

MINNESOTA'S TIMBER



This pamphlet was revised from "Forestry in Minnesota" by Minnesota Forest Service personnel and is intended for the use of those who desire to become better informed on forestry conditions and forestry programs of their state. Copies may be obtained by writing the Division of Forestry, State Office Building, St. Paul, Minnesota.

MINNESOTA'S TIMBER

Timber has played an important part in the making of a great state -- Minnesota -- and the future of the state will be greatly influenced by her forests.

Trees furnished the early settler with logs for his home, fuel for his comfort; and then as the settlements grew to villages, towns, and great cities, the timber industry and its products led all others in the state.

Throughout this development trees have been conserving soil and water, providing beauty spots for recreation, and shelter for our birds and animals.

The purpose of this pamphlet is to describe briefly Minnesota's timber resources as they once were; to trace the history of the early industry and its decline; to sketch conditions as they are now; and to outline a forest program for the future.

EARLY FORESTS

Thirty-one and a half million acres (sixty-two per cent of the area of the state) were originally forests. Today only two thirds of that area is forest land, and much of it has very little timber.

The original forest of Minnesota was divided into two sections; the hardwood forest and the evergreen (pine) forest. The hardwood forests, or the Big Woods as they were known to the pioneers, extended from the mouth of the Crow Wing River south to the boundary of the state and west to the prairies where tree growth was scarce even in the early days. The Big Woods contained white oak, red oak, black walnut, green ash, basswood, white elm, black cherry, cottonwood, sugar maple, hickory, and other hardwoods. They very closely resembled the hardwood forests found farther east. It was into this section that the settlers first came. Most of the hardwood forest was destroyed without ever playing an important part in the lumber industry. Much of it was burned to clear the land for farming. The farm woodlands of southern Minnesota are the remnants of these forests. According to the 1934 census (revised 1937) there are about five million acres in farm woodlands.

The North Woods, or evergreen forests, were larger. They extended from the Big Woods north to Canada and west to the prairies. Pines and spruce predominated; maple, birch, poplar, balsam, tamarack, and cedar were scattered through the region and occasionally formed more or less pure stands over small areas. Merchantable timber was composed mostly of a mixture of Norway pine, white pine, and spruce with the addition of jack pine on the poorer soils, the jack pine forming pure stands on very light sandy soil.

The timber of the North Woods was cut mostly by lumbermen. A few settlers went into the area before the timber was cut that they might sell their logs to the lumbermen. Many of the settlers, however, drifted into the cut-over lands following logging operations. Very little timber in the northern section was cut or destroyed for the purpose of land clearing; almost all of it went into lumber.

BOOM DAYS OF MINNESOTA LOGGING

The first sawmill in the state was not a commercial mill. It was built in 1821 at St. Anthony Falls to saw lumber for the building of Fort Snelling. The logs were cut in Dutchman's Grove on lower Rum River.

It was not until 1839 that the first commercial mill started operating at Marine-on-the-St. Croix. This mill was small, and a water wheel supplied the power. It ran for fifty years and sawed an aggregate of 197,000,000 board feet of lumber.

As the federal government completed treaties with the Indians, new territories were opened up to the logger. Five or six mills were built prior to 1844 in Stillwater, which then promised to be the largest city in the state. Franklin Steele built a mill in Minneapolis in 1847 and bought his logs from Chief Hole-in-the-Day for fifty cents a tree. From this start Minneapolis gained the leadership in the lumber industry.

The accidental breaking of a log boom at Stillwater pointed the way to southern markets, and log rafts began floating down the river to Winona, Minnesota, Dubuque, Iowa; St. Louis, Missouri, and other river towns.

Up to this time, logging was confined to the vicinity of large streams and sawmills were located only on rivers, since these were the only means for transporting logs from forest to mill. With the coming of the railroad, logging expanded into new territory back from the river. When a railroad first reached the Mississippi River at Prairie du Chien in 1854, Minneapolis had a population of about 8,000; by 1856 it had increased to 100,000. Duluth was linked by rail to Minneapolis in 1870, and mills were immediately established there. In 1878 the first mill was built at Cloquet, the city which later took the lead in the lumber industry away from Minneapolis and holds it to the present day. Other large mills were built at West Duluth, Carlton, Scanlon, Grand Rapids, Deer River, Cass Lake, Bemidji, Walker, Akeley, Cloquet, Virginia, and International Falls.

