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Why Forestry is Necessarily a Nation Problem

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Forestry is a vast subject. It is both broad and deep. It has to do with soil, climate, and topography. It affects both mountain and valley. It determines the course and volume of rivers. It influences physical and political geographic changes. It governs the prosperity and life of nations. The forest is only one of its incidents. One might spend the evening profitably with the single subject "The Tree," or "National Forests, Their Organization and Administration," or "Forestry as it Affects the Lumber Industry," or "Forest Fires and How to Fight Them," or "The Uses of Wood and Its Substitutes," or "The Grