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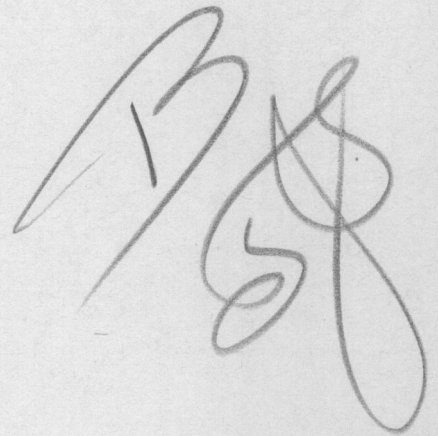
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FOREST DEPLETION IN THE UNITED STATES

By

Harold A. Rapraeger

INTRODUCTION

If the Nation Saves the Trees,
The Trees Will Save the Nation.

---Charles Lathrop Pack.

When the Pilgrim Fathers landed on our shores more than three-hundred years ago, our vast domain was largely covered with forests. It is of tremendous significance that these forests were used to aid in the rapid development of our nation from the embryo stage until we have become the greatest nation in the world. We are still dependent on our forests, and the story of our dependence on the forests is one that cannot be told too often. We have been blessed with an abundance of a very important resource, but abundance tended to breed neglect. We have had unlimited use of wood for hundreds of years, and the people of our country believed that our magnificent forests were inexhaustible.

Our great country is a world power today because of the fighting spirit of its pioneers backed by abundant resources of which the greatest was a great, easily accessible supply of timber. We are only stating a true fact when we say that our progress has been mainly due to the utilization of the vast forests which once stretched

from Maine to Florida, to the great timber areas of the Lake States, the important timber stands on the Rocky Mountains, and to the superb densely forested hills of the Pacific Coast. This timber was ever ready to aid in the development of the new frontier which was ever creeping westward until the limit of westward expansion was reached.

From the forests have come the materials needed in the building of pioneer homes and the development of their farms. Wood supplied by our invaluable forests have in truth been the backbone of our rapid development. Today our forests are giving direct employment to about a million wage earners who in turn furnish support for several millions of people. Timber is indeed a great resource, and it is still being used in hundreds of ways to maintain our high standard of living in spite of the fact that wood substitutes are replacing many of the uses for which only wood was formerly used.

The destruction of our forests have bred a race of people that are peculiar to this nation alone. Care must be taken to save them from the curse of peasantry. The people who are already in their teens, will manage to get along fairly comfortably even though no solution is found in our lifetime concerning the problem of forest depletion. Yet after all it will be our children who will suffer the penalty of an exhausted timber supply. It is a problem which cannot be solved in a day, and action must be taken during our lifetime if we are going to

have the necessary perpetual supply of timber.

The most serious factor of forest depletion is that it affects the national welfare in many ways. We have depleted our forests without heeding the lesson that many of the European countries have learned to their sorrow and at a great cost. We know that we are a great wood using nation, and proper steps must soon be taken to provide the future generations with this valuable resource or have them pay the penalty as many of the European countries had to pay.

Thus our forest history has been one of lavish use with consequently rapidly depleting timber supply. We have used our forests to make us a powerful nation, and have cut region after region until now we are beginning on the last region of all-the Pacific Northwest. We cannot hope to retain our supremacy without an adequate supply of natural resources or to maintain our high standard of living..

It has been said that we would have better forests today if we had not been blessed with abundant forests originally. If we had been a country without timber resources we would have realized long ago the great and important part that forests do play in the development of a nation, and that we would have long ago taken the proper steps to perpetuate and develop our forests. Instead of perpetuating our forests we have neglected them because the timber had always been so plentiful.

With proper care and supervision the forests of our country can be made to produce far more timber products than they produce now-far more, in fact, than they have ever produced before, and they can be kept productive forever. Our work is to build up and restore the productive capacity of our forest lands so that the coming generations will not feel the curse of a timber famine, and also to keep our nation foremost among the nations of the world.

TIMBER DEPLETION--THE PRESENT SITUATION

A good and continuous supply of timber and forest products is necessary for the safety and welfare of the United States both in times of peace or war. The beginning of the timber shortage is already here, and cannot but help grow worse in the decades to come. We are using our remaining forest resources between four and five times as fast as we are growing them. It can be readily seen that this great drain on our forests cannot last forever.