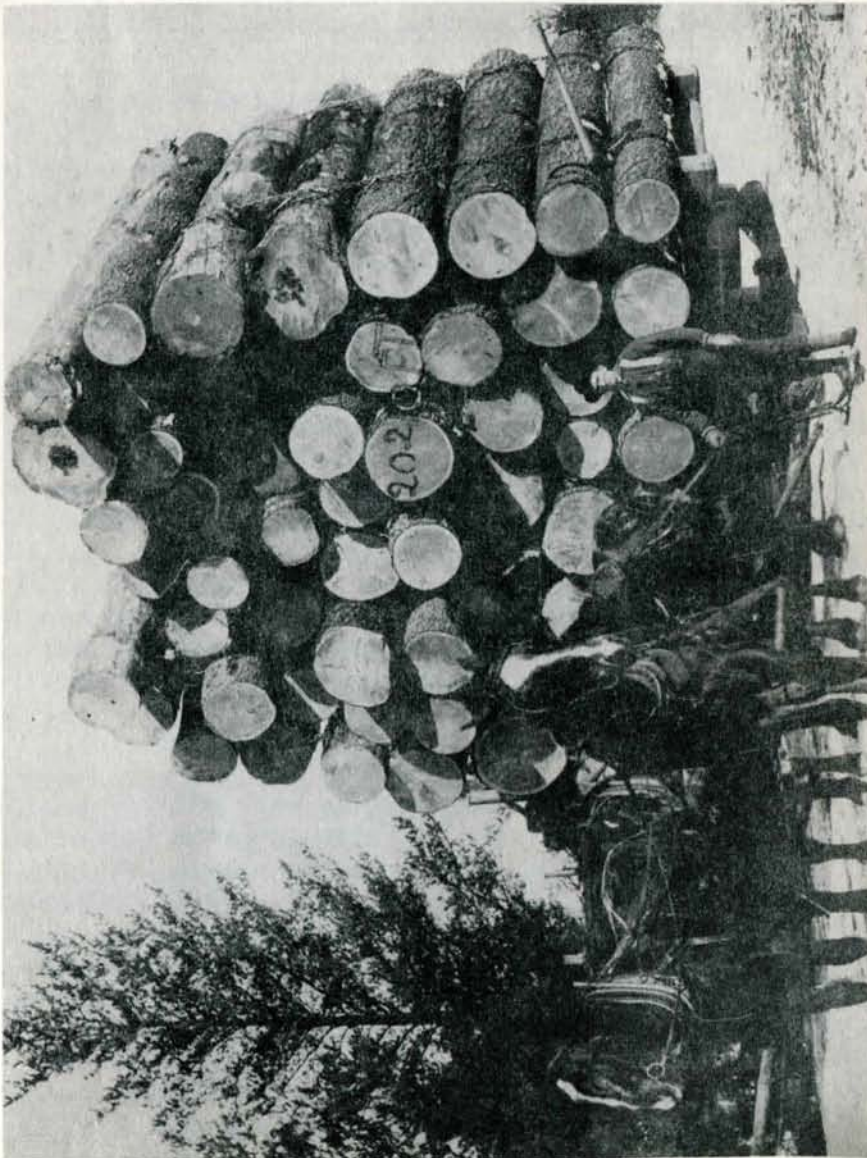
Mills sprang up wherever logs could be obtained. The "cut" jumped from one and one-half million board feet in 1843 to nine million feet in 1851; and forty-four million feet in 1857. By 1899 it had reached the enormous figure of 2,341,719,000 board feet.

The spruce forests soon attracted the attention of the paper industry, and the first paper mill was built at Cloquet in 1898. Others followed at International Falls, Brainerd, Grand Rapids, Sartell, and Little Falls; consequently, these towns became the centers of paper manufacturing. For many years nothing but newsprint paper was manufactured, and only spruce and balsam were used for this purpose. Later, sulphite mills were built at International Falls and Cloquet which made possible the use of other woods and the manufacturing of other products. The latest development is the new sulphite and soda mill at Cloquet where it is believed that paper from almost any kind of wood can eventually be manufactured.

THE DECLINE OF LOGGING

Minnesota's timber industry reached its peak in 1899; at that time it was surpassed only by that of Michigan and Wisconsin. But rapid as the rise had been, the fall was still more rapid. By 1924 the annual cut had fallen to 527,962,000 board feet, or three fifths of the state's annual consumption; and Minnesota ranked nineteenth among the states of the union in lumber production. Between 1837 and 1927 over 75,000,000,000 board feet of pine were taken out of the North Woods.

