishment of fires, cause notices, which shall be furnished by the state fire warden, to be posted at their stations, and when a fire occurs along the line of their road, or on lands adjacent thereto, for which fire they are responsible, they shall concentrate such help and adopt such measures, as shall most effectually arrest its progress. The state fire warden, or his assistant, whenever it shall appear necessary, shall inspect the right of way of any railroad company for the purpose of ascertaining whether the provisions of this section have been complied with. Any person wilfully failing to comply with the requirements of this section shall be deemed guilty of a misdemeanor and shall be punished, upon conviction, by a fine of not less than fifty nor more than five hundred dollars, or by imprisonment in the county jail not exceeding one year, or by both such fine and imprisonment. Any corporation by its officers, agents or employes, wilfully violating the provisions of this section shall be liable to a fine of not less than fifty dollars nor more than five hundred dollars for each and every such violation, to be collected in a civil action in the name of the state.

An experienced engineer was appointed by this office as an inspector to visit all the round houses and see that the spark arresters in the locomotives were in good condition so that they would not throw live sparks or drop hot coal along the right of way. The fine spirit and the active co-operation of the C. & N. W. railroad is shown under "Forestry and the Railroads," and, in fact, most of the railroads have seen that it was to their own interest to put a stop to forest fires and have helped our inspector in every way to see that the engines were put in as nearly perfect condition as possible. The chief counsel for one road, however, held that under the law this office has no authority to go into their round houses or machine shops to inspect any

of their property. He held that the law only gave this office authority to inspect the right of way and, of course, such right is specifically given in one portion of the law. However, it does not seem reasonable that the legislature would pass a forestry law and, among other things, provide that all locomotives should be equipped with spark arresters, without clearly meaning that this office should see that the law is enforced. The right to enter upon the property of the railroads and examine the engines is clearly implied, even though not stated, but the wording of the law should have been so broad that no loop-holes would be left. The railroad in question did not press the point for they were really in favor of the inspection, but there can be no doubt that they or any company would have refused to comply with a law which they did not favor.

#### TIMBER TRESPASS.

In the report of this office for 1906 it was pointed out that for some unaccountable reason timber trespass had always been treated most leniently and was not generally looked upon as common stealing, with the result that the state had suffered enormous losses in this way, but that gradually the man who stole timber was coming into his own and was looked upon as twin brother to the horse thief. The state itself was responsible to a certain extent for such thievery, for it had always been the custom to allow the trespasser to settle for the mere market value of the timber. In other words, he did not pay any more for timber which he had stolen than if he had bought it lawfully, and naturally under such easy going methods there was a very strong temptation for poor settlers and unscrupulous timber companies to enrich themselves at the cost of the state. Since 1905, however, double stumpage, or twice the value of the timber, has been collected and as a result of such fines, together with the fact that our cruisers look over the state lands from time to time, the number of trespass cases have decreased to a remarkable degree. During 1906, \$6,077.72 was collected for trespass; in 1907, \$5,586.77; and in 1908 up to December 1st, \$2,583.61.

It was proposed to publish in this report the names of all individuals and companies guilty of wilful trespass, but as such cases seem to be decreasing rapidly, it is felt that it is better not to do so at this time, but fair warning is given that if

flagrant cases occur in the future, names together with all the facts, will be published in the reports of this office. The most difficult cases to deal with are those of poor settlers who are not financially responsible and who invariably seem to have large families who would be thrown upon the town if the man was sent to prison. Town boards, judge, and jury are inclined to be most lenient in such cases, and it is very difficult to secure a conviction. Land companies who induce settlers to purchase poor, sandy, cut-over pine lands for farms, thereby often make timber thieves, for the small amount of fertility in the soil is soon exhausted and the land then will not produce enough to yield a bare living. The settler naturally becomes entirely discouraged, and in the struggle to support his family, often reasons that the state owes him a living. Timber near at hand on a state forty will yield more money than he has ever had before, and sometimes the temptation is too strong to be resisted. Of course, all sand is not poor soil, but often settlers have purchased burned over, poor, white sand lands which are absolutely unsuited for agricultural purposes. The results of such settlement are, fortunately for Wisconsin, far better known in some other states, where the settlers eke out a miserable existence as berry pickers, and not only steal timber, but periodically burn over the whole country so as to increase the yield of berries. Such people soon degenerate into as low a type of humanity as the poor whites or "Crackers," as they are called, in some of the mountainous districts of the south. Wisconsin has plenty of good land, especially where the hardwoods are found, which will make fine farms, and it is a shame to see settlers purchasing poor, sandy lands at a high price, as they are almost certain to meet with failure. Every such discouraged and poverty stricken settler is anything but a benefit to the state.

#### THE WISCONSIN VALLEY IMPROVEMENT COMPANY.

As previously stated, the main reason for establishing forest reserves in Wisconsin is to preserve the stream flow in the important rivers and therefore the reserves are being located in the lake region of Oneida, Vilas and Iron counties, where our greatest rivers rise. These lakes offer an unequalled opportunity for storing water and it has always been felt that this would be very necessary in connection with the work of building up a forest reserve, but it was found that the state could not build

or operate reservoirs, as the constitution of Wisconsin prohibits the state from engaging in any work of internal improvement. This being the case, and as it was extremely important that the work should be done, the legislature of 1907 was requested to consider and finally passed an act authorizing a private company to construct and operate such reservoirs, but under the supervision of the state.

So far as is known, no other similar law has even been passed in any state, nor has a private corporation ever undertaken any such work, and in view of the wide interest which was taken in this measure, and as it is believed to be a remarkable piece of legislation in the interest of the people of the whole state, the most important sections of the act are here given:

AN ACT to authorize Wisconsin Valley Improvement Company to construct, acquire and maintain a system of water reservoirs located on the tributaries of the Wisconsin river north of the south line of township thirty-four (34) north, for the purpose of producing a uniform flow of water in the Wisconsin river and its said tributaries, and thereby improving the navigation and other uses of said streams and diminishing the injury to property both public and private.

**Tolls secured by license, other companies taxable therewith; railroad commission to regulate.** SECTION 4. In case said Wisconsin Valley Improvement Company shall improve any navigable tributary of the Wisconsin river not herein excepted or shall acquire the improvements or the control of the improvements of any river improvement company already operating on such stream and shall so keep in repair and operate the works as to render the driving of logs and other floatables to the mouth of such tributary reasonably practicable and certain, it may charge and collect reasonable and uniform tolls upon all such logs, timber and other floatables driven or floated on said stream, and shall have all of the rights and remedies granted to river improvement companies by section 1777 of the Wisconsin statutes, and all amendments thereof, including the right of lien therein provided for and shall be charged with all the duties and obligations imposed upon such river improvement companies under like circumstances.

When said Wisconsin Valley Improvement Company shall have created or acquired and maintained in successful operation water reservoirs in accordance with this act, of a capacity sufficient to store up in times of abundance and retain and discharge in times of scarcity two billion cubic feet of water that would not be so stored up and retained by nature it shall, subject to the supervision and control



hereinafter provided for, be entitled to charge, collect and receive reasonable and uniform tolls from the owner or owners or lessee or lessees of each and every improved and operated water power located upon the Wisconsin river, or any tributaries thereof, below any said reservoirs and benefited thereby, but not exceeding in the aggregate of all its revenues sufficient to pay all reasonable costs of operation and maintenance and a net annual return of six per cent. on cash capital actually paid in on stock subscriptions to the grantee. Said tolls shall be semi-annually fixed, ascertained and determined by the railroad commission of Wisconsin on or about the first day of July and the first day of January of each year, for the six months period preceding each of said dates. Said tolls shall be fixed in proportion to the benefits conferred by the reservoir system upon each of the improved and operated water powers aforesaid. It shall be the duty of the grantee to employ competent hydraulic engineers to be selected by the railroad commission of Wisconsin to assist in determining the tolls to be charged as aforesaid and the expense thereof shall be treated as a part of the cost of maintenance and operation of said works. If any such improved water power be operated by a lessee or lessees under lease or contract made prior to the enactment and publication of this act, then such lessee or lessees shall be chargeable with the payment of such tolls; otherwise the same shall be paid by the owner or owners of the water power. Each water power liable to tolls as above provided which shall be operated two months or more during any six months' toll period shall be subject to tolls for the whole of the same period; otherwise no tolls for that period shall be chargeable.

**Railroad commission, semi-annual reports to; hearings on tolls; appeals from. Tolls, use and enforcement of.** SECTION 5. On or before June 15th and December 15th of each year, said Wisconsin Valley Improvement Company shall lay before the railroad commission of Wisconsin a statement showing all expenditures made or necessary to be made for the next six months, period next preceding July 1st and January 1st respectively of each year for maintenance and operation of such reservoir system, all capital stock of said company issued and then outstanding, the cash capital actually paid in, the storage capacity and location of each reservoir, and all reports and data obtained from engineers employed as provided in section four of this act and such other information and statements as the commission shall require, together with a recommendation of the amount of tolls necessary to pay such cost of maintenance and operation and a net return of six per cent. per annum on the capital invested, and a recommendation as to the apportionment thereof against the owners or operators of improved powers in accordance with said section four. The railroad com-

Commission shall, thereupon, give to each water power operator proposed to be charged with tolls ten days' notice of the amount of tolls recommended to be charged against him and of the time when and place where the railroad commission will hear objections to the proposed tolls. The railroad commission shall at the time appointed hear all objections made and may take evidence and make or cause to be made independent investigation of the validity of the same, and may adjourn, from time to time, and shall, as soon as practicable, on or about July 1st, and January 1st, of each year, determine and certify the amount of tolls to be collected from each water power operator for the period under consideration, and such tolls, shall, thereupon be due and payable to the Wisconsin Valley Improvement Company.

Any person in interest being dissatisfied with any order of the commission authorized to be made under this act, may commence an action in the circuit court of the county where the property affected is located, against the commission as defendant to vacate and set aside any such order within sixty days from the date of the mailing to such person of a copy of such order by the commission, on the ground that such order is unlawful or unreasonable, in which case the complaint shall be served with the summons. The commission shall immediately notify the said company by mail of the service of said complaint. Within twenty days after the mailing of such notice, to said company the said company or said commission shall file its answer to said complaint and said action shall be at issue and stand ready for trial the same as any other action.

In all trials under this section the burden of proof shall be upon the plaintiff to show by clear and satisfactory evidence that the order of the commission complained of is unlawful or unreasonable as the case may be. Every party to said action, within sixty days after the service of a copy of the order of judgment of the circuit court may appeal to the supreme court.

No tolls shall be levied or used to pay for any part of the original construction or purchase or betterment of the reservoir system. The amount of such tolls shall be a lien upon the water power, dam, franchises and flowage rights of the person or corporation chargeable with such tolls and in case such tolls shall not be paid when due the person or corporation entitled to collect the same, shall be entitled to sue for and collect the same by an action at law, or by a suit in equity for the foreclosure and enforcement of said lien, and for sale of the property affected thereby pursuant to such judgment of foreclosure.

Forestry board to regulate construction and flow; railroad commission's approval of stock issue; resources for cost and maintenance.

SECTION 6. No dam or reservoir not now in existence or heretofore



Reforestation waste land in the New York forest reserve. Broadcast sowing of tree seed on snow.



authorized shall be constructed or created until the plan therefor showing the form and location of the dam and a description of the lands to be overflowed thereby be first submitted to the state board of forestry and approved thereby, after first giving reasonable notice and opportunity to be heard, to all persons interested, by publication in one or more newspapers most likely to give such notice, or such other notice as the board shall deem advisable, nor shall any petition be filed for the condemnation of any property for the purposes of this act without first having attached thereto the approval in writing of said board. Said board shall cause the height to which the water may be raised by any dam to be marked by permanent monuments and bench marks and shall have supervision and control of the time and extent of the drawing of water from the reservoirs and the power to compel the maintenance of all reservoirs, established. They shall have authority to employ at the expense of said improvement company hydraulic engineers and other persons to assist them in obtaining the information necessary to a proper discharge of their duties, such expense to be treated as part of the cost of constructing or maintenance and operation of the reservoir system. No capital stock of said improvement company shall be issued until the proposed issue thereof shall have been submitted to the railroad commission of Wisconsin and said commission shall have ascertained, determined and certified that the proposed issue will be in consideration of money or labor or property estimated at its true money value actually received by said company, equal to the par value thereof, and it shall be the duty of the said commission to act promptly on any such proposition submitted. The money received by said company upon account of capital stock shall be used only in payment of the original cost of purchase, construction or betterment of the reservoir system and of the work preliminary thereto and necessary to prepare for or to determine upon the same; and all tolls collected as hereinbefore authorized shall be applied only to the payment of cost of maintenance and operation of the system and payment of the net return on capital above provided for; to the end that the capital stock shall be maintained at par value at all times.

**Fishways, free passage of logs, etc.** SECTION 7. All dams erected or acquired and maintained by the grantee shall be subject to all of the requirements of the statutes now in effect, and all that may be hereafter enacted relating to the providing of good and sufficient fishways in said dams, and shall be equipped with all necessary slides, chutes, guide booms and piers for the passage of logs and timber over or through the same.