The original forests of the United States were estimated to be about 822,000,000 acres and to have contained 5200 billion board feet of timber. The greater part of this area has been logged or burnt over until today there are but 138,000,000 acres of virgin timber left, and the greater part of this is in country which is not readily accessible and profitable to log under our present economic setup. At the present time there is about 250,000,000 acres of forest land which is covered

with young growth of no commercial value at the present time, but which with proper care and protection will produce commercial timber within a few more decades.

In addition to the above forest area, there is about 100,000,000 acres of land which is barren and unproductive, but which is suitable only for the growing of timber. It is this great area of land which constitutes a great problem as this land is a dead loss to its owners and is a detriment rather than the asset that it would be if proper care had been taken of it. The evils resulting from such unproductive land are many, and this land constitutes a vital problem in our present industrial system.

Furthermore in addition to the rapid depletion of our remaining forest resources, there is a serious dislocation of our remaining forests. Three-fourths of the land of the United States lies to the east of the Great Plains, but this vast area wherein industrial development has been built largely on wood, contains but twenty-five percent of the virgin timber which is left and only forty percent of the merchantable stands. Thus seventy-five percent of the virgin timber lies in the states of the Pacific Coast and in the Rocky Mountain region. One-half of the timber remaining in the United States is in the three States bordering the Pacific Ocean. Thus the timber using States of the East are now dependent for their timber on these timbered States of

West, or the pine forests of the South.

The greater part of the forest resources of the eastern part of the United States are located in the States of the Southeast. The industrial states of the northeast are dependent for their timber supplies on other States, although these industrial states themselves have thousands of acres of denuded forest land from which they could supply their own industries with the needed timber if these lands were only cared for and put on a productive basis. Under present conditions these northeast industrial States have to pay an enormous annual freight bill which in many instances amounts to more than the original cost of the lumber.

Since 1902 the United States has ceased to be self-supporting in newsprint paper. The depletion of the eastern pulpwoods has resulted in the importation of about two-thirds of our newsprint or newsprint material from our Canadian neighbor or from certain European Countries. Yet the northeastern States are capable of growing all their own newsprint material just by utilizing the now unproductive and denuded forest lands.

A situation quite similar to the newsprint situation also prevails in the naval stores industry. There is no shortage of naval stores at present, but the production of rosin and turpentine is falling off so rapidly that unless proper action is taken, this country will lose its commanding

position in the world's market for these products. The vast resources of the western forests have not as yet been touched because they are not commercially available.

The true index of lumber or timber depletion is not quantity but availability. It avails us nothing to have vast forests if the timber is not accessible to the timber using public. The quantity of our timber, as mentioned before, is being used up about four times as fast as we are growing it, but another important fact is that the availability of our timber is steadily decreasing. Our annual wood bill is much too large for us to depend on other countries for our timber and thus increase their power at the expense of our own.

Another phase of the present timber situation is that about one-half of all the privately owned timber in this country is held by approximately two hundred and fifty large owners, the ownership of the remaining timber being widely distributed. There is a tendency for small mills and small holdings to disappear and to be blocked up into larger ones. It is hoped that these large interests will maintain a fairly constant supply of timber for their manufacturing plants. Some authorities believe that the timber depletion problem is being made more severe by the concentration of ownership because these large interests may get a natural monopoly on timber and thus another problem will be added to the present forestry problems.

At the present time we have, then, the problem of many wood using industrial States which are dependent for their timber on other States, although most of these States have ample forest land of their own on which to grow timber to supply their own needs. We also have the problem of dislocated sources of our timber supply together with the problem presented by the large areas of idle forest land and the fact that this acreage is steadily increasing each year instead of decreasing, as well as the fact that we are making rapid inroads into our remaining forest resources and that they are being used up about four times as fast as they are being grown.

GOVERNMENTAL INTEREST IN FORESTRY.

Long before our forests were being seriously depleted, the Government realized the need of preserving some of the more important species of timber. Town governments issued ordinances restricting the use of timber as early as 1640. These ordinances were no doubt merely intended to secure a proper and orderly use of the town property rather than to prevent a threatened deficiency of the timber.

Early attempts at regulation were made by the agents of the King of England as early as 1699. England, during colonial times, considered our forests as her forests, and the agents of the King were given orders to paint a broad arrow on each tree which such tree was suitable for the mast of a ship. This move of England proved unsuccessful

against our resourceful freedom loving pioneers even though they were of English descent.

The New England colonies of New Hampshire and Massachusetts imposed penalties for cutting certain trees on the public lands, but this was not due to conservatism as but two years later the legislature of Maine devised a lottery scheme to dispose of fifty townships of timbered land. Millions of acres of excellent forest land was disposed of in this way at trifling prices.