While the forests were so rapidly disappearing, the population was increasing; a population that, for the most part, was fairly well able to provide itself with good housing and to use timber in other forms. With this increased population came greater demands for lumber. The very best grades of pine lumber, available in almost unlimited quantities, sold in the early days for six to ten dollars a thousand board feet. Now much poorer grades of pine lumber sell for forty to one hundred dollars a thousand board feet, and much of the production is shipped out of the state



THE SITUATION IN MINNESOTA TODAY

Early loggers have been criticised severely for slashing down forests without regard for a future supply of timber. No doubt, they deserved some of this criticism; however, they had an argument for their side of the story. They said, "There is more timber here than the country can ever use; lumber is needed for home building and industry which will bring progress and a higher standard of living; therefore, it is only practical to supply the demand."

Today, lumbermen and the average citizen know that the early loggers were wrong about the future supply of timber.

A glance at our lumber yards today will disclose a surprising situation. Instead of the northern pine, which at one time constituted the entire stock in trade, we see eighty-five per cent of the stock made up chiefly of Douglas fir from the Pacific Coast and yellow pine from the south for which consumers are paying a freight charge which in many instances amounts to one-half the cost of the lumber. At the same time much of our own forest lands are idle and abandoned. It is only now that we are beginning to realize what the depletion of our forests is costing us and will continue to cost until we are again growing our own timber supply.

As a result of large logging operations and forest fires, the greater portion of the original forests has disappeared. Nevertheless, considerable timber remains which is estimated at 12,000,000,000 board feet; some of it is old growth; some is second growth. Exclusive of farm woodlands, there are 14,318,450 acres of forest land in northern Minnesota. The total farm woodland area of the state is 5,383,250 acres.

Many of the pine lands are being reforested through natural reproduction and planting. A large part of the area which was cut over and burned is either reproducing inferior species such as aspen and jack pine, or has no reproduction other than brush. This is where planting is needed.

When logging first started in the pine forests, only the choice logs were taken; but as the supply of these logs became scarce, the wood-using industry, out of necessity, developed means of utilizing inferior species; certain kinds of timber which were considered of no value in the early operations are selling today for greater prices than were received for the best pine in the original stands.

Logging and manufacturing methods have changed greatly since the early days. The large sawmills of Minnesota have disappeared. Today most of the lumber is being cut by small portable sawmills. There are between 1,000 and 1,200 of these in the state. The old logging methods are also history. The days of log drives are practically over. Nearly all the timber is hauled on trucks for long distances to manufacturing centers.

Our future forests will undoubtedly contain less white and Norway pine and produce more jack pine, tamarack, aspen, and other so-called inferior varieties because the growth of the latter is much more rapid. There is also an ever increasing demand for this type of timber.

The forests of eastern United States have been so depleted that more than half the lumber and other timber products now come from west of the Rocky Mountains. A large part of the timber used in Minnesota is shipped from this region. At the present rate of consumption there is possibly enough timber in the west to support the present rate of cutting there for fifteen to twenty-five years.

While the supply now in the west is being cut, we should encourage forest restoration in other parts of the country. Meanwhile, Minnesota must pay heavily for her short-sightedness in not acting sooner; she can avoid paying high freight rates on timber in the future by prompt action now.

Today, farm woodlands occupy eleven per cent of the entire area of the state and represent twenty-seven per cent of all the forest lands in Minnesota. According to the 1934 census, forest products cut and sold from farm woodlands ranked fifth among all other agricultural crops. The cash income from these products was \$2,037,000. Besides this income these woodlands furnished material such as firewood, posts, lumber, etc. for direct use on the farm amounting to \$5,336,000.