**This act a public act.** SECTION 8. This act is hereby declared to be

a public act and for the accomplishment of public purposes, and shall be favorably construed to the accomplishment of said purpose.

**Repeal and amendment reserved; time for completion; state may acquire.** SECTION 9. The right is hereby reserved to the legislature to repeal or amend this act at any time; in case the Wisconsin Valley Improvement Company shall not by the first day of January, 1909, have in operation reservoirs of the storage capacity of at least two billion cubic feet of water, then the rights and privileges granted by this act shall cease. The state of Wisconsin shall have the right at any time whenever it may have the constitutional power, to take over to itself and become the owner of all reservoirs and other works and property acquired by the Wisconsin Valley Improvement Company, pursuant to this act, by paying therefor the cash capital actually paid on the capital stock of said company theretofore lawfully issued and outstanding or the actual value of the physical properties so taken over and without any allowance for franchises or good will of the business, and if such actual value cannot be agreed upon between the state and such owner, then the same shall be determined by the railroad commission of Wisconsin.

As will be noted from section 6, this office supervises all the field work and must authorize the building of each dam, its location, height, amount of land to be overflowed and the time and manner of drawing off the water. The railroad commission, acting in its capacity as our public utilities commission, passes upon a fair capitalization for the company, distribution of stock, amount of tolls to be charged and so forth.

The right is reserved to the state to take over and become the owner of all reservoirs and property of the company by paying the amount of the cash capital that has been paid in as the actual value of the physical properties. The far-reaching importance of this law can scarcely be estimated at this time. So carefully has it been drawn in all its details, and so thoroughly have the interests of the public been safeguarded by the state supervision provided, that it would seem to make a long stride in progress in the development of one of the greatest resources of the state.

Mr. Gifford Pinchot, United States Forester, has predicted that "the anthracite coal supply of the country is good for only fifty years, and the bituminous for only one hundred years. The supply of timber in the country will last between twenty-five and thirty years, but within the forest reserves created by the federal government and states will be conserved the great power

of the future, which will take the place of coal, namely, water power."

Wisconsin has never had a coal supply; as a lumbering state its power is fast waning, and it is of the utmost importance that its manufacturing interests should be conserved by protecting and developing its water powers.

During the winter of 1908 there was very little snow, and several of the mills on the Wisconsin river were practically run for three months by the water that had been stored in these reservoirs.

The summer of 1908 was phenomenally dry and had it not been for these reservoirs there is no question but that the flow in the river would have been very seriously lessened. Fortunately there was an unusual amount of rain in the spring so that the reservoirs were full when the dry season started, and so already the great need of water storage has been clearly shown.

This office has recognized that the corporation authorized to create such reservoirs is working to accomplish one and the most important end that we are striving to attain by the creation of forest reserves, and a cordial co-operation between the state and corporation is the result. The successful working of this law will undoubtedly lead to the creation of reservoirs on many Wisconsin rivers, resulting in great advantages to the manufacturing interests of the state; and national interests also must benefit by the influence on the Mississippi river of a nearly uniform flow in its Wisconsin tributaries.

Below is given a list of reservoirs already under operation on the head waters of the Wisconsin with their summer and winter storage capacity:

NAME OF LAKE.	STORAGE IN MILLIONS OF CUBIC FEET.	
	Summer.	Winter.
Vieux Desert.....	550	550
Twin.....	440	440
Long Lake on Deerskin.....	320	320
Long Lake on Eagle.....	380	570 increased 100 M.
Lower 9 Mile.....	210	210
Upper 9 Mile.....	40	40
Seven Mile.....	140	140
Minocqua.....	330	700
Little Deerskin.....	20	20
Sugar Camp.....	420	700
Buckatahbin.....	120	120
North Pelican.....		150
South Pelican.....		300
Squirrel Lake.....	150	150
Little St. Germain.....	150	150
Pickerel.....	100	100
Total.....	3,370	4,660

The total developed power on the Wisconsin river is now about 50,000 h. p. and the undeveloped powers which can be utilized will probably bring this up to about 100,000 h. p. Estimating that each horse power on the Wisconsin is worth on the average \$20 per annum, the present 50,000 h. p. developed represents a value of \$1,000,000 per annum and the 100,000 horse power that can be developed, a value of \$2,000,000 per annum. When one considers that the present reservoirs are expected to increase the water powers over 20%, their value can readily be seen.

#### THE TAX EXEMPTION LAW.

In 1907 the legislature passed a law providing for the exemption from taxation of lands planted to forest trees, but although many notices of the law appeared in the farm papers and daily press of the state, no one to the knowledge of this office has made application for such exemption. Under the provisions of the law any individual or corporation may plant not to exceed forty acres of land with not less than twelve hundred forest trees per acre and thereby secure a total exemption of all taxes on such land for a period of thirty years, providing that the trees are kept alive and in a healthy growing condition. The law does not go far enough, for if it is a good thing for the state to encourage forest planting, it is even more desirable to have young growing timber protected, but this broader phase of the question is dealt with fully under "Taxation of Timberlands." The present law should be of chief value to the farmer who wishes to establish a wood lot, and under "The Farm Woodlot" will be found notes on some species which are recommended for planting in Wisconsin.

#### LAND FORFEITED FOR NON-PAYMENT OF TAXES.

The legislature in 1907 passed a law enabling the land commissioners to acquire lands for the forest reserve by purchase at tax sales and also tax title lands from the counties. It provides that whenever any county north or partly north of town 33 has received a tax deed upon a certificate of sale upon any real property in this state, the county clerk of such county shall at the time of deeding such land to the county, file in the office of the state land commissioners a list of said lands, and that such lands shall not be sold by the county except to the state



until one year after the taking of such deed, unless the land commissioners shall give notice to such county that the state does not desire to acquire title thereto. As will be seen, the law gives the state the first chance to purchase lands which have been forfeited to the counties for non-payment of taxes and which would be desirable as additions to the forest reserves. Up to the present time, however, only two hundred and eighty acres have been purchased under the provisions of this law, these being in Iron county, and were the only lands, with the exception of three or four undesirable forties, for which tax deeds were held by any of the counties north of town 33. However, it is believed that in time more and more of the cut-over sandy lands which are unsuitable for agriculture will revert to the counties and be purchased by the state for the forest reserves. Such lands have been tossed about like a football from one land speculator to another for many years. From fifteen to twenty years ago such lands were forfeited to the counties by the wholesale for the non-payment of taxes, and at that time the counties in order to realize something upon these lands and get them back upon the tax rolls, auctioned them off for as low as twenty cents per acre. Since then they have been sold and resold and in some cases this office finds that the taxes plus the accrued interest amount to considerably more than the lands are worth.

The policy of the law is the correct one, for these lands should be put to some good use and the state should own them, saving the small timber, planting where necessary, and thus not only secure a second crop of timber in time, but protect the headwaters of our important rivers.

#### TAXATION OF TIMBERLANDS.

While the nation and state are working to devise methods and means of conserving our fast waning forest resources, we are at the same time taxing our timber to death. Forests are a crop just as much as wheat or corn and when the private owner is obliged to pay an annual, and often increasing, tax on his growing timber, it is no wonder that he cuts, and usually cuts all, to escape practical confiscation through taxation.

Our legislature in 1907 passed an act exempting from taxation for a period of thirty years, forty acres of land owned by

an individual or corporation when planted to forest trees. If it is a good thing for the state to thus encourage the planting of trees, it is certainly wise to encourage the forest owner to cut his timber conservatively under simple methods of forest management.

The two great deterrent factors that are keeping many timberland owners from adopting forestry methods are fire and taxes. It is believed that the first can and must be overcome through a well organized patrol and fire warden system as previously outlined and it is felt that our state should give timberland owners a chance to manage their forests on a permanent basis by the enactment of the following proposed law or one which will give an equal opportunity:

Section 1. In consideration of the public benefit to be derived from forestry management upon a considerable area of the timberlands within the state, the owner of any timberland may apply to the state board of forestry for an examination of his lands and timber. Such application shall be accompanied by a plat and description of such timberland and a guarantee to pay the reasonable expense of such examination and report.

Section 2. In case the state board of forestry finds upon examination that the management of such timberland under forestry regulations would be a public benefit, they shall submit a report for the management of such lands to the owner thereof, clearly stating the regulations in regard to the cutting of the timber, and in case the owner shall accept the same, a contract shall be entered into between the owner and the state.

Section 3. Upon the execution of the above contract the state board of forestry shall file a plat and description of the lands with the local board of assessors, and after such plat and description have been filed with them, the assessors when making the annual assessment shall assess only the value of the land and no tax shall be paid upon the timber until it is cut. In no case shall the land be assessed at a higher rate than cut-over, wild, or non-agricultural land in the same town.

Section 4. When the owner of such timberland cuts therefrom any timber, cordwood, poles, posts, or any other forest products for any purpose whatsoever, he shall make or cause to be made an accurate measurement of all such products and file a sworn copy of such measurement with the board of assessors, and such sworn statement shall be the basis of the tax valuation.

Section 5. Before any such products are sold or removed, the owner of the timberland from which they have been cut, shall pay in lieu of the usual annual tax upon timber, 10% of the stumpage value of such products as determined by the board of assessors.

Section 6. The owner of any timberland who shall have entered into a contract with the state to manage the forests under such regulations as the state may prescribe and who shall then fail to file a sworn statement as to the measurement of such products as he may cut, or who shall remove such products without notifying the local board of assessors, or who shall swear falsely as to the measurement of such products, shall pay 10% of the value of such products as determined by the board of assessors, and in addition thereto shall be liable to a fine of not less than \$1 nor more than \$10 for each tree so cut and removed.

The plan that is proposed in the above bill that the land should pay a yearly tax but the timber to be exempt until it is cut, is believed to be the fairest and most practical solution of this knotty problem. It is the plan that has been recommended by the National Conservation commission after the most careful investigations and it will certainly encourage forest preservation and thus be a tremendous improvement over the present system of taxation, which encourages and even compels forest destruction.

The Timberland Owners' association at the meeting in Eau Claire December 1st considered this matter of great importance and the following motion was unanimously carried: "It is the sense of this meeting that the forestry department be requested to prepare a bill to be presented to the next legislature providing for a contract which may be made by the timber owners and the state, that shall exempt the timber on such lands from taxation under certain proper conditions during the term of such contract."

#### LAKE STATES FORESTRY CONFERENCE.

As the forestry problems of Michigan, Minnesota and Wisconsin are very much alike it was felt that uniform forestry legislation for the above states was very important. At the suggestion of this office and through the courtesy of the Michigan forestry commission the first conference was held in Saginaw,

Michigan, November 13th and 14th, 1907, the following delegates being present.

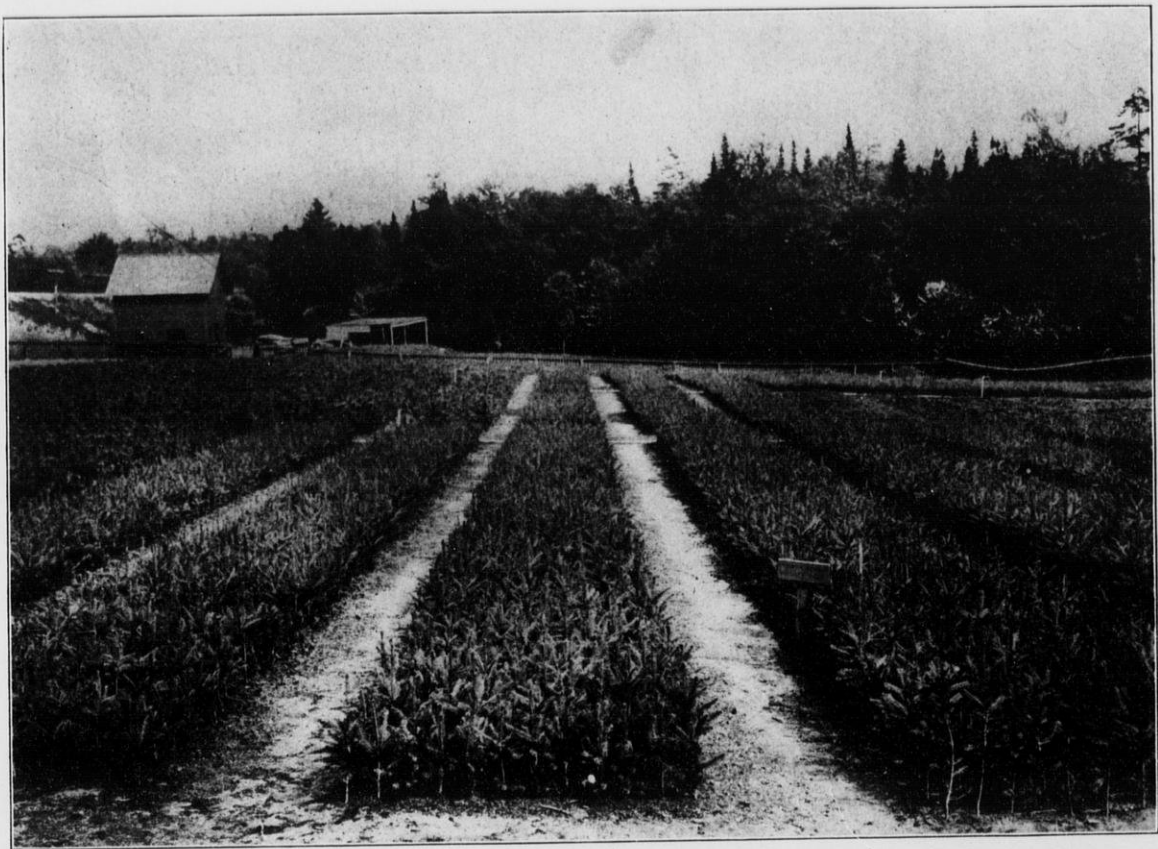
Forestry Commissioner C. C. Andrews, St. Paul, Minn.  
Prof. S. B. Green, Minneapolis, Minn.  
Pres. Charles R. Van Hise, Madison, Wis.  
Dean H. L. Russell, Madison, Wis.  
Attorney General Frank L. Gilbert, Madison, Wis.  
State Forester E. M. Griffith, Madison, Wis.  
Asst. Forester Frank B. Moody, Rhinelander, Wis.  
Prof. T. J. Burrill, Urbana, Ill.  
State Forester W. J. Green, Wooster, Ohio.  
Dr. B. E. Fernow, Toronto, Ont.  
Prof. E. J. Zavitz, Guelph, Ont.  
Mr. Ellwood Wilson, Grand Niere, Quebec.  
Clyde Leavitt, Forest Service, Washington, D. C.  
A. C. Shaw, Forest Service, Washington, D. C.  
H. H. Chapman, Forest Service, New Haven, Conn.  
Forest Commissioner Chas. W. Garfield, Grand Rapids, Mich.  
Forest Commissioner Wm. B. Mershon, Saginaw, Mich.  
Forest Warden Filibert Roth, Ann Arbor, Mich.