William Penn attempted to inaugurate a conservative policy when he stipulated that for every five acres of land which was cleared, that one acre was to be reserved for forest growth by the people who took title from him. However this attempt at conservatism bore little or no fruit as the people deemed our forest resources inexhaustible and in many instances a hindrance to farm development.

In 1799 the Federal Government became concerned over the fact that some of the more useful timber was being rapidly depleted, and Congress then appropriated the sum of \$200,000 for the purchase of timber fit to build ships for the navy and the preservation of this timber for future use. A tract of 1950 acres was thus purchased by the Government as a feeble attempt at conservation or reservation. Similar acts were passed in the succeeding years, and under a general act of 1827 the President was authorized to preserve the Live Oak

timber on federal land. Under these acts about 224,000 acres of forest land was reserved for the navy. These lands were set aside from land in the Southern States.

An act was passed in 1831 which provided for the punishment of persons cutting or destroying any trees on the lands of the United States. This act remained a standing joke to the people until the National Forest movement sustained it seventy-five years later. Various acts were passed by Congress such as the Timber Culture Act in 1873, the Preemption and Homestead laws, but these laws practically gave license to the timber barons to destroy millions of acres of fine forests. The intentions of the lawmakers were good, but these flimsy laws were used mainly to cover frauds which resulted in doing much harm to our vast public domain.

In 1873 the first definite beginning was made which was to result in making forest history. Money was appropriated by Congress to protect the public lands in general. Nine States passed laws between 1868 and 1873 encouraging the planting of trees within the State boundaries. The Arbor Day movement started in Nebraska, and it was the beginning of a general public interest in forestry. It was the beginning of the end of the old belief that our forests were inexhaustible.

In 1891, Congress authorized the President to set aside forest reserves. President Harrison created the Yellowstone Timberland Reserve as well as the Pacific

Forest Reserve in Washington. President Cleveland also set aside forest lands until in 1894 there were seventeen forest reserves with a total estimated area of 17,500,000 acres. Cleveland set aside 20,000,000 acres more in 1896, and the outdoor-loving Roosevelt expanded the acreage to a total of approximately 160 million acres. The power of the president to set aside forest reserves was taken away from him by Congress in 1907, but Roosevelt made good use of his time by setting aside millions of acres of forest land before the power was taken away from him.

Forestry has gained great momentum in the United States since 1895. The importance of our forest resources and the fact that supervision was being needed became recognized. European methods were studied, and technically trained men were put in charge of our forestry work. Congress appropriated money for investigation work for the purpose of learning more about our forest resources. Many of the States appointed forestry commissions. Gradually and gradually by legislation and policies, the National Government won public approval until today the forestry idea is firmly fixed in the minds of the majority of the people, and the need for forest conservation and reforestation is also being clearly fixed in their minds.

EFFECTS OF FOREST DEPLETION

Many of the European countries have discovered to their sorrow the evils connected with forest depletion.

We need not go to the European countries to find out the many disastrous results of forest ruination, as the results can be plainly seen in our own states; especially those of the Lake States. The forests of the Lake States are not a permanent waste, but at the present time they are not producing a continuous supply of timber. The effects now being experienced by these States may be experienced by the present forest regions unless the proper steps are taken to perpetuate the timber supply and put the areas on a sustained yield basis.

There are many disastrous results of denuding forest lands. One of the greatest evils is the great destruction which results through soil erosion. Italy, Austria, France, China and other countries have denuded many of their forests in the past, but they are all engaged in reforesting these vast areas as a means of controlling the floods which have resulted from the destruction of the forests.

Already many forestry facts point to the moderating effect of forests on floods, and the fact that forests play an invaluable part in preventing erosion. Erosion furnishes tools to the waters so that the amount of damage is increased. The forest vegetation prevents much of the soil and other materials from being washed into the streams and thus reduces the scouring effect of the water. The soil and other materials add much to the volume of the stream, and consequently the waters rise higher than

they would if the waters were clear.

A well-kept forest is the best of natural forest holders. A test made by the Missouri Agricultural Experiment Station showed that during six years, erosion had removed soil at the rate of two hundred and eight tons per acre from bare uncultivated land as compared to less than two tons per acre from similar land covered with vegetation.

Land is one of the most valuable resources of any nation, and the loss by erosion due to depleted forests is millions of dollars yearly. The great Mississippi floods are a challenge to our patriotism. Forests alone will not prevent floods, but they do help greatly to control them. Forests at the headwaters of this great river will help much to prevent a duplication of the great Mississippi flood in 1927 in which the property loss was from \$200,000,000 to \$400,000,000 with thousands of people made destitute. Forest depletion on any watershed adds more and more to the great menace of floods and erosion.