WHAT MINNESOTA MUST DO

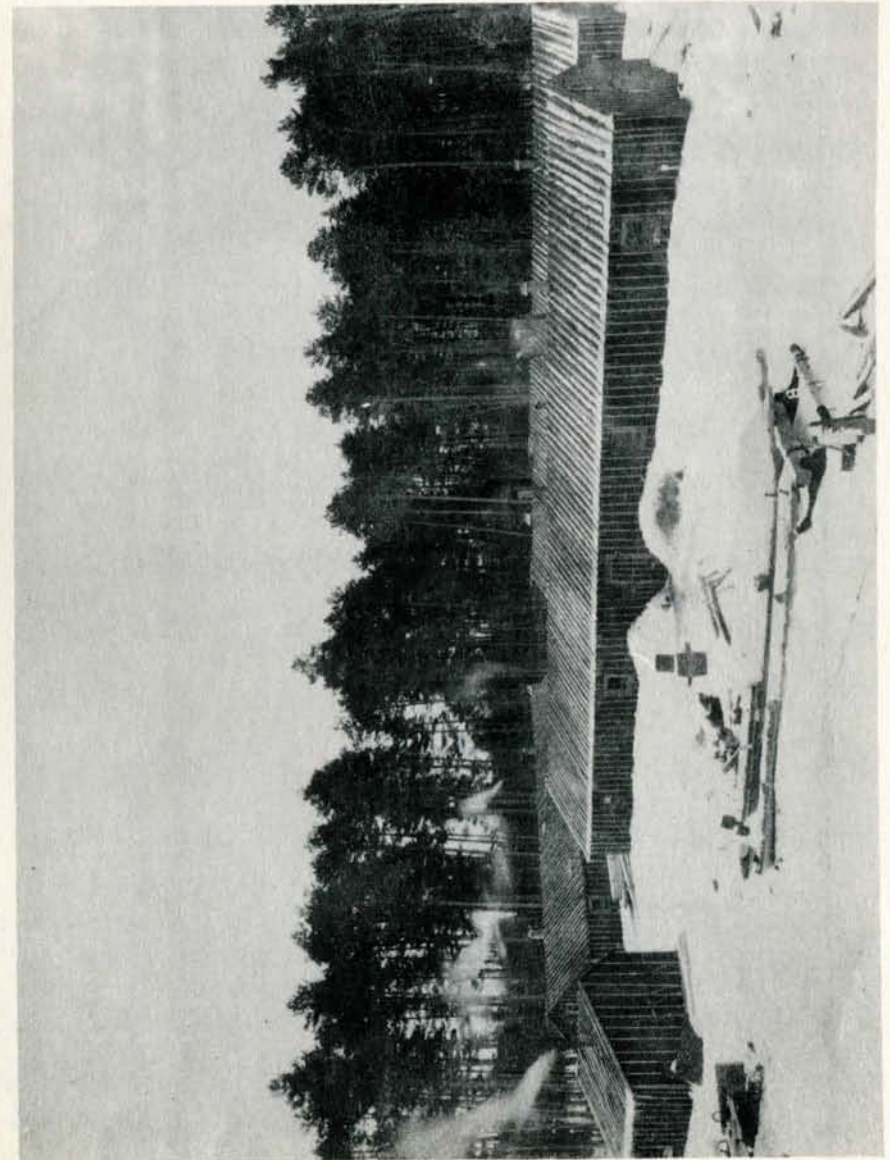
PLANTING

There are thousands of acres of cut-over lands scattered throughout the northern forest region which cannot produce a timber crop unaided for many decades. They should be planted as soon as possible. In addition to these forest lands there are several million acres of potential farm land which will not be brought under cultivation for a long time to come. At the rate land has been cleared during the past ten years, it will be more than a century before this type of agricultural land will be needed. Why let these acres lie idle in the meantime? Possibly, when farmers really need the land, there will be so many new uses for wood that they will find it more profitable to raise timber as a crop than farm produce.