Mr. Chas. W. Garfield of Michigan was elected chairman of the conference and Mr. F. B. Moody of Wisconsin, secretary. After two days of most interesting discussion, the following resolutions were adopted:

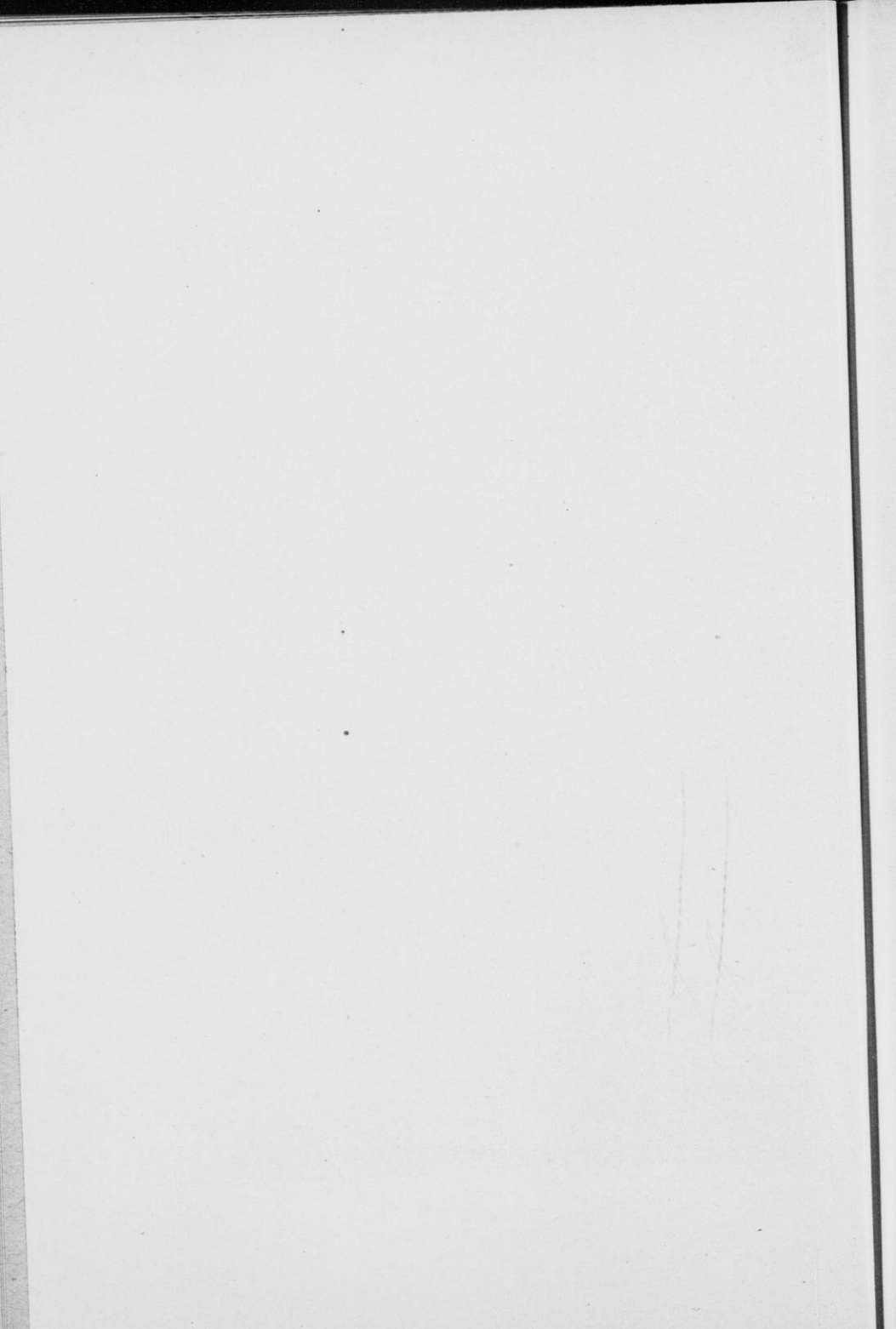
I. "The delegates from the states of Michigan, Wisconsin, Minnesota, Ohio and Illinois and the provinces of Ontario and Quebec, assembled in conference in Saginaw, November 13, 1907, recommend that on a scale suited to its needs and its natural resources each state and province shall acquire forestry lands within its limits and maintain forests thereon in accordance with forestry principles.

II. "That the states and provinces in the great lakes region be urged to encourage private forestry, especially the maintenance of existing forests.

III. "This conference believes that at present there is lack of law and also that there are certain laws inimical to private forestry; and it is the sense of this conference that modifications of present laws and enactment of new laws are necessary in order that private forestry as a regular industry shall become possible and general.



A forest nursery in the New York State forest reserve.



IV. "It is the sense of this conference that lands containing forests should be taxed in the usual manner so far as the land is concerned, said land to be assessed as if it contained no timber; but the forest products should be assessed and taxed only when they are cut and removed, and then in an appropriate manner.

V. "The conference approves of the general purposes of a bill presented by Mr. Griffith, of Wisconsin, for the piling and burning of slash and recommends that the forestry commissions of the states and provinces represented in this conference draw up and present to their legislatures bills adapted to the special conditions of their states or provinces in order to accomplish the piling and burning of slashing.

VI. "Resolved, that each state and province represented in this conference; viz., the states of Michigan, Minnesota, Ohio, Illinois and Wisconsin and the provinces of Ontario and Quebec be invited each to appoint a representative to draw up bills covering the principles to which this conference has agreed, adapted to their local conditions, to present to their governments. Said representatives are to constitute a committee to meet and discuss these measures so that they may be as nearly alike as is practicable. And since Michigan called this conference the representative of Michigan is to be chairman of the committee. When said bills are ready the committee is authorized to call another meeting of this conference at its discretion.

VII. "Resolved that the thanks of this conference be extended to the Michigan State Forestry Commission for bringing together this conference, and to the business men of Saginaw for their hospitality in entertaining the members of the conference."

The second conference was held in Madison December 9th and 10th, 1908, the following delegates being present:

Forest Commissioner Chas. W. Garfield, Grand Rapids, Mich.

Forest Warden Filibert Roth, Ann Arbor, Mich.

Forestry Commissioner C. C. Andrews, St. Paul, Minn.

Prof. S. B. Green, Minneapolis, Minn.

Prof. E. J. Zavitz, Guelph, Ont.

Wm T. Cox, Forest Service, Washington, D. C.

A. B. Patterson, Forest Service, Washington, D. C.

H. P. Bird, Wausaukee, Wis.

Guy Nash, Grand Rapids, Wis.

Dean E. A. Birge, Madison, Wis.

Assistant State Forester F. B. Moody, Rhinelander, Wis.

State Forester E. M. Griffith, Madison, Wis.

This second conference was largely devoted to the consideration of the losses by forest fires in 1908 and the urgent need of much more stringent and fairly uniform legislation in order to protect the forests.

The following resolutions were passed unanimously at the final session December 10th:

The object of this conference is to secure uniform forestry legislation throughout the great lakes region, and particularly for Minnesota, Wisconsin and Michigan, and,

Whereas, the enormous destruction of forests and other property in the great lake states and Canada by the forest fires of 1908 has again called attention to the pressing need of immediate action on the part of these states, especially in the matter of prevention of fires and their suppression, and,

Whereas, this matter is accentuated by the prompt and intelligent action of the associations of citizens most interested in this matter, and especially the action of the Timberland Owners' association of Wisconsin, which includes many of the largest lumber companies of northern Wisconsin, which at its meeting at Eau Claire December 1, 1908, approved the report and suggestions of its committee, charged with the preparation of suitable bills to be submitted to the legislature of Wisconsin at its next session, and as the following resolutions are largely based on the recommendations of that association, and,

Whereas, the experience of the fires of the last season has fully demonstrated that the leaving of debris over large areas of land in the form of "slashes" seriously threatens the safety of all wild lands and forests, as well as farm settlements, and even towns, therefore, be it

Resolved, that all persons cutting and exploiting timber in any part of the lake states here represented should be obliged to dispose of the debris in such manner that it shall not be a menace to the forests; that failure to do this should be punished by a fine commensurate with the extent of the operations and consequent possibility of damage; that the timber cut or standing as well as the land, should be held to secure the payment of such fines imposed, and that full authority be given to the



proper authorities to carry out and interpret the law providing for this disposal of debris or "slashings."

Whereas, in the matter of forest fires this conference realizes that these forest fires in the lake states during any dry season readily take on enormous proportions; that we are dealing, therefore, with great calamities affecting human life as well as millions of acres of land and many millions of dollars worth of property; from this it follows that any measures adopted should be adequate to the situation; that efficient preventive and protective measures are the only kind that will really pay, and that such protection in a single year can and will save enough property, such that the interest on the material wealth saved will easily maintain such service or protection; therefore, be it

Resolved, that forest fires, being one of the greatest enemies of the state and thus akin to riot and invasion, the Executive Power of the state should be employed to the utmost limit in emergencies, in their suppression and control for the protection of the lives and property of the people.

Resolved, that we advocate the patrol system as the only satisfactory method of preventing forest fires, and the commanding factor in fighting them.

Resolved, that we recommend the retention of the fire warden system with the county, rather than the town, as the unit, as being essential in securing interest and responsibility among the people most affected.

Resolved, that in all districts covered by state fire patrol a reasonable portion of the expense for such patrol should be placed upon the unoccupied, unimproved or wild lands, whether forest or cut-over land, preferably in the form of an acreage tax.

Resolved, that the expense of the local fire warden service, and the help called out for the suppression of fires, should be borne wholly or in part by the county or town, but the payment should first be made by the state to insure promptness.

Resolved, that all officials, including public prosecutors, charged with the enforcement of fire protective measures should be subject to severe penalty or removal from office for non-performance of duty.

Resolved, that the successful prosecution and a commensurate punishment in case of conviction often cannot be secured in

the locality where the offense has been committed, and in order that the law shall be enforced, in the interest of justice, and under authority of the attorney general, a change of venue should be permitted.

Resolved, that it is the sense of this meeting that lands containing forests should be taxed in the usual manner so far as the land is concerned, said land to be assessed as if it contained no timber; but the forest products should be assessed and taxed only when they are cut and removed, and then in an appropriate manner; that the harvest timber tax should be based on a stumpage value determined by the value of the forest product at the place where it is assessed less the cost of placing it there.

Resolved, that the thanks of the gentlemen composing the lake states conference are hereby extended to State Forester E. M. Griffith and his associates, for the hospitality tendered during our sojourn in Madison, which has materially added to the usefulness and pleasure of the meeting.

#### STATE CONSERVATION COMMISSION.

On July 24, 1908, Governor Davidson appointed a State Conservation commission to consider and report upon the best methods of conserving the natural resources of Wisconsin, and to co-operate with the National Conservation commission appointed by President Roosevelt. The Wisconsin commission is composed of the following men:

Dr. Charles Van Hise, Madison, President of the University of Wisconsin.