Forest destruction also results in the loss of a great resource which in turn lessens the number and value of many wood-using industries. The forest industries have suffered severe declines as the nearby forests have become depleted, and millions of dollars are paid for freight alone by Michigan which now has to depend on other states for its lumber although at one time it was the leading state in the production of lumber.

As the forests become depleted, there is also a loss of

employment to the settlers. Many settlers are dependent on local outside work in order to earn a living until their farms become self-supporting. In such regions where settlers are clearing lands for crops, the employment offered by local lumber industries together with a market afforded for the timber cut in clearing land was an incentive for developing a region. In a timbered country these settlers are able to work in the woods, and thus there is an added incentive to the settlement of a country.

When the timber in a forested region is depleted the farmers are also harmed again by the loss of nearby markets for their products. The agricultural population loses the market that was formed by the non-agricultural population who were engaged in wood-working industries. The scattered settlers especially are harmed as their surplus is generally small and the transportation system poor due to the lack of business. Thus the scattered settlers in a region where the forests have been depleted are barely able to make a living unless some other industries develop and bring in new people.

The burden of taxation invariably increases when the forests are denuded. The roads of the county must be kept up for transportation purposes, and revenue is required to run the affairs of the Nation, State, county etc. When a large portion of the land is producing no revenue to help defray the expenses of the public functions, the burden of taxation falls elsewhere, and the burden of

taxation is severe on industries that are productive. Furthermore these non-productive lands are not entirely exempt from taxes, and the owners must pay some taxes on land which is producing no revenue unless these owners allow the land to revert to the county which in turn produces a new problem. The great evil lies in making paying industries pay a much higher tax than they would ordinarily if the forest lands were productive.

Another disadvantage of forest destruction is the establishment of a higher interest rate. It is a known fact that interest rates are higher where values are not stable and the risk is high. When the forests are exploited and depleted the settlers must face the uncertainty of making a success of their venture and consequently the risk of loaning money is greater and the interest rate higher than is demanded in a settled community where the risks are few and conditions more stable.

Abandoned towns are also manifest indications of the evils of forest destruction. Abandoned towns are numerous through out the States that were once heavily forested. The same thing has occurred in the coal regions and other mining areas where the raw material has become exhausted, thus leaving whole towns abandoned. There is an excuse for these "ghost" towns in a mining region as ore is not a renewable resource, but timber is a renewable resource which with the proper care can sustain the towns perpetually when the forests are put on a sustained yield basis.

Abandoned towns or decreasing population also results in the desertion of farms. Farmers cannot prosper where there is no market for their products. Desertion of towns and farms also results in the abandoning or tearing up of the local branch lines of many railroads. The settlers thus left in the region must struggle alone without adequate transportation facilities until such time as new industries enter the region or the forests again become ready for logging.

The importance of timber is especially realized during times of war. Timber is easily adapted to many purposes, and thus is in great demand during times of war. Wood has been shipped across the continent on passenger train schedules to the East because it was needed so badly. Walnut was so badly needed during the last war that shade and park trees were sacrificed. Forest products of all kinds are essential in warfare, and the nation without an adequate supply of timber is greatly handicapped in its fight. Wars will still be fought, and great stands of timber are necessary. These stands of timber must be planted and grown in times of peace because timber is a product which cannot be grown in a short period.

Another unfortunate result of forest depletion is seen in the character of the logging population dependent on the forests for their livelihood. In very few places at present is the logging operation permanent in a certain area, as but few forests are on a sustained yield basis. The average lumberjack, or logger, leads a restless roving life as

he moves from camp to camp, and he finds that a permanent home and a family life are practically impossible as long as he follows his work in the timber. A typical lumber camp with its cheap temporary buildings and lack of sanitation is no place to rear a family, especially as the camps are not permanent and the children cannot enjoy the pleasures of permanent friendship and continued schooling in one place.

Conditions are not greatly superior to these in the crude sawmill towns which flourish only as long as there is a supply of timber and then become abandoned as the timber is depleted. Permanent homes, strong characters and good citizens are hard to build on such an unstable foundation.

Destructive logging also has its effect on the well-being of the city dweller by destroying his vacation ground. Forest recreation is gaining more momentum as our forests are fast becoming depleted. Our people have been accustomed to the forests and all the beauty and recreation that the forests are able to give. The people of our nation are having more and more time for recreation, and the greater part of them go to the wooded areas to enjoy the wholesome pleasures that are found only in the forested areas. For the sportsman, nature lover, and the recreationist the conversion of our forests into a denuded stump-covered blackened area represents a real loss. Without forests the pleasures of a vacation are greatly decreased.