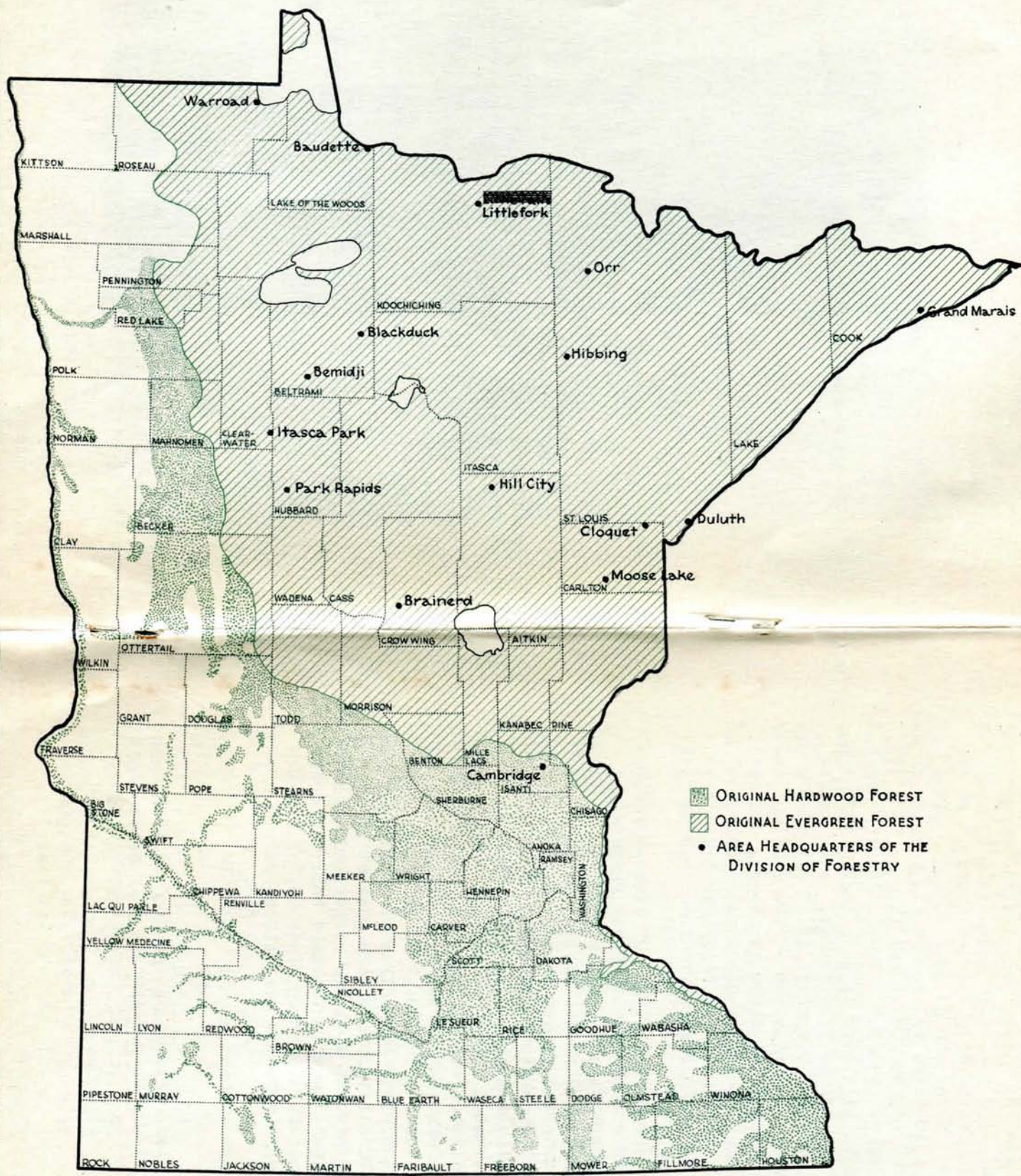
FIRE PROTECTION

If we are unable to plant these lands with trees, they certainly should be protected from fire and encouraged to produce a crop of natural timber wherever possible. With efficient management and sound policies governing the cutting and sale of timber, both privately and publicly owned, there can be no question of forest lands being able to produce enough timber for the needs of the state.

Fire protection is necessary if our forests are to be restored. Loss by forest fires must be greatly reduced. It is useless to establish forest planting or other improvements if there is considerable chance of their being destroyed by fire. Forest fires can be prevented!



Logging Camp in Minnesota



FOREST MAP OF MINNESOTA

Minnesota has a good forest fire suppression organization; but like all other organizations, it must be maintained and continually improved upon if we are to make progress. Under the present economic situation, the state is in a position to improve its present forest fire detection and prevention system through CCC, WPA, and other work relief agencies. These agencies are now actively engaged in such work as fire hazard reduction; the maintenance of present fire breaks, truck trails and foot trails, and the construction of new ones where needed; improvement and expansion of the look-out tower system; the construction of field warehouses and tool caches for housing fire-fighting equipment; and the construction and maintenance of telephone lines from look-out towers to their respective area headquarters.

Adequate appropriations for fire protection and an increase in the number of forest rangers and patrolmen can do much toward keeping fire out of the timber area; however, no patrol system can be devised which will eliminate all forest fires. People must be educated to help. When every citizen is trained to exercise care with the use of fire and feels under obligation to put out a fire whenever and wherever he sees it, there will be few big forest fires. Until this is achieved, our timber will continue to burn. It is not someone else's business; it is definitely the duty of every one of us. Regardless of appropriations, the success of efficient forest fire prevention is, to a large extent, dependent upon the cooperation and goodwill of the local people. Without this cooperation it is next to impossible to keep fires out of forest areas. ----- Everybody loses when timber burns!