William Irvine, Chippewa Falls, lumberman and former member of the assembly.

George A. Whiting, Menasha, paper manufacturer and president of the Wisconsin Valley Improvement Company.

Dr. E. A. Birge, Madison, director of the Wisconsin geological and natural history survey.

J. H. Stout, Menomonie, State Senator and lumberman.

H. P. Bird, Wausaukee, State Senator and former lumberman.

E. M. Griffith, Madison, State Forester.

Two of these commissioners are members of the National commission, President Van Hise being a member of the division on minerals, and Mr. Irvine a member of the division on forests.

Upon the call of Governor Davidson the first meeting was held August 3, 1908, and the commission was organized by the

election of President Van Hise as chairman and Mr. Griffith, as secretary.

It was voted that the state forester should report at the next meeting such forestry matters as he deemed most important, especially those which would require legislation, and upon the request of the commission, the Governor asked all state departments to prepare such reports as might be required by the commission.

The second meeting was held December 11th, 1908, and after the state forester had read his report to the commission, the following resolutions were passed:

1. The State Conservation commission recommends to the governor that the state board of forestry be authorized to issue certificates of indebtedness on the forest reserve lands owned by the state and to borrow thereon for a long term of years and at a low rate of interest not to exceed \$1,000,000, the money so secured to be used only for the purchase of lands as additions to the permanent forest reserves.

2. The State Conservation commission approves the forestry principles as adopted by the forestry conference of the lake states held in Madison December 9th and 10th, 1908.

3. The State Conservation commission recommends to the governor that in view of the large increase in the area of the forest reserves since the last session of the legislature and the probability that in the future such holdings will be materially added to, the annual appropriation of the state board of forestry for administrative purposes should be largely increased.

4. The State Conservation commission approves of the plan to request Congress to grant to the state of Wisconsin all unsurveyed and unallotted islands in lakes north of town 33.

5. The State Conservation commission recommends to the governor that the 16,378 acres of timberland in the Menominee Indian reservation, the possessory rights of which until recently were claimed by the government, and also the timber, but the state rights of which have now been fully recognized through the vigorous presentation of the case to the Secretary of the Interior by the state board of forestry, be made a part of the state forest reserve.

6. The State Conservation commission desires to call attention to the following facts regarding the present condition of lands in that portion of Wisconsin where a forest reserve must

be established: At present large areas of land are held by companies which are endeavoring to dispose of them to settlers and to small holders. These companies in many cases are now willing to dispose of their lands in a body to the state at reasonable prices. The state can unquestionably purchase these lands in the near future at a much lower rate than will be possible after the tracts are divided and are in the possession of numerous small holders.

We therefore urge the importance of providing for the purchase of such tracts of land as rapidly as possible.

As will be seen from the above resolutions, the Conservation commission endorses the recommendations for necessary forestry legislation, as presented in this report.

#### NECESSARY LEGISLATION.

The disastrous forest fires of 1908 have demonstrated unanswerably the need of further legislation to protect the timberlands of the state from destruction by fire. 1,209,432 acres were burned over by the 1,435 individual fires that came to the attention of the wardens. It is estimated that 499,495,791 feet of merchantable timber was burned, which was worth at a low estimate \$2,996,975, while the young growth of pine and hardwoods on the burned lands, which was valued at \$6,047,000, makes the total loss of timber approximately \$9,000,000. Farm houses, barns, live stock, school houses, bridges and other private and public improvements to the value of \$149,454 were destroyed. More than 11,000 men fought fire under the supervision of the wardens and the total expense to the towns was \$43,850, although thousands of men volunteered without pay, and the lumber companies spent \$55,820 in addition.

#### *Piling and Burning of Slash.*

Forestry will amount to little or nothing until the state can put a stop to forest fires, and destructive fires will continue until the slash of logging operations is disposed of properly. In past years lumbermen have been averse to assuming the trouble and expense of piling and burning their slash but the fires of this year have convinced them of the wisdom of doing this and at the second meeting of timberland owners at Eau Claire December first, an organization was effected and the

members unanimously agreed that a law should be passed for the piling and burning of slashings, limbs, tops and refuse left by operators.

#### *Forest Fire Patrol.*

It is increasingly evident that the only effective way to prevent forest fires is by maintaining a patrol during those months in which fires are liable to occur. The Timberland Owners' association of northern Wisconsin, in recognition of this fact, voted also that there should be an annual tax of two or two and one-half cents per acre upon all wild and unimproved lands, to constitute a forest fire fund for the maintenance of a patrol system from April first to November first of each year. The fact that this recommendation comes from the men who would have to bear a very large proportion of such a tax is eloquent of the progress in public sentiment and clearly shows that the proposed legislation is practical and necessary.

#### *Fire Warden Laws.*

The exigencies of the past season have brought out the need of several amendments to the present fire warden laws. No fires should be set from April first to November first, except for warming the person or cooking food, without the written or posted permission of a local fire warden. The wardens and their assistants, who are now allowed "not to exceed 25 cents per hour" should be protected by a clause making their compensation "not less than 15 cents" per hour. The fire laws should be read at annual town meetings and published twice a year in local papers in the timbered counties of the state.

In many cases the fines imposed upon individuals who were guilty of having violated the laws in relation to setting fires, have been so absurdly inadequate that a minimum fine should be provided, as well as a maximum, sufficient to discourage violations of the law.

#### *Taxation of Timberlands.*

The present method of taxing timberlands is hostile to the forestry interests of the state, as a single timber crop is taxed heavily and repeatedly and the owners are forced by our present laws to cut their mature timber in order to escape inequit-

able taxation, to sacrifice their young growth and to disregard conservative methods of forest management. The state has passed laws to encourage the planting of trees and much more should it encourage, by wise legislation, the protection of trees of several years' growth. A law should be passed by which owners of timberlands might list their holdings with the state and enter into a contract by which they should submit to certain reasonable regulations in cutting their timber, and in return all timber should be exempt from taxation until it is cut, although the land on which it stands shall still be subject to an equitable annual tax.

Such a law has been considered by several of the lake states and by certain of the Canadian provinces and it is believed that if it is carefully drawn, it would give a wonderful impetus to the adoption of forestry methods in the management of timberlands.

#### *Increase by Purchase of the State Forest Reserves.*

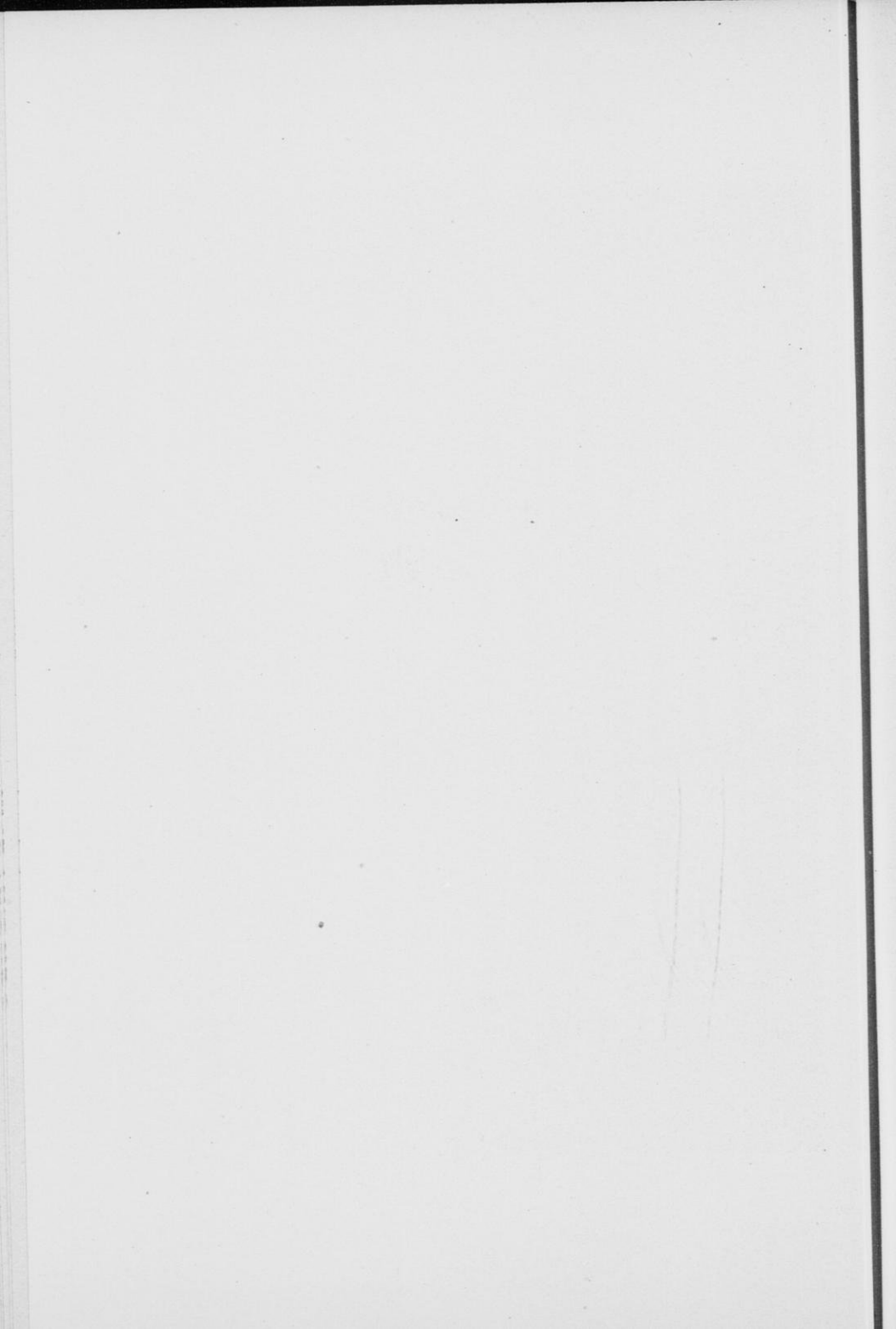
Although great progress has been made in releasing and offering for sale the agricultural and scattering lands that have been classed as forest reserve lands, and in purchasing with the fund so derived other lands more suitable for forestry purposes, it is evident that the forest reserve area should be increased at an earlier date than can be accomplished by the present procedure.

In order to properly foster the manufacturing interests of the state through the protection of its water powers with an adequate forest cover, and by maintaining a timber supply, it is important that large additions be made to the present forest reserves and that they be made immediately, so as to avoid the heavy increase in expenditure that would be caused by delay. The lands most suitable for forestry purposes are now largely in the hands of speculators and are rapidly deteriorating through fires and neglect. They can be purchased at the present time at a much greater advantage than when the prices have increased and large tracts been broken up amongst small purchasers.

So large an income will revert to the state from adequate forest reserves, aside from the indirect benefit to users of water power and those employed in various wood-working industries, that a plan has been favorably considered for asking the legis-



A splendid forest nursery in Germany.





lature to authorize the state board of forestry to issue certificates of indebtedness on the state forest reserve lands for a period of, perhaps, twenty years, bearing a reasonable rate of interest; that a reasonable tax be levied upon the owners of all water powers protected by the forest reserves, the proceeds to be used only for paying off the principal and interest of such a loan. Careful investigation by the Attorney General has shown that such a law would not be unconstitutional and the plan seems to be entirely feasible. If, however, it does not meet with favor, an annual state tax should be levied amounting to one-tenth of a mill, to accomplish the same result.

#### *Increased Appropriation for the State Board of Forestry.*

The work of the state board of forestry has grown so rapidly and the annual appropriation of \$9,800 is so small in comparison with the needs of the department that it has been impossible to take up several important lines of work.

The forest reserves now comprise some 300,000 acres in 17 counties, being worth at least from \$2,500,000 to \$3,000,000, and the work of examining and appraising the scattered and agricultural lands, protecting all the state's holdings from trespass and examining lands that are to be purchased as additions to the reserves, alone, demands the employment of a number of trained foresters and cruisers.

We now have over 400 town fire wardens and a very considerable part of the time of both the field and office force has been devoted to directing their work and in order to get the best results, at least two well trained men should devote their entire time to it. The work has been so heavy for the small force that could be employed with the present appropriation that we have been seriously handicapped and if forestry is to advance in Wisconsin as it should, we must have a much larger department.