FIRE AS AN AGENT OF FOREST DEVESTATION

One of the greatest enemies of the forest is fire. Fire has been an implacable enemy of the forest practically as long as there have been forests. It has oftentimes been said that fire has destroyed more timber than has been cut by man. Millions of acres are burned over each year, but a great many of these fires could be prevented by using the proper precautions in the forest.

Long before the coming of the White Men to this country, fire has been the arch enemy of the forest. The trees themselves have recorded this fact, and the story can be read by those who are able to interpret the records as left by the trees. Doubtless a great many of the fires were caused by lightning, but it is most certain that many fires were set by the Indians in an endeavor to drive out game and also to provide clearings for the villages. Indians also used fire as a means of attack when warring on hostile tribes. Accurate records have been kept by the trees as to the extent of forest fires before the coming of Columbus to our shores.

The first settlers considered the forests almost as an enemy in many instances because it served to protect the many prowling Indians. The early settlers burned the forests in order to provide clearings in which to raise the necessary farm crops. Many of the early settlers were superstitious and believed that the forests were inhabited by unearthly beings as well as dangerous wild animals. Thus

they burned over various parts of the forest in order to lessen the dangers which they believed existed in the forest.

The number of fires in the United States are seemingly on the increase. This no doubt is due to the fact that there is a steadily increasing trend of the urban population to the forests in quest of recreation. As the number of forest visitors increase, the number of fires also increase. This fact is borne out by statistics which cover a period of years.

The yearly fire loss in the United States alone amounts to millions of dollars with millions of acres of mature and immature timber destroyed. Every year there are from 90,000 to 150,000 fires which burn over an area of about 40,000,000 acres with a total estimated loss of \$100,000,000. This is a tremendous loss, especially when this loss could be greatly reduced through the use of proper care in the woods. These figures are the basis for saying that fire destroys more timber each year than is cut by the saw and axe.

The man-caused fires present the chief difficulty. The State and Federal fire-fighting forces can generally cope with the fires that are set by natural agencies such as lightning. It is ninety-eight percent of the man caused fires that break down the fire defenses and cause the great annual loss each year by fire.

Thus during the development of our nation, millions of acres have been destroyed by fire, and millions of acres of forests are still being destroyed by fire. One of the great problems in preventing further depletion of our forests is then to reduce this gigantic annual fire loss. Calvin Coolidge, although not a forester, said that the greatest obstacle to reforestation and effective forest management is the red curse of fire. There is a great difference between what nature will produce on a piece of land if fire is not kept out and what is produced on the same forest land if fire is kept out. We are now paying for that difference in the increased cost of every forest product.

INSECTS AS AN AGENT OF FOREST DESTRUCTIVE

Insects are also to be dreaded as a depleter of our forest resources. It is said that they destroy or ruin as much timber yearly as do the fires. Entomologists claim that the loss each year by insects greatly exceeds the annual loss of timber by fire. At any rate it is estimated that the insects do destroy timber each year which has a value of \$100,000,000.

Insects not only reduce the future supply of wood by killing the mature trees, but they also destroy much timber by killing immature trees in all stages of the life cycle. The yield per acre is also greatly decreased as the insects inflict injuries to the trees in their flowering, fruiting, germinating and seeding periods.

Investigations in this country have shown that the regeneration of forests by natural agencies as well as by artificial means is more or less affected by insects. While the losses to forest reproduction are not nearly as great as injuries to mature trees, yet they are far greater than is generally recognized.

Insects harm the trees during the flowering period by sometimes mining the buds, eating the buds or deforming them in some manner depending on the species which is doing the damage. Damage to the buds results in decreasing the number of seeds borne by the tree and thus affects the natural regeneration as well as affecting the vitality of the tree.

Insects also injure trees during the fruiting or seed period by mining the seeds or otherwise destroying them in various ways. Seeds of the hardwoods as well as those of the conifers may be destroyed by insects thus reducing the amount of seed produced for natural regeneration as well as reducing the seed supply when gathered for artificial regeneration.

Injuries by insects are also caused during the germinating period and during the seedling stage. The seedlings are especially susceptible to injury, and their susceptibility decreases after they reach a height of from two to three feet. The roots of the seedlings may also be destroyed or the young tree may be killed by bark injuries or other injuries imposed on it by various insects.