FOREST MANAGEMENT

Nearly ten per cent of the land in Minnesota is in some form of public ownership. This percentage is increasing from year to year, due to reversion of lands through tax delinquency, and through land purchased by the federal government. The management of these holdings is one of the most important problems that we have today.

Lands which have reverted to the state through tax delinquency are held in trust by the state for the benefit of the taxing districts in which the lands are located. In order to get the greatest returns from these lands, the state and counties interested must cooperate in their management and development. Reverted forest lands can be managed cooperatively in the same manner and under the same plans as are made for developing and improving trust lands owned by the state. They probably should be managed as part of the state forests.

Before a workable management plan can be applied to forest lands, they must be classified as to their best uses.

Inventories of state lands and timber including tax reverted lands as well as trust fund lands, are being made by CCC camps, WPA workers, and the personnel of the forest service. Some of this work has been completed. On the basis of these inventories, definite plans for the restoration and development of state land and timber can be made. The lands best suited to agriculture or industrial purposes should be offered for sale and eventually placed on tax rolls. The remaining lands not suited to agriculture or industrial purposes should remain in public ownership and be developed for forest uses. Management plans for the restoration and development of forest lands must necessarily include improvement of fire protection; establishment of nurseries to produce planting stock for areas in need of planting; general improvement of the forest by cutting out undesirable trees and thinning stands of timber that are too crowded, allowing the better trees a chance to develop; and provision for laying out and constructing logging roads for transporting forest products. These plans should also include methods for logging the timber; showing the amount of timber on the land, its location, age, condition, when and how it should be cut, and the amount that might be cut annually without cutting more of the capital stock than the new growth will replenish. The present annual cut of timber from state land is from forty to fifty million board feet each year, but by proper handling of the forests, this amount could be doubled. Most of this development work could be done

through work relief projects, and in this way under-used land would give work to under-employed men; and a greater annual cut of timber on state lands would mean more jobs for people living in the forest area. Management plans should be prepared on a community basis with regard to the sale of timber, and only as much timber put on the market in the community area as could safely be cut in that area without violating the forestry principle of sustained yield. The land inventories should also give information as to other possible classifications, such as watershed protection areas, recreational regions, and wild life refuges.

CONSOLIDATION OF STATE OWNED FOREST LANDS

State owned lands within the present state forests are more or less scattered. In order to provide for more efficient and economic management, there should be a consolidation of lands within the boundaries of state forests. This could be accomplished most easily by exchanging lands with the federal government or private owners as permitted by the Land Exchange Law passed by the 1939 State Legislature. This law enables the state to trade with settlers living on poor land in isolated areas and give them an opportunity to relocate on better lands in more settled communities. The federal government does not own any lands suitable for exchange with the state but it may purchase lands in designated areas within state forests and exchange these for lands now owned by the state within the boundaries of national forests in Minnesota.

The Minnesota Land Exchange Law specifies that on lands to be exchanged, "..... there shall be reserved to the state all mineral and all water power rights in the said state lands." Also, "..... that the exchange program under this act will be conducted in a manner that will not materially decrease but rather which will increase the state's total holdings of timber and of water frontage desirable for public use and enjoyment."

PRIVATE FORESTS

There is a definite public interest in privately owned timber because much of this timber land protects watershed areas from erosion; helps conserve our water supply; and provides cover and refuge for wild life, in addition to furnishing raw material for industry. Therefore, the state should encourage the private timber owner to follow good forestry practices in cutting his timber by giving assistance in technical advice and by tax adjustment. Additional laws will be necessary to enable this to be done.

FARM FORESTRY

A large per cent of privately owned timber lands are in the form of farm woodlands. Many of these have been badly neglected and are in poor condition. The drought of the past few years has killed many of the trees, especially in the southern and western parts of the state.