We must soon commence the construction of fire lines on the reserves, establish nurseries to grow our own seedlings to reforest burned and barren areas, build rangers' cabins, clean out old roads and trails and, in a word, institute many measures for the protection and improvement of the reserves. It is expected that the cost of such work will be paid from the forest reserve fund. As timberland owners are requesting help and advice in the management of their forests, and farmers

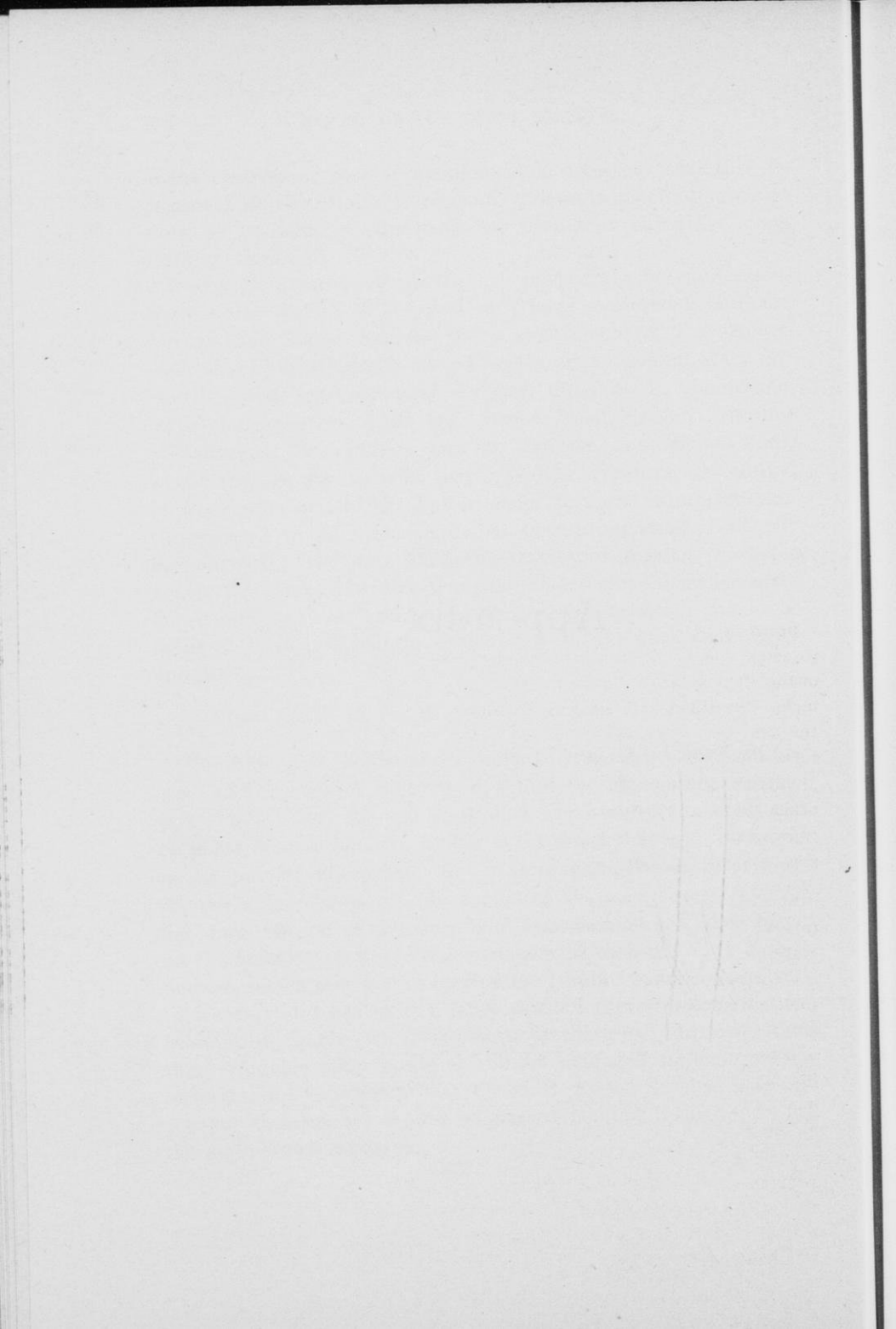
in the creation or care of woodlots, it is necessary that this department should be able to respond. There is also an important work to be done in educating the people of our state along forestry lines.

Under the present law provision is made for a forester, assistant forester and clerk. In addition I have employed a head fire warden, five timber cruisers and a stenographer. The department should be allowed a state forester, first assistant state forester, second assistant state forester, chief clerk, statistician, three stenographers, head fire warden, head cruiser, inspector of railroads, five cruisers and five rangers, and such a force would require for salaries and traveling expenses, an annual appropriation of \$30,000, but in order to meet unforeseen contingencies, I would recommend that an appropriation of \$35,000 be requested. The state has been carrying on forestry work for nearly five years and now that the department is firmly established and its needs clearly known, an appropriation should be made at least sufficient to enable it to do its work thoroughly and well.

*State Lands in the Menominee Indian Reservation.*

The state now holds under patent from the United States some 16,378 acres of timberland within the Menominee reservation. These lands for the most part are heavily timbered and on many descriptions the timber is the finest that is to be found in any part of Wisconsin. As the reservation lies south of town 33, these state lands are not a part of the state forest reserves but upon request of the state land commissioners, I have taken up the question of their final management with the U. S. Forest Service, which now has charge of the logging operations on this reservation and has built a large sawmill there to manufacture the mature timber, which is owned by the tribe. In order that these valuable state lands should be managed under forestry methods, in co-operation with the U. S. Forest Service, it is important that an act should be passed making them a part of the state forest reserves.

# Appendix



# State Forestry Laws

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## CHAPTER 264, LAWS OF 1905.

AN ACT creating a forestry board, to appoint fire wardens and trespass agents and making an appropriation therefor.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

**State board of forestry.** SECTION 1. There shall be a state board of forestry, consisting of the president of the state university, the director of the state geological survey, the dean of the state agricultural department, the attorney general and one other member to be appointed by the governor. Said board shall select its own president and shall perform the duties hereinafter provided; and shall meet on the second Monday in January, April, July and October of each year, and at such other times as may be necessary. They shall receive no compensation except their actual expenses to be audited by the secretary of state and paid out of the state treasury.

**State forester and his duties.** SECTION 2. There shall be a state forester, who shall be a technically trained forester, appointed by the state board of forestry, and whether any candidate for this position is a technically trained forester shall be determined by certificate from the secretary of the United States department of agriculture. He shall receive a salary of twenty-five hundred dollars per year, and the actual and necessary traveling and field expenses, incurred in the conduct of his official business; be empowered to appoint a clerk whose salary shall not exceed eight hundred dollars per annum; be supplied with suitable offices in the capitol building; be entitled from the superintendent of public property to such stationery, postage and other office supplies and equipment as may be necessary; be authorized to purchase all necessary field supplies, equipment and instruments; be furnished by the state all necessary printed forms and notices and the publications hereinafter provided; and shall act as secretary of the

state board of forestry. He shall, under the supervision of the state board of forestry, execute all matters pertaining to forestry within the jurisdiction of the state; direct the management of the state forest reserve; collect data relative to forest destruction and conditions; take such action as is authorized by law to prevent and extinguish forest fires and to prevent forest trespass; cooperate in forestry as provided under section 5 of this act; advance as he may deem wise, by the issuing of publications and by lectures, the cause of forestry within the state; and may, upon invitation of the board of regents of the University of Wisconsin supervise such courses in forestry as may hereafter be provided for at said university. He shall prepare annually a report to the state board of forestry on the progress and condition of state forest work, and recommend therein plans for improving the state system of forest protection, management, replacement and taxation. The state board of forestry shall report annually a summary of such facts to the governor.

**State forest reserve.** SECTION 3. The sale of all lands belonging to the state north of town 33 shall cease upon the passage of this act, and such lands north of town 33 shall constitute the state forest reserve; provided, that those state lands within said forest reserve which after examination by the state forester are found by him to be more suitable for other purposes than for the purposes of the state forest reserve because of their character, condition, extent or situation, may be sold by the commissioners of the public lands, upon the recommendation of the state forester and with the approval of the state board of forestry. The state forester shall, under the supervision of the state board of forestry, direct the management of the state forest reserve, to which end he may employ the necessary assistance, and may upon said reserve institute conservative lumbering, make and maintain forest nurseries, plantations and fire lines and execute other silvicultural and protective measures necessary to the highest permanent usefulness of said reserve to the state. In such conservative lumbering the state forester is authorized, under the supervision of the state board of forestry, to remove or cause to be removed, when and in such manner as he may deem advisable, wood, timber, or other products from said reserve. Such wood, timber or other products shall be sold to the highest bidder upon contracts executed and signed by the state forester, on behalf of the state, subject to the approval of the state board of forestry.

**Grants of land for state forest reserve.** SECTION 4. The state board of forestry is hereby authorized, when in its judgment it is advisable to accept on behalf of the state any grant of land within the state, which shall become a part of the state forest reserve; provided, that

no such grant shall be accepted until its title has been examined by the attorney general and a report made to said board of the results of such examination.

**Public parks.** SECTION 4a. The state board of forestry shall visit points of natural interest in the state and examine into and consider the propriety and desirability of securing such places as public parks. Said board may further investigate as to the price and report its conclusions to the next session of the legislature.

**Cooperation in forestry.** SECTION 5. The state forester shall, acting under the supervision of the state board of forestry, whenever he deems it necessary to the best interests of the people and the state, cooperate in forest surveys, forest studies and forest protection, and in the preparation of plans for the protection, management, replacement of trees, woodlots and timber tracts, with any of the several departments of the federal or state governments or the governments of other states, and with counties, towns, corporations and individuals.

**Assistant state forester.** SECTION 6. There shall be an assistant state forester, who shall be a technically trained forester, appointed by the state forester with the approval of the state board of forestry. He shall receive a salary of fifteen hundred dollars per year, and the actual and necessary traveling and field expenses, incurred in the conduct of his official business. He shall perform such duties as may be assigned to him by the state forester, and shall represent the latter in case of disability or absence.

**State and town fire wardens.** SECTION 7. The state forester shall also be state fire warden, and the assistant state forester shall be assistant state fire warden. The state forester shall appoint one or more town fire wardens for those organized towns in which he deems it necessary, or for such portions of organized towns as he may define, and he may remove any fire warden from office. He shall give the necessary instructions to said fire wardens and supervise the execution of their work.

**Powers and duties of town fire wardens.** SECTION 8. Each town fire warden, before entering upon his duties, shall take an oath of office and file the same with the state forester. All town fire wardens shall take prompt and effective measures against the spread and illegal setting of forest, marsh or swamp fires within their own and adjoining towns and have the power of sheriffs to arrest without warrant for violations of the provisions of this act. They shall have authority to call upon any able bodied citizen, in territory in which they act, to assist in extinguishing forest, marsh or swamp fires in such manner as they may direct. The town fire wardens shall first submit to the state

forester itemized accounts for their own services and the services of their assistants, and no accounts shall be paid out of the treasury of the town in which such services have been rendered without a written approval of the state forester. The town fire wardens and those assisting them shall receive such compensation for their services in carrying out the provisions of this section as the town board shall allow, not to exceed 25 cents per hour for the time actually employed; provided, that the total of such accounts shall not exceed one hundred dollars for each thirty-six sections in any one year in any one town. The state forester is authorized to approve for payment not to exceed 50 per centum of the clear proceeds of any fine collected in an action brought for a violation of any of the provisions of sections 17 or 18 of this act, or sections 4405a or 4406, statutes of 1898, relating to setting, failure to put out or care of fires, where the evidence to secure a conviction is furnished by a town fire warden or any other person.

**Liability of town fire wardens and citizens.** SECTION 9. Any town fire warden who shall refuse to carry out the provisions of the preceding section or any able bodied citizen who shall refuse to render assistance as provided by said section, shall be punished by a fine of not less than ten, nor more than fifty dollars, or by imprisonment in the county jail for not less than ten days or more than thirty days, or by both such fine and imprisonment.

**Fire warning notices.** SECTION 10. Each town fire warden shall post or cause to be posted conspicuously in those parts of his town where fires are likely to occur, all notices furnished him for that purpose by the state forester, and he shall receive therefor compensation at the rate provided in section 8 of this act.

**Report of fire wardens.** SECTION 11. Every fire warden, immediately after each fire within his territory, shall forward to the state forester a detailed report of said fire, and shall report annually on or before the first day of December a summary of all forest fires and such other matters at the state forester may direct.

**Trespass agents.** SECTION 12. The state forester shall also be state trespass agent and the assistant state forester, assistant state trespass agent. As state trespass agent, the state forester shall appoint, and may remove from office, such trespass agents as he may deem expedient. He shall give the necessary instructions to said trespass agents and shall supervise the execution of their work. The state forester is authorized to approve for payment to any trespass agent or other person, upon whose evidence successful action is brought for trespass upon any portion of the state forest reserve, not to exceed 25 per centum of the amount collected for such trespass, which payment shall



be made by the state treasurer. Provided that in no case shall such payment exceed five hundred dollars (\$500.00).

**Oath and liability of trespass agents.** SECTION 13. Every person appointed as trespass agent under authority of this act, shall, before entering upon his duties, take and subscribe the following oath of office: "I do solemnly swear that I will support the constitution of the United States and of the state of Wisconsin; that I will not engage, either directly or indirectly, in the purchase for my own benefit or for the benefit of any other person, of any state lands or products from said lands, so long as I remain a trespass agent, and that I will faithfully and to the best of my ability discharge the duties of such position, so help me God." Such oath of office shall be filed with the state forester. Any trespass agent who violates the terms of his oath regarding the purchase of state lands or products therefrom, shall be punished by a fine not less than three times the price paid for said land, or three times the market value of said products, or by imprisonment in the county jail for not less than thirty days or more than ninety days, or by both such fine and imprisonment.