Many seedlings escape the depredations of insects during the seedling stage, but may be severely injured during the sapling stage. Bark-beetles, bud and twig miners, and foliage eaters are constantly at work working havoc on the young trees. If the trees are not killed, they may be so severely injured as to prevent them from producing merchantable timber during the single rotation which would otherwise be required.

The great loss by insects is mainly to the mature timber of our forests. The yearly damage is very hard to estimate with any degree of accuracy, but the average annual loss is estimated to be about \$100,000,000. If we could but save the timber that is being annually destroyed by fire, insects, and disease, we would never have to worry about a timber famine.

DISEASE AS AN AGENT OF FOREST DEVESTATION

Forest tree diseases are also a source of a great annual loss in our timber supply. The average person does not realize the enormous loss which results from this source. There are many native diseases which are taking a large annual toll of our forests each year, but the diseases which have been introduced into this country are the ones which are doing the greatest damage.

The majority of forest tree diseases are caused by fungi. These fungi are almost invariably confined in their activities to certain parts of the tree. A heartwood destroying fungus does not destroy or attack the needles of

a tree, while a fungus attacking the needles or leaves of a tree will not destroy the heartwood directly.

Decays are the most important of the diseases caused by native fungi. This decay results in the loss of much timber that would otherwise be merchantable. The average yearly loss in timber due to these native and imported diseases is not accurately known. Pathologists claim that that the loss directly attributed to disease is greater than the loss due to either fire or insects.

Great losses to our forests have been caused by the introduced diseases from other countries. The Chestnut Blight, a fungous disease introduced from Asia, has already killed the greater part of the native chestnut (Castanea dentata) in the eastern part of the United States and has gained such a foothold so as to seal the doom of one of our loveliest forest trees.

The same devastation is now occurring in our five-needled pines. The White Pine Blister Rust (Cronartium ribicola) which has been introduced into this country from Europe is threatening the existence of our countries most important pine trees. This disease is continually enlarging its range and working havoc in many of our five-needled white pine stands.

Investigations have shown that all tree species in the earlier part of their life are relatively free from decay. Thus a great annual loss can be lessened by cutting the trees in the earlier stage of their life.

ACCOMPLISHMENTS OF OTHER NATIONS REGARDING FOREST DEPLETION

Many nations of the world have been faced with this same problem of forest depletion, and many nations have successfully solved this problem to their own satisfaction. When one is solving a problem, one looks for information which will help in finding a proper solution to the problem. Thus we can gain much helpful information from the nations which have already tried out the various solutions. Our conditions are not the same as those which are to be found in Europe, but we can no doubt learn much from them and also accomplish to our satisfaction what they have accomplished to their satisfaction.

At the present time, Germany has practically mastered her forestry problems regarding timber depletion. The Germans foresaw a wood shortage as far back as the thirteenth century, and they took the necessary steps to provide a perpetual supply of timber. They passed laws regulating the clearing of land, and in many instances it was forbidden to clear land. Many towns acquired forest lands and began to grow trees. Only enough timber was cut to supply the demand, and authorities were appointed to select such trees as were to be cut. The government purchased forest lands and put the areas on a sustained yield basis. Laws were passed regulating the cutting of timber. The forests were carefully tended to keep the land most productive, and great care was taken to insure

a perpetual supply of timber.

Forestry is not a temporary business in Germany, but it is now regarded as a permanent business. The forestry policy of the country is to grow a tree for every one that is cut. The best forestry methods are used, and the forests are tended with as much care as any other agricultural crop.

Ownership of the timber is divided between private owners, the government and the cities and towns. The government owns about thirty-three percent of the forests, private owners hold about fifty percent of the forests while the remainder is owned by the various cities and towns.

Germany has about the correct proportion of land in forests. World economists agree that about thirty percent of the land area of a nation should be in forests. Germany has about twenty-six percent of the land area of the nation growing timber crops. She is not suffering from lack of timber because of the large amount of land producing timber crops and the great care that is being taken to perpetuate the crops.

An excellent example of a conservation forest policy is shown by the Zurich Forest near the city of Zurich in Switzerland. The city has owned this forest for about one-thousand years, and a conservation policy was worked out about six hundred years ago to put this forest on a

sustained yield basis. The policy worked out has been carefully followed, and during all the centuries this forest has furnished the fixed amount of timber. What other nations have done; we can also do.

We are far behind other modern nations, with the exception of China, in all that relates to preserving and perpetuating our forests. It has been hard for us to realize the fact that our forests are nearing depletion and that immediate steps must be taken to prevent a timber famine. We have been so accustomed to a vast amount of forest products that it is difficult to realize the fact that our great forests are in danger of depletion.