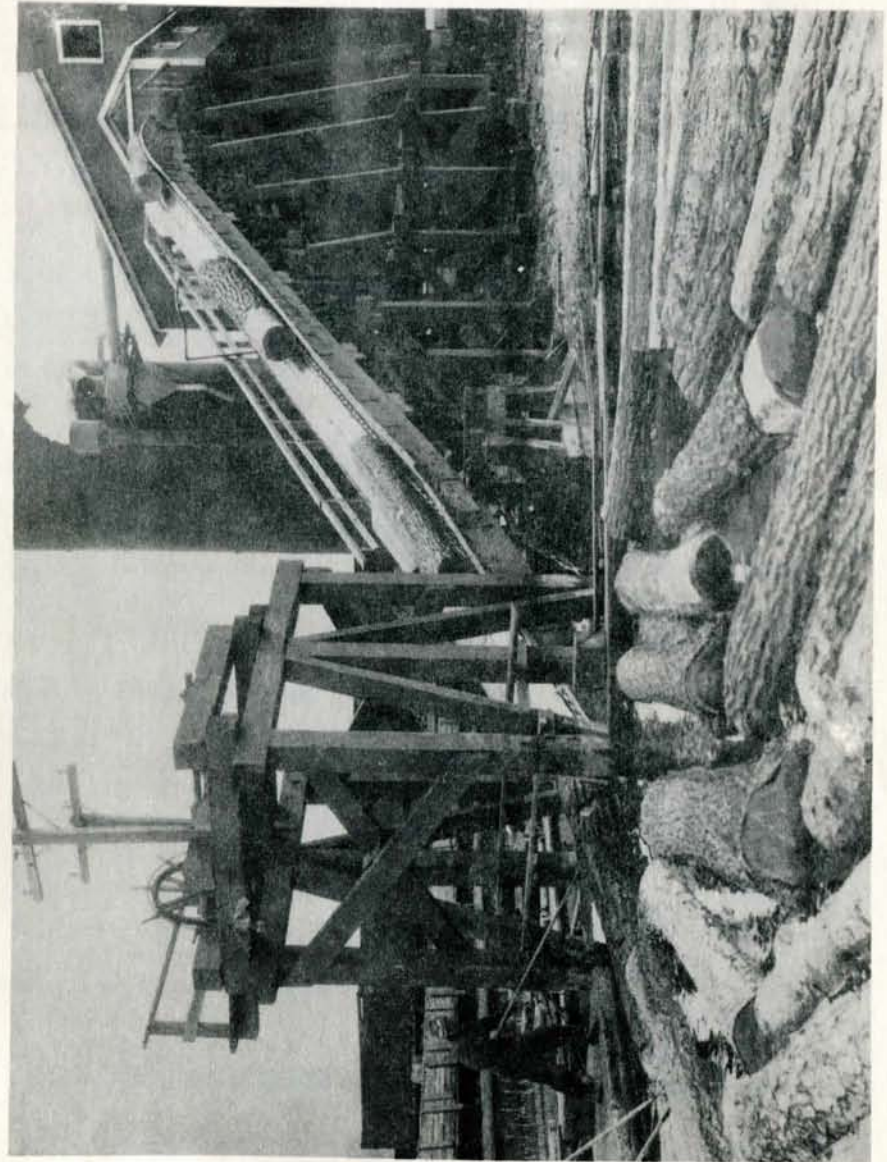
One of the chief reasons for unsatisfactory forestry practices on farm woodlands is the lack of understanding of forestry methods and the marketing of forestry products. Protection, educational aids, and field extension specialists should be available to woodland owners for better management of their timber and its marketing.

COMMUNITY FORESTS

Any well-rounded and coordinated forestry program must include community forests. There is a state law which authorizes cities and villages in Minnesota to acquire land for municipal forests by gift, purchase, or condemnation and to levy a tax to manage these forests. A few cities - St. Paul, St. Cloud, and Winona - have established municipal forests. The Gnesen School District near Duluth has started a school forest, the first to be recorded by the Minnesota Forest Service. With a few amendments to present laws, a broad community program can be put into effect.

REMEMBER ! THE STATUTES MAKE IT ILLEGAL

1. To cut timber without posting notices and notifying the Director of the Division of Forestry, except in the case of cutting fuel wood or in clearing land tenanted by an owner.
2. To clear a road bed or highway right-of-way without first notifying the Director of the Division of Forestry.
3. To dispose of slashing and debris except by direction of a forest officer, unless the ground is snow covered.
4. To cut, remove or transport living evergreens (Christmas trees and decorations) without a written permit signed by the owner of the land.
5. To remove, ship, transport, offer for sale, sell, purchase for re-sale, or have in possession for transportation or sale, any evergreen or coniferous tree unless an official tag is attached thereto, except nursery stock or trees cut or transplanted from nursery stock. Trees shipped out of the state require no tags where a \$200 permit has been purchased.
6. To cut timber on state owned land regardless of species or condition unless purchased as provided by law.