**Powers of trespass agents.** SECTION 14. All trespass agents shall have the power of sheriffs to arrest without warrant for any violation of the provisions of this act. It shall be the duty of every trespass agent to immediately report to the state forester and the district attorney of the county in which such trespass is committed, all cases of trespass upon state lands, which come to his knowledge, and to furnish these officers with information required by them concerning said trespass.

**District attorneys to prosecute.** SECTION 15. Whenever an arrest shall have been made for any violation of any provision of this act, or whenever any information of such violation shall have been lodged with him, it shall be the duty of the district attorney of the county in which the criminal act was committed to prosecute the offender or offenders. If any district attorney should fail to comply with the provisions of this section he shall be guilty of a misdemeanor and upon conviction shall be fined not less than \$100 nor more than \$1,000, or be imprisoned not less than thirty days nor more than one year, or both in the discretion of the court. The penalties of this section shall apply to any magistrate, with proper authority, who refuses or neglects without cause to issue a warrant for the arrest and prosecution of any person or persons when complaint, under oath, of violation of any terms of this act has been lodged with him.

**Destruction of warning notices.** SECTION 16. Any person who shall maliciously or wilfully destroy, deface, remove or disfigure any sign

poster or warning notice posted under the provisions of this act shall be guilty of a misdemeanor and punishable upon conviction by a fine of not less than \$15 nor more than \$100, or by imprisonment in the county jail for a period of not less than ten days nor more than three months, or by both such fine and imprisonment.

**Engines in forest land; burning weeds, etc.** SECTION 17. It shall be unlawful for any logging locomotive, donkey or threshing engine, railway locomotive and all other engines, boilers and locomotives operated in, through or near, forest, brush or grass land, which do not burn oil as fuel, to be operated without a netting of steel or iron wires so constructed as to give the most practicable protection against the escape of sparks, cinders or fire from the smoke stacks thereof, and each such engine shall be provided with adequate devices to prevent the escape of fire from ash pans and fire boxes. Every railroad company shall, at least once in each year, as far as practicable, cut and burn or remove from its right of way all grass and weeds and burn and remove therefrom all brush, logs, refuse material and debris within a reasonable time, and whenever fires are set for such purpose shall take proper care to prevent the escape thereof from the right of way. No railroad company shall permit its employes to deposit fire, live coals or ashes upon their tracks, outside of the yard limits, except they be immediately extinguished. Engineers, conductors or trainmen who discover that fences or other material along the right of way or on lands adjacent to the railroad are burning or in danger from fire shall report the same to the agent or person in charge at their next stopping place at which there shall be a telegraph station. Railroad companies shall give particular instructions to their section employes for the prevention and prompt extinguishment of fires, cause notices, which shall be furnished by the state fire warden, to be posted at their stations, and when a fire occurs along the line of their road, or on lands adjacent thereto, for which fire they are responsible, they shall concentrate such help and adopt such measures, as shall most effectually arrest its progress. The state fire warden, or his assistant, whenever it shall appear necessary, shall inspect the right of way of any railroad company for the purpose of ascertaining whether the provisions of this section have been complied with. Any person wilfully failing to comply with the requirements of this section shall be deemed guilty of a misdemeanor and shall be punished, upon conviction, by a fine of not less than fifty nor more than five hundred dollars, or by imprisonment in the county jail not exceeding one year, or by both such fine and imprisonment. Any corporation by its officers, agents or employes, wilfully violating the provisions of this section shall be liable to a fine of not less than fifty dollars nor more than five hundred dollars for each

and every such violation, to be collected in a civil action in the name of the state.

**Civil liability for forest fires.** SECTION 18. In addition to the penalties provided in the preceding sections of this act, the United States, the state, the county or private owners, whose property is injured or destroyed by such fires, may recover, in a civil action, double the amount of damages suffered, if the fires occurred through wilfulness, malice or negligence. Persons or corporations causing fires in violation of this act shall be liable to the state in an action for debt, to the full amount of all damages done to state lands and for all expenses incurred by the towns fighting such fires.

**Criminal action; forest trespass.** SECTION 19. Every person who unlawfully and wilfully cuts, injures or destroys any kind of wood or timber standing, lying or growing upon the lands of another, or of the state, or of the United States, or upon any public highway, or unlawfully and wilfully injures or destroys or carries away any of the products of such wood or timber lands is guilty of a misdemeanor, and upon conviction shall be fined not less than \$25 nor more than \$1,000 or be imprisoned not less than fifteen days nor more than three years, or by both such fine and imprisonment.

**Civil liability for forest trespass.** SECTION 20. In addition to the penalties provided in section 19 for wilful trespass on forest lands, the state, the county or the private owners, upon whose lands the wilful trespass was committed, may recover in a civil action double the amount of damages suffered. This section shall not apply to the cutting of wood or timber from uncultivated woodland for the repair of a public highway or bridge upon or adjacent to the land.

**Disposals of moneys from management of state forest reserve.** SECTION 21. All moneys received from the sale of wood, timber, minerals or other products, and from the sale of state forest reserve lands, and penalties for trespass thereon, as hereinbefore provided, except when otherwise disposed of by constitutional provision, shall be paid into the state treasury and shall constitute a forest reserve fund which shall be disbursed only for the purchase of lands to be added to the state forest reserve and for the improvement and protection of said reserve and for the employment of the necessary assistance therefor, as hereinbefore provided, by or upon the order of the state forester, with the approval of the state board of forestry.

**Appropriation.** SECTION 22. There is hereby appropriated out of any funds in the state treasury not otherwise appropriated an annual appropriation of nine thousand eight hundred dollars to pay the annual salaries provided by the terms of this act, and for carrying out the

provisions of this act. If all of said sum be not expended in any one year the balance not so expended may be used for the purpose aforesaid in any subsequent year.

SECTION 23. Paragraph 18 of section 1038; sections 1469, 1470, 1471 and 1816a, Wisconsin Statutes of 1898; sections 7 and 9 of chapter 432, laws of Wisconsin of 1901; chapter 450, laws of Wisconsin of 1903, and all acts and parts of acts inconsistent or in conflict with the provisions of this act are hereby repealed.

SECTION 24. The repeal of said sections and acts shall not affect any act done or right accrued or established, or any proceeding, suit or prosecution had or commenced in any civil or criminal action or proceeding previous to the time when such repeal shall take effect; but every such right or proceeding shall remain as valid and effectual as if the provision so repealed had remained in force.

SECTION 25. This act shall take effect and be in force from and after its passage and publication.

The two following sections, statutes of 1898, were not repealed and form an important part of the forestry law:

Section 4405a, statutes of 1898, provides as follows: Whenever the fire warden of any town becomes convinced that a dangerously dry time exists in its vicinity, and that it is imprudent to set fire on any land, he shall post or cause to be posted, a notice in three public places in such town forbidding the setting of any such fire therein, and after the posting of such notices no person shall set any fire upon any land in said town, except for warming the person or cooking food, until written permission has been received from one of the fire wardens of said town. All persons who start camp fires shall exercise all reasonable precautions to prevent damage therefrom, and shall extinguish the same before leaving them. Every person violating any provision of this section shall be punished by a fine of not more than \$50 or by imprisonment in the county jail not more than six months for each offense.

Section 4406, statutes of 1898, provides as follows: Any person who shall build a fire on any lands in this state not his own or under his control, except as hereinafter provided, shall before leaving the same, totally extinguish it, and upon failure to do so shall be punished by a fine not exceeding \$100 or by imprisonment in the county jail not exceeding one month, or by both such fine and imprisonment. Any person who shall negligently or wilfully set fire to or assist another to set fire on any land, whereby such land is injured or endangered or shall wilfully or negligently suffer any fire upon his own land to escape beyond the limits thereof, to the injury of the land of another, shall be punished as hereinbefore provided and be liable to the person injured for all damage that may be caused by the fire.

## CHAPTER 31, LAWS OF 1907.

AN ACT to repeal chapter 181 of the laws of 1903, entitled, An act to authorize Alwin A. Muck, of the town of Brule, Douglas county, Wisconsin, his heirs, associates, and assigns, to build and maintain a dam across the Brule river, in Douglas county, Wisconsin, for the purpose of improving the navigation of said river and creating hydraulic power for the operation of machinery and for other lawful purposes.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

**Repealed.** SECTION 1. Chapter 181 of the laws of 1903 is hereby repealed.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

## CHAPTER 96, LAWS OF 1907.

AN ACT to create sections 1494—121 to 1494—124, inclusive, statutes of 1898, providing for the appraisal of and sale to the United States of certain lands in the Indian reservations of this state.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. There are added to the statutes of 1898 four new sections to read: Section 1494—121. The state board of forestry of Wisconsin are hereby authorized in their discretion to cause an appraisal to be made of all state lands and the timber thereon which are included within any of the several Indian reservations in Wisconsin and to pay for said appraisal from the forest reserve fund.

Section 1494—122. The results of said appraisal shall be reported by the state forester to the state board of forestry and to the commissioners of public lands of this state.

Section 1494—123. When said appraisal is completed the said commissioners of public lands are hereby authorized to convey all the right, title and interest of the state therein to the United States if the United States within a reasonable time shall authorize the payment to the state of Wisconsin of the full amount found by said appraisal to be the value of said lands and the timber thereon.

Section 1494—124. All moneys received for said lands and timber thereon from the United States shall be paid into the state treasury and, except when otherwise disposed of by constitutional provision, shall constitute a part of the forest reserve fund, which part shall be disbursed only for the purchase of lands by the state to be added to the state forest reserve.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

#### CHAPTER 97, LAWS OF 1907.

AN ACT to amend section 257, of the statutes, relating to lease of swamp lands.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. Section 257, of the statutes, is amended to read: Section 257. The town board of supervisors in any town or portion of a town south of town 34 may lease, for the purpose of cutting grass or picking cranberries therefrom, for the term of one year but subject to termination on sale thereof, any swamp lands in such town or portion of a town on which marsh hay may be cut or cranberries picked, for such cash price as they may determine; but it shall not be lawful to cut any timber or do any waste thereon. All moneys received on any such leases shall be added to the drainage fund of the town.

SECTION 2. This act shall take effect and be in force from and after its passage and publication.

#### CHAPTER 143, LAWS OF 1907.

AN ACT to create sections 207 to 210, inclusive, statutes of 1898, relating to the sale of public lands.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. There are added to the statutes of 1898, four new sections to read: Section 207. All public lands not heretofore offered for sale shall, from time to time, in the discretion of said commissioners, be offered for sale at public auction as hereinafter provided; and no such lands, except mortgaged lands bid in by the state, shall be subject to private entry until they shall have first been offered for sale at public auction. All such sales shall be made at such times and

public places as said commissioners shall designate; and they shall, previously to any such sale, cause a notice thereof, specifying the time and place of such sale, to be published once in each week for six successive weeks in one newspaper printed in the county where such lands are situated; but if there be no such newspaper, then in the newspaper printed nearest to the place where such lands are situated. Said commissioners may, at any time when in their judgment the public interest can be best subserved thereby, withdraw any public lands from sale and withhold from sale all or such portions thereof as in their opinion it may not be advantageous to sell, and for so long a time as in their opinion will be most beneficial to the funds to be derived from such sale; provided that when reoffered the lands so withdrawn shall first be offered at public sale in the manner prescribed by law. The appraisal of the public lands heretofore provided for by law is hereby fixed as the minimum price of said lands, provided, that the commissioners of public lands may, by order in their discretion, whenever said lands or any part thereof shall have become enhanced in value, or for other cause, fix an increased price upon such lands. No such change in price shall affect any bona fide application for the purchase of lands filed immediately prior to such change.

Section 208. At the time and place specified in such notice said commissioners shall commence the sale of such lands as are then to be sold by them, and shall continue the sale from day to day (Sundays excepted) between nine o'clock in the forenoon and the setting of the sun, so long as shall be necessary. The order of such sale at auction shall be to begin at the lowest number of the sections, townships and ranges in each county and proceed regularly to the highest, until all then to be sold are offered for sale. Each lot or tract of such lands then to be sold shall, except as provided in the preceding section, be offered separately at the minimum price as fixed by law, and shall be cried long enough to enable any one to bid who desires; and if the minimum price or more be bid, such lot or tract shall be struck off to the highest bidder; but if such price be not bid the same shall be set down unsold.

Section 209. Sales of all public lands shall be made for cash only, to be paid at time of sale.

Section 210. Every purchaser of any lot or tract at any sale as aforesaid shall pay the amount of the purchase money required by the terms of sale to be paid in hand immediately after having bid off the same; and if he shall refuse or neglect to so pay the lot or tract so bid off by him shall again be offered for sale; and the purchaser shall, for such neglect to pay, forfeit twenty-five dollars for each lot or tract so bid off by him, which the commissioners shall, in the name of the

state, cause to be immediately sued for and collected, and when collected paid into the school fund.