THE IDEAL TIMBER SITUATION

We are still dependent on our forests. The dependence that the early pioneers put in the forests has passed unto us. We still find that forests and their products are very important for human needs. Practically every forward step that we have made during our rapid development has been made possible through the use of our forests. Even today advancement is greatly dependent on a bountiful supply of forest products, and it will continue so into the future.

We are a great wood using nation as is shown by our large per capita use of wood. We are finding more and more uses for wood as time goes on. The new eras of building and different types of construction may have

reduced the use of timber for many purposes where lumber was formerly used, but the new uses being found for wood tend to offset this decrease.

Wood substitutes will never take the place of wood to such an extent that we will have to decrease our forest areas and depend on the wood substitutes instead of wood. Chemists are continually making wood substitutes from such things as cornstalks, peanut shells, and various things which formerly were wasted. Many people thus believe that we no longer need wood since wood substitutes can be made from waste products, but they forget the fact that the forests can produce more cellophane and wood per acre more cheaply than any wood substitutes can be manufactured.

We are also dependent on our forests for the direct benefits which we derive from the trees themselves, but there are many other indirect benefits such as controlling run-off, preventing erosion, providing a natural playground preserving wild life and other benefits which are known to all people who are familiar with the forests.

Forests are necessary, and the fundamental principles of the ideal timber situation are that the forest products should be produced near to the centers of consumption so as to reduce the length of haul to the consumers and thus reduce the freight expense which will in turn lower the price of lumber.

The timber supply should be large enough at all times

so as to prevent any possible shortage of timber, and to have these forests on a sustained yield basis so as to provide a continual supply of timber to the local industries which are dependent on a timber supply for their operation. By having the forests normalized as to age classes, these industries can be operated perpetually without fear of being forced to stop operations on account of the depletion of the resource on which they are dependent. These lumber towns can then be permanent settlements instead of temporary towns as is generally the rule at present. Keeping the forest lands productive is then one of the great essential requirements.

The taxation system should be adapted to the needs of the industry. Growing a crop of trees is a long time investment with probably no returns until the crop is harvested at maturity. Thus the tax system should be such that payment of taxes comes at such a time when the crop is harvested and the owner has the necessary finances. It is unfair to the forest grower to pay taxes yearly when he gets returns but possibly only once in sixty years or so depending on the length of the rotation.

The supply of timber should be large enough to meet the demands of the home industries and to furnish a surplus for export. Forests should be in every part of the country where forests can be grown so that all the people can have the advantages of forest recreation such as hunting and fishing and the other advantages which only a forested region can give.

A PROBABLE SOLUTION TO OUR TIMBER DEPLETION PROBLEM

Our present problem of timber depletion has not resulted from using our forests, but from the fact that we have not taken the necessary steps to perpetuate the timber supply. The kernel of the problem lies in the vast areas of forest land which are not producing the timber crops that they should be producing. A remedy for our annual appalling waste is to stop the devastation of our remaining forest resources and to put the idle forest land to work growing new crops of timber. The action necessary to put an end to forest devastation and to provide a sufficient crop of forest products for future needs must enlist the united action of the National Government, the respective States and the private owners of forest land.

Timber is a long time crop, and hence a policy is necessary which will cover this long period of time. Thus the shortage of timber is a problem which cannot be adjusted in the short period of a year, but it will take at the very least the time required to sow, grow, and harvest a crop of trees which in the average case will be about sixty years.

The following proposed plan combines the features of the plans as advocated by the Committee for the Application of Forestry, the Committee for the purpose of devising a plan to meet our timber depletion problem is response to Senate Resolution number 311, and also the program of the American

Tree Association of Washington D.C. The main points of the various plans as advocated by the various bodies are practically the same, and the following plan is a combination of all three plans.

The Proposed Plan

1-It is necessary to have a forest policy for the United States based on the following fundamental principles.

(A)-Prosperity in peace and safety in war requires a bountiful and perpetual supply of timber.

(B)-The timber supply of the Nation should be made secure by forbidding the devastation of private forest lands and promoting conditions which will insure the maintaining of these lands in a productive state forever. Forest crops should also be produced on forest land which is owned by the Nation, States and Communities.

(C)-The transformation of forest lands into idle wastes must be stopped as it is harmful to the Nation.