REVIEW QUESTIONS

1. What was the approximate original forest area of Minnesota?
2. Where was the large hardwood area located?
3. Where were the pine forests located?
4. What is the aggregate acreage of timber now in woodlands?
5. Did the original pine forests grow in clear stands of white and Norway pine?
6. How many acres of potential forest lands are there in the state today?
7. When was the first sawmill established in the state?
8. In what year was the first commercial sawmill established?
9. How many large sawmills are left in the state?
10. What is the main objection to having lumber shipped into the state from the west coast?
11. What is required to insure future forests in the state?
12. What is a person required to do before starting to cut timber?
13. Is anyone permitted to burn logging slash in a dry season?
14. Where are the paper mills in Minnesota located?
15. What aid should the state give to encourage private owners to develop their woodlands?
16. How much standing timber is there left in Minnesota?

17. Why is fire protection necessary in the development of a forestry program?
18. Why is the public interested in the regulation of private forest practices?

LIST OF REFERENCES FOR STUDY

Tree Planting a Part of Erosion Control - Extension Service. Bul. 166 - Extension Service, Iowa State College, Ames, Iowa - free.

How a Tree Grows - American Forest Association, Washington, D. C. - free.

Collecting Tree Seed, Press Btn. 161, A.E.S., Durham, N. H. - free.

Forest Planting Methods - State Conservation Commission, Madison, Wis. - free.

Relative Resistance of Tree Seedlings to Excessive Heat, USDA Btn. 1263, Supt. of Doc., Washington, D. C. - 5¢.

Waste - David Cushman Coyle - National Book Library, Washington, D. C.

Forest Nurseries for Schools, F. B. 423, USDA, Supt. of Doc., Washington, D. C. - 5¢.

American and the World's Wood Pile, 1928 - Circular No. 21, USDA, Gov. Printing Office, Washington, D. C. - free.

Christmas Tree Law, The - State Forest Service, St. Paul, Minn. - free.

Norway Pine in the Lake States - USDA - Btn. 139 - U. S. Forest Service, Washington, D. C. - free.

Our Minnesota Forests - Minn. Arrowhead Association, Duluth, Minn.

Our Native Conifers - University Farm - Bulletin Department, St. Paul, Minn. - free.

Idle Lands - Idle Men - H. C. Moser - Minnesota Resources Commission, State Office Bldg., St. Paul, Minn. - free.

Need for Farm Forestry - Zon and Cunningham - University Farm, St. Paul, Minn. - free.

Forestry and Lumbering - Perry and Slauson - Longmans Green and Company, New York City.

Rich Land, Poor Land - Stuart Chase - McGraw-Hill Book Company, New York.

Sunlight and Forest Growth - Tech. Notes 35 - Lake States Forest Experiment Station, University Farm, St. Paul, Minn. - free.

The Forest - USDA misc. Circ. 98, Supt. of Doc., Washington, D. C. - 30¢.

Trees and Tree Planting - P. O. Anderson - Webb Publishing Company, St. Paul, Minn. - 50¢.

Log Scaling and Timber Estimating, Jr. Ext. Btn. 39, Cornell University, Ithaca, N. Y. - free.

Timber Growing and Logging Practices in the Lake States, Dept. Bul. No. 1496, USDA, Washington, D.C. - free.

Forestry Primer, The - American Tree Association, Washington, D. C. - free.

Outline of General Forestry, An - J. S. Illick - Pub. Barnes - Noble, N. Y.

The Forest, A Handbook for Teachers, 1927 Circ. 98, USDA, Gov. Printing Office, Washington, D. C.

CCC Forestry - Supt. of Documents - Washington, D. C. - \$1.00.

The Division of Forestry calls upon all Minnesotans and visitors to co-operate in the wise use and protection of the state's forests.

REPORT ALL FIRES REGARDLESS OF SIZE TO NEAREST FOREST OFFICER OR LOCAL TELEPHONE OPERATOR, COLLECT.

Following is a list of towns in Minnesota in which ranger stations are located:

Baudette	Hibbing
Bemidji	Hill City
Blackduck	Itasca Park
Brainerd	Littlefork
Cloquet	Moose Lake
Duluth, 201 Folz Bldg.	Orr
Grand Marais	Park Rapids
Grand Rapids	Warroad

DIVISION OF FORESTRY
STATE OFFICE BUILDING
ST. PAUL, MINNESOTA