No more than one hundred and sixty acres shall be sold to any one person. Every person having bid in any such lands at a public sale or making application for the purchase thereof at private sale shall, before such sale is made, make and file with the commissioners of public lands, or their agent making such sale, the following affidavit:

State of Wisconsin, }  
..... County, } ss.:

..... being duly sworn, on oath says that he is a resident of the county of ..... and state of .....; that he is desirous of purchasing..... (description of lands)..... situated in the county of.....and state of Wisconsin; that the public lands of this state, sold by it since the fifteenth day of October, A D. 1903, now owned by the affiant, together with the lands hereinbefore described, do not exceed one hundred and sixty acres; that he has no agreement or understanding and is under no contract, express or implied with any person, copartnership or corporation, for any sale, transfer or conveyance of said lands, now or at any future time, bona fide mortgages for raising some part of the purchase price excepted; and that he has not been engaged or instrumental, directly or indirectly, in inducing any person or persons to remain away from or to refrain from bidding at the last public sale at which said lands have been or are being offered.

.....  
Subscribed and sworn to before me this.....day of  
....., A. D. 19.....  
.....

SECTION 2. Nothing in this act shall be construed as in any manner affecting the provisions of section 3 of chapter 264 of the laws of 1905.

SECTION 3. This act shall take effect and be in force from and after its passage and publication.



## CHAPTER 335, LAWS OF 1907.

AN ACT to authorize Wisconsin Valley Improvement company to construct, acquire and maintain a system of water reservoirs located on the tributaries of the Wisconsin river north of the south line of township thirty-four (34) north, for the purpose of producing a uniform flow of water in the Wisconsin river and its said tributaries, and thereby improving the navigation and other uses of said streams and diminishing the injury to property both public and private.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. Subject to the supervision and control hereinafter provided for, authority is hereby granted unto Wisconsin Valley Improvement company, in order to promote the purposes hereinafter set forth, to create, construct, acquire, maintain and operate a system of water reservoirs located in or along the Wisconsin river at points north of township forty (40) north, of range ten (10) east, and in or along any or all of the direct or indirect tributaries of the Wisconsin river that discharge into said river at any point north of the south line of township thirty-four (34) north, in this state, excepting that part of the Eagle river and lakes lying between the point where Eagle river enters Cranberry lake, in section thirty-one (31), township forty (40) north, of range eleven (11) east, and the Wisconsin river, and for that purpose said grantee may construct, acquire and maintain all such dams, booms, sluiceways, locks and other structures in, along or across any and all of said tributaries, not above excepted, and the said portion of the Wisconsin river, as may be necessary or reasonably convenient to accomplish the purposes of this grant, and may clean out, straighten, deepen or otherwise improve any of said tributaries, in order to improve the navigation thereof and of said Wisconsin river and prevent injury to property bordering on said waters. All franchises, other than corporate franchises, and all riparian rights and rights of flowage, either perfected or inchoate, acquired by purchase or grant, by any person or by any corporation organized to improve the navigation for any purpose, of either of said Wisconsin or Tomahawk rivers or any of their tributaries, not above excepted, shall be and hereby are made assignable to the Wisconsin Valley Improvement company, and shall be of the same force and effect in the possession and ownership of such assignee to accomplish the purposes of this act as the same may be before assignment to accomplish their original purpose. But this act shall not amend or repeal chapter 532 of the laws of 1887, nor chapter 252 of the laws of 1889, nor chapter 483 of the laws of 1905, nor chapter 26 of

the laws of 1903, nor any amendment thereof, nor abridge the rights, powers or duties conferred by said acts, nor authorize the taking by the Wisconsin Valley Improvement company, by the power of eminent domain, of any property used under or pursuant to said acts, nor any other property devoted to public uses; except that the dam authorized by and now maintained under said chapter 532 of the laws of 1887 may be raised, or a new dam or dams which are hereby authorized, may be constructed and maintained, in and across the Eagle river between Long and Cranberry lakes at any convenient point or points in townships thirty-nine (39) and forty (40) north, of range eleven (11) east, so as to raise and hold the water in Long lake aforesaid six inches, and no more, higher than the high water mark to which the water has been customarily raised and held by means of said present dam; provided, however, that between May 1st and the succeeding November 1st of each year the waters shall not be drawn down in Long lake more than eighteen (18) inches below said present high water mark as established by said dam now constructed and maintained, and provided further that said Wisconsin Valley Improvement company shall prior to June 1st, 1909, by such dam or dams, and by locks, marine slides or other safe and convenient means, make and thereafter maintain the Eagle river between said Long and Cranberry lakes navigable for the safe and convenient passage of boats of all kinds and sizes up to and including boats fifty feet in length and of twelve foot beam and drawing five feet of water. Said Wisconsin Valley Improvement company shall have the right to charge and collect reasonable and uniform tolls for the passage of boats through and over said works proportioned to the size of the boat, not, however, exceeding in the aggregate the actual cost of the care, maintenance and operation of said locks, marine slides or other means of passage.

SECTION 2. The said authority is granted for the purpose of producing as nearly a uniform flow of water as practicable in the Wisconsin and Tomahawk rivers through all seasons by holding back and storing up in said reservoirs the surplus water in times of great supply, and discharging the same in times of drought and a scarcity of water, and thereby, and by other means, improving the navigation of said Wisconsin and Tomahawk rivers throughout their entire length, for boats, barges and other water craft, and for the running, driving, rafting, booming, storing, sorting and delivering of logs, timber and lumber and other forest products, and for the purpose of improving the usefulness of said streams for all other public purposes, and of diminishing the damage and injury by floods and freshets to property, both public and private, located along said waters. It shall be the duty of said Wisconsin Valley Improvement company to so manage, operate and maintain all of its said reservoirs and other works that the purposes aforesaid shall be accomplished to the greatest practicable extent and so that

as nearly a uniform flow of water as practicable shall be maintained at all times and at all points on the said Wisconsin and Tomahawk rivers, and during the times when it may be found to be impracticable to maintain at the same time such uniform flow in the Wisconsin river, both below the north line of Lincoln county and above the same line, the portions of said streams above said line shall be given the preference.

SECTION 3. For the purpose of creating, acquiring, maintaining and operating the dams and other works, authorized as aforesaid, and subject to the supervision and control hereinafter provided for, the Wisconsin Valley Improvement company excepting as herein otherwise excepted or provided, is hereby authorized to take and use any lands, riparian or other rights, that may be required for the creation, construction and maintenance of any and all reservoirs, dams and other structures and improvements that may be necessary to accomplish the purposes of this act, and whenever it cannot agree with the owner or owners of any such required lands, or other property, for the purchase thereof and for the compensation to be paid therefor, the said Wisconsin Valley Improvement company may acquire title to any such lands and other property above specified, or the right to use same for said purposes, by the exercise of the power of eminent domain under and in pursuance of sections 1777a, 1777b, 1777c and 1777d of the Wisconsin statutes of 1898 and the laws amendatory thereof and supplemental thereto, but the said company shall have no right to take or enter into possession or overflow any of the property condemned until it shall have first paid in the manner provided by section 1777c, the damages awarded.

And in case the possession or use of any such property shall be obtained by said Wisconsin Valley Improvement company, before acquiring the title thereto or the right to use thereof by purchase or condemnation, the owner or owners of the same property shall have the same right to institute proceedings for condemnation thereof and ascertainment of damages to be paid, as is granted by the aforesaid statutes relating to the exercise of eminent domain. In case any lands of the state of Wisconsin be required to be taken or overflowed for any of the purposes of this act the railroad commission of Wisconsin shall appraise and fix the damage to be caused by such taking or overflow, and the amount thereof shall be paid into the state treasury by the Wisconsin Valley Improvement company before the taking or overflow shall occur.

SECTION 4. In case said Wisconsin Valley Improvement company shall improve any navigable tributary of the Wisconsin river not herein excepted or shall acquire the improvements or the control of the improvements of any river improvement company already operating on

any such stream and shall so keep in repair and operate the works as to render the driving of logs and other floatables to the mouth of such tributary reasonably practicable and certain, it may charge and collect reasonable and uniform tolls upon all such logs, timber and other floatables driven or floated on said stream, and shall have all of the rights and remedies granted to river improvement companies by section 1777 of the Wisconsin statutes, and all amendments thereof, including the right of lien therein provided for, and shall be charged with all the duties and obligations imposed upon such river improvement companies under like circumstances.

When said Wisconsin Valley Improvement company shall have created or acquired and maintained in successful operation water reservoirs in accordance with this act, of a capacity sufficient to store up in times of abundance and retain and discharge in times of scarcity two billion cubic feet of water that would not be so stored up and retained by nature it shall, subject to the supervision and control hereinafter provided for, be entitled to charge, collect and receive reasonable and uniform tolls from the owner or owners or lessee or lessees of each and every improved and operated water power located upon the Wisconsin river, or any tributaries thereof, below any said reservoirs and benefited thereby, but not exceeding in the aggregate of all its revenues sufficient to pay all reasonable costs of operation and maintenance and a net annual return of six per cent on the cash capital actually paid in on stock subscriptions to the grantee. Said tolls shall be semi-annually fixed, ascertained and determined by the railroad commission of Wisconsin on or about the first day of July and the first day of January of each year, for the six months' period preceding each of said dates. Said tolls shall be fixed in proportion to the benefits conferred by the reservoir system upon each of the improved and operated water powers aforesaid. It shall be the duty of the grantee to employ competent hydraulic engineers to be selected by the railroad commission of Wisconsin to assist in determining the tolls to be charged as aforesaid and the expense thereof shall be treated as a part of the cost of maintenance and operation of said works. If any such improved water power be operated by a lessee or lessees under lease or contract made prior to the enactment and publication of this act, then such lessee or lessees shall be chargeable with the payment of such tolls; otherwise the same shall be paid by the owner or owners of the water power. Each water power liable to tolls as above provided which shall be operated two months or more during any six months' toll period shall be subject to tolls for the whole of the same period; otherwise no tolls for that period shall be chargeable.

SECTION 5. On or before June 15th and December 15th of each year, said Wisconsin Valley Improvement company shall lay before the

railroad commission of Wisconsin a statement showing all expenditures made or necessary to be made for the next six months' period next preceding July 1st and January 1st respectively of each year for maintenance and operation of such reservoir system, all capital stock of said company issued and then outstanding, the cash capital actually paid in, the storage capacity and location of each reservoir, and all reports and data obtained from engineers employed as provided in section four of this act and such other information and statements as the commission shall require, together with a recommendation of the amount of tolls necessary to pay such cost of maintenance and operation and a net return of six per cent. per annum on the capital invested, and a recommendation as to the apportionment thereof against the owners or operators of improved powers in accordance with said section four. The railroad commission shall, thereupon, give to each water power operator proposed to be charged with tolls ten days' notice by mail of the amount of tolls recommended to be charged against him and of the time when and place where the railroad commission will hear objections to the proposed tolls. The railroad commission shall at the time appointed hear all objections made and may take evidence and make or cause to be made independent investigation of the validity of the same, and may adjourn, from time to time, and shall, as soon as practicable, on or about July 1st and January 1st of each year, determine and certify the amount of tolls to be collected from each water power operator for the period under consideration, and such tolls shall, thereupon be due and payable to the Wisconsin Valley Improvement company.

Any person in interest being dissatisfied with any order of the commission authorized to be made under this act, may commence an action in the circuit court of the county where the property affected is located, against the commission as defendant to vacate and set aside any such order within sixty days from the date of the mailing to such person of a copy of such order by the commission, on the ground that such order is unlawful or unreasonable, in which case the complaint shall be served with the summons. The commission shall immediately notify the said company by mail of the service of said complaint. Within twenty days after the mailing of such notice, to said company, the said company or said commission shall file its answer to said complaint and said action shall be at issue and stand ready for trial the same as any other action.

In all trials under this section the burden of proof shall be upon the plaintiff to show by clear and satisfactory evidence that the order of the commission complained of is unlawful or unreasonable as the case may be. Every party to said action, within sixty days after the service of a copy of the order of judgment of the circuit court may appeal to the supreme court.

No tolls shall be levied or used to pay for any part of the original construction or purchase or betterment of the reservoir system. The amount of such tolls shall be a lien upon the water power, dam, franchises and flowage rights of the person or corporation chargeable with such tolls and in case such tolls shall not be paid when due the person or corporation entitled to collect the same, shall be entitled to sue for and collect the same, by an action at law, or by a suit in equity for the foreclosure and enforcement of said lien, and for sale of the property affected thereby pursuant to such judgment of foreclosure.