(D)-Idle lands should be used to produce forest crops until it is shown that these lands can be used for more profitable purposes. By utilizing the many idle lands, forest crops can be grown near to the centers of consumption and States now dependent on other States for their lumber will be able to produce their own forest products and reduce the price of these forest products. Using these idle lands to grow

trees will also help to prevent erosion, droughts, floods, and silting and will thus aid navigation, irrigation, and water supply. Growing trees on a sustained yield basis will also insure a perpetual supply of forest for our own use, and will give permanent occupation to the people depending on the forests for their livelihood as well as allowing the people to enjoy the recreation and health which is to be found in the forested regions.

(E)-The ownership of forest land carries with it a special obligation not to injure the public as timber is a long time crop, and injuries to the productive power of a forest cannot often be repaired for generations. Injury to the forests will also injure the general prosperity of the people.

(F)-The Government should always be fully informed on all facts relating to the lumber industry in order to secure a steady operation of the lumber industry. To this end the Government should be empowered to control the lumber industry in times of economic stress.

(G)-The control of the lumber industry should be National since it is nation wide, and the separate States cannot effectively subdivide and deal with the control of this interstate question effectively. Co-operation from the States is highly essential, but

being a national problem, the administration and direction of effort to put the lumber industry on a firm basis should be entrusted to the National Government in order to insure uniformity.

(H)-The National Legislation which must be passed to prevent further forest devastation should have the following objects: 1-Public control over private lands soon, but only such as is necessary to insure continuous production of forest products on lands which would otherwise be idle and to prevent further devastation. 2-Only such public control as may be necessary to place forest industries on a stable basis in harmony with public interests. 3-Transfer of control back to private interests when they have demonstrated that they are capable of handling the industry, but to have the Government retain a supervisory function with full authority to renew its control at any time the public interest so demands it.

(I)-The National, State and Community forests should be maintained on a sustained yield basis, and such forests should be largely increased.

The above fundamentals as applied to private and public lands excludes the small woodlots of the farmers, as logging is not done on a commercial scale by a farmer with his woodlot.

2-Suggested National Legislation

(A)-National Legislation should enact a Federal Law for the appointment of a Commission to make rules, regulations and such decisions as may be necessary to administer the laws. It has been suggested that the Commission should consist of the Secretary of Agriculture, Secretary of Labor, and the Chairman of the Federal Trade Commission.

(B)-The Commission would be authorized to:

- (1)-Establish regional administrative organizations for the purpose of promptly executing laws and regulations in accord with local conditions and needs.
- (2)-To fix standards and make rules to prevent further devastation and perpetuate the forest growth with the object of providing protection to our forests.
- (3)-To require standard accounting systems and reports so as to obtain accurate results.
- (4)-To withdraw its supervision and make only occasional inspections when an organized forest unit proves itself capable of taking direct charge of its work.
- (5)-To control production when such action is necessary in times of economic stress.
- (6)-To permit the co-operative combinations of

lumber manufacturers for economy in production and marketing when, in the judgment of the Commission, such co-operation will promote the public interests.

(7)-To acquire title or control of forest lands for the United States by outright purchase, gifts, long-time leases, or by exchange of timber on National Forest Lands for cut-over lands. Congress to appropriate at least \$2,000,000 yearly for the purchase of forest or cut-over lands until the public owns fifty percent of the timber-growing land in the United States with such land well distributed through all the principal forest regions of our nation.

(8)-To co-operate with the various States for better protection of forest lands against fire, and to aid such States financially.

(C)-National Legislation should also provide for an appropriation by which a study can be made of factors in order to devise the most suitable system of taxation, and to co-operate with State agencies in promoting their adoption.

(B)-National Legislation should also authorize the creation of National Forest Loan Banks to enable the lumber industry to borrow on more equitable terms than at present.

(E)-Legislation should also authorize the establishment of adequate forest insurance companies as they would be important factors in stabilizing the industry and would bring about better fire protection.

The State Legislatures should also pass laws similar to the above in order to stop forest devastation on State lands. The various States should also provide for better organized fire protection on all forest lands in the State whether forested or not. By the proper co-operation between the Nation, States, and private owners the problem of timber depletion can be properly solved.

Much has already been done in the working out of various parts of the above plan. A survey is being made of all the forest resources in the United States. A forest taxation inquiry has been inaugurated and more money is being spent on research. Better methods of fire control are constantly being put in practice each year, and better forestry is being practiced. We are gradually and gradually making progress in forestry, and it is hoped that we will continue to make rapid progress so that we will never have to face a serious timber famine. If we but take the proper steps now we will know that we have done our children a great deed; namely supplying them with one of the greatest of all natural resources-forest products.

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