SECTION 6. No dam or reservoir not now in existence or heretofore authorized shall be constructed or created until the plan therefor showing the form and location of the dam and a description of the lands to be overflowed thereby be first submitted to the state board of forestry and approved thereby, after first giving reasonable notice and opportunity to be heard, to all persons interested, by publication in one or more newspapers most likely to give such notice, or such other notice as the board shall deem advisable; nor shall any petition be filed for the condemnation of any property for the purposes of this act without first having attached thereto the approval in writing of said board. Said board shall cause the height to which the water may be raised by any dam to be marked by permanent monuments and bench marks and shall have supervision and control of the times and extent of the drawing of the water from the reservoirs, and the power to compel the maintenance of all reservoirs, established. They shall have authority to employ at the expense of said improvement company hydraulic engineers and other persons to assist them in obtaining the information necessary to a proper discharge of their duties, such expense to be treated as part of the cost of construction or maintenance and operation of the reservoir system. No capital stock of said improvement company shall be issued until the proposed issue thereof shall have been submitted to the railroad commission of Wisconsin and said commission shall have ascertained, determined and certified that the proposed issue will be in consideration of money or labor or property estimated at its true money value actually received by said company, equal to the par value thereof, and it shall be the duty of the said commission to act promptly on any such proposition submitted. The money received by said company upon account of capital stock shall be used only in payment of the original cost of purchase, construction or betterment of the reservoir system and of the work preliminary thereto and necessary to prepare for or to determine upon the same; and all tolls collected as hereinbefore authorized shall be applied only to the payment of cost of maintenance and operation of the system and payment of the net return on capital above provided for; to the end that the capital stock shall be maintained at par value at all times.

SECTION 7. All dams erected or acquired and maintained by the grantee shall be subject to all of the requirements of the statutes now in effect, and all that may be hereafter enacted relating to the providing of good and sufficient fishways in said dams, and shall be equipped with all necessary slides, chutes, guide booms and piers for the passage of logs and timber over or through the same.

SECTION 8. This act is hereby declared to be a public act and for the accomplishment of public purposes, and shall be favorably construed to the accomplishment of said purposes.

SECTION 9. The right is hereby reserved to the legislature to repeal or amend this act at any time; in case the Wisconsin Valley Improvement company shall not by the first day of January, 1909, have in operation reservoirs of the storage capacity of at least two billion cubic feet of water, then the rights and privileges granted by this act shall cease. The state of Wisconsin shall have the right at any time whenever it may have the constitutional power, to take over to itself and become the owner of all reservoirs and other works and property acquired by the Wisconsin Valley Improvement company, pursuant to this act, by paying therefor the cash capital actually paid on the capital stock of said company theretofore lawfully issued and outstanding or the actual value of the physical properties so taken over and without any allowance for franchises or good will of the business, and if such actual value cannot be agreed upon between the state and such owner, then the same shall be determined by the railroad commission of Wisconsin.

SECTION 10. This act shall take effect and be in force from and after its passage and publication.

#### CHAPTER 406, LAWS OF 1907.

AN ACT to amend section 160f, of the statutes, as amended, relating to the state funds and interest thereon.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. Section 160f, of the statutes, as amended by chapter 346, laws of 1901, is amended to read: Section 160f. Every state depository shall, on the first day of each month, and oftener when required, file with the secretary of state a sworn statement of the amount of public moneys deposited with it, and shall within ten days after the first day of each January, April, July and October make a full statement of all deposits and payments of state moneys during the preceding quarter, together with a computation and statement of the interest earned thereon, computed upon the daily balance on deposit,

which interest shall thereupon be added to and become part of the deposit balance; such statement shall be accompanied by an affidavit of the president and cashier of such depository to the effect that it is in all respects true and correct, and that, except for the interest therein credited, neither said depository nor any officer, agent or employe thereof, nor any person in its behalf, has in any way whatsoever given, paid or rendered, or promised to give, pay or render to the state treasurer or to any other person any money, credit, service or benefit whatsoever by reason or in consideration of the deposit with it of any portion of the state moneys. Any person who shall make any false statement in any affidavit required by this section shall be guilty of perjury. The total interest by all depositories shall be apportioned by the state treasurer among, added to and become a part of the several funds as follows: That received from the general fund deposit to the general fund; that received from the school fund and the school income deposits, to the school income fund; that received from the university fund and the university income fund deposits, to the university income fund; that received from the normal school fund and the normal school income fund deposits, to the normal income fund; that received from the agricultural college fund and the agricultural college income fund, to the agricultural college income fund, that received from the forest reserve fund and the forest reserve income fund to the forest reserve income fund; according to the average amount of each such fund on hand the first day of each month.

#### CHAPTER 491, LAWS OF 1907.

AN ACT to create sections 1494—131 to 1494—135, inclusive, of the statutes, enabling the commissioners of public lands to acquire certain lands by purchase at tax sales and also certain tax title lands from the several counties in the state, and making an appropriation therefor.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. There are added to the statutes five new sections to read: Section 1494—131. The commissioners of public lands are hereby authorized to acquire lands north of town 33 for the forest reserve by purchase at tax sales, and other lands which may be hereafter acquired by any county under tax deeds and also lands which have been heretofore acquired by said counties and which remain unsold.

Section 1494—132. Whenever any county in this state north or partly north of town 33 is entitled to a tax deed upon a certificate of



sale upon any real property in this state, the county clerk of such county shall at the time of deeding such land to the county, file in the office of the commissioners of public lands a list of said lands and the date of the tax deed and the record thereof, together with a statement of the total amount due the county for taxes, interest, fees and expenses in acquiring such tax title. The lands so acquired by any such county shall not be sold by the county except to the state until one year after the taxing of such deed unless the commissioners of public lands shall give notice to said county that the state does not desire to acquire title thereto.

Section 1494—133. The commissioners of public lands may select any or all of such tax title lands within one year from the date of the recording of a tax deed thereon conveying the same to the county and shall pay therefor to the county not to exceed the total amount due said county for taxes, interest, and charges, together with interest not to exceed six per cent. from the date of such deed, and the county clerk of any county owning any such lands is hereby authorized and directed to execute a deed of such lands to the state of Wisconsin upon payment of the purchase price thereof as agreed upon by the state and county and the purchase price thereof shall be paid to the county treasurer of such county from the general fund of the state on the order of the commissioners of public lands after being audited by the secretary of state.

Section 1494—134. All statutes of limitations now or hereafter in force applicable to persons holding lands under tax deeds shall apply to the state and to the original owners of such lands acquired and actions may be brought against the state within the period provided by such statutes of limitation to recover such lands from the state, but in all such actions no costs shall be recovered against the state, and the original owner in case of recovery shall comply with the provisions of section 3087, of the statutes.

Section 1494—135. There is hereby appropriated out of any funds in the state treasury not otherwise appropriated, for the purpose of carrying out the provisions of this act, so much money each year as may be necessary therefor, not exceeding ten thousand dollars per annum.

## CHAPTER 592, LAWS OF 1907.

AN ACT to create sections 1494—101 to 1494—111, inclusive, of the statutes, providing for the exemption from taxation of certain lands planted to forest trees.

*The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:*

SECTION 1. There are added to the statutes eleven new sections to read: Section 1494—101. In consideration of the public benefit to be derived from the planting and cultivation of timber or forest trees, the owner of any tract of land in this state who shall set apart any specific portion thereof, not exceeding forty acres, for forest culture and plant the same with timber or forest trees, not less than 1,200 to the acre, shall be exempted from taxation for the period of thirty years from the time of such planting to timber or forest trees. Such exemption shall only be allowed on condition that said planted trees are kept alive and in a healthy condition. A statement or return of such plantings shall be made to the assessors when making the annual assessment, which returns shall be verified by the assessors and made the basis of such tax exemption. After said trees have been planted ten years, the owner may, without waiving the tax exemption, thin out the same so that not less than six hundred trees shall be left upon each acre.

Section 1494—102. A description and plat of all lands so planted shall be made in duplicate by the person applying for an exemption under the provisions of this act. One copy of said description and plat shall be filed with the town clerk of the town in which said land is located and the other copy of said description and plat shall be filed in the office of the state forester at Madison, on or before the 1st day of May of the year in which such exemption shall first be claimed.

Section 1494—103. The state forester is hereby authorized upon a written complaint being filed in his office that an exemption has been allowed on any plantation which has not been established or maintained in conformity with the provisions of section 1494—101 of this act, to determine whether the facts as set forth in the complaint are just and true, and if he shall find such complaint to be true he shall cancel such exemptions by filing a statement to that effect with the town clerk of the town in which such plantation is located and thereupon such plantation or so much thereof as is not so established and maintained, shall cease to be exempt from taxation until the same shall be replanted, and otherwise brought within the conditions of this act.

Section 1494—104. Said exemption, as provided in section 1494—101 of this act, shall not apply to any lands within two miles of the limits of any incorporated city or village, except upon written approval of the state forester, filed with the town clerk of the town in which such land is located.

Section 1494—105. The planting of a tract in forest trees in compliance with the provisions of this act and the filing of the description and plat of the tract so planted as provided in section 1494—102, shall be taken and deemed to be an acceptance by the person planting the same of the exemption privilege herein granted and of the conditions herein imposed upon such privilege; and, in consideration of the public benefit to be derived from the planting, cultivation and growth of such trees, the exemption of such land from taxation as herein provided shall be continued and is hereby assured, and the right to such exemption shall be inviolable and irrevocable as a contract obligation of the state, so long as the owner of the land so planted shall fully comply with and perform the conditions aforesaid, not exceeding said period of thirty years.

Section 1494—106. Any person intending to plant a tract of land in forest trees so as to secure the exemption privilege provided in this act, may have the value thereof determined in advance of such planting by the board of review of the town in which such tract is located. To procure such determination such person shall file in the office of the clerk of such town an application in writing containing a declaration of such intention, a correct description of the lands included in such tract and a request that the valuation thereof be determined by such board under the provisions of this act. Said board at their first meeting after the filing of such application shall proceed to determine such value. For that purpose they shall have authority to summon witnesses and take testimony under oath. They may require such lands to be viewed by one or more members of such board, and may adjourn the matter for such time as may be necessary in order to secure needful testimony or information respecting the value of such tract. If such board shall determine the average value of such tract to be not over \$10 per acre, such determination shall be final for all purposes of this act as to so much of such tract as shall be planted with forest trees in accordance with the requirements of this act within two years after such determination. But if the board shall determine such value to be more than \$10 per acre, the owner of such tract shall not be precluded from making a new application in any subsequent year.

Section 1494—107. The person filing such application shall be entitled to have the value of such tract determined without delay and before the said board shall be convened for other purposes by including in his application a request that such determination be so made and by depositing with the town clerk a sum sufficient to defray the

compensation of the members of said board for one day's attendance. The clerk shall thereupon fix a time at the earliest practicable date for a special meeting of such board to act upon such application, and shall give notice thereof to each member of said board, to be served by or at the expense of the applicant, in time to enable each member to be present. Such meeting shall be at the place fixed by law for the regular meetings of said board. The members of the board shall attend at the time and place designated in such notice and the board shall thereupon proceed to determine the value of such tract in the manner hereinbefore provided.

Section 1494—108. The town clerk shall make a record of the proceedings and determination of the board of review upon each application under the foregoing provisions and shall enter the same in the book containing the record of other proceedings of said board. The record of each determination shall include a description of the lands to which such determination relates. Such record shall be prima facie evidence of the facts therein stated, but failure to make the same shall not affect the validity of the action of the board.

Section 1494—109. When a tract of land shall have been planted in trees under the provisions of this act without previous determination of the value thereof as hereinbefore provided, the allowance by the assessor and board of review, or by the board of review, of the exemption thereof under the provisions of this act shall be deemed to include a determination by such board that the value of such land at the time of planting did not exceed ten dollars per acre; and such determination shall have the same effect as if made before such planting. If such exemption shall be disallowed, the action of the board of review disallowing the same may be reviewed by the state forester. To secure such review the claimant of such exemption shall file with the state forester an application in writing containing a description of the lands, a statement of the facts on which such exemption is claimed and of the disallowance thereof by such board, and a request for the review of such action by the state forester. Such application shall be accompanied by an undertaking on the part of the applicant with one or more sureties, approved by the chairman or clerk of the town, for the payment of the expense of said forester upon such review in case the exemption claimed shall be disallowed by him. The state forester shall thereupon give notice of a time and place within the town at which he will hear the matter and any testimony that may be offered in relation thereto. A copy of such notice shall be mailed to the chairman and clerk of the town and to such applicant at least ten days before the time fixed in such notice. Said forester may adjourn such hearing from time to time if necessary, by filing notice thereof with the town clerk. He may review and inspect the premises and may summon and examine witnesses under oath. His determination shall be made in

writing and filed with the town clerk as soon as practicable. Such determination upon written approval of the state tax commission shall be final, but if adverse to the claimant, it shall not preclude him from applying for like exemption in any subsequent year upon compliance with the requirements of this act.

Section 1494—110. After the exemption provided in this act has once been allowed it shall continue for the period specified in this act unless cancelled by the state forester as provided in section 1494—103.

Section 1494—111. Any corporation, co-partnership or other association of persons, as well as individuals, shall be entitled to the exemption rights and privileges herein provided, upon compliance with the conditions and requirements of this act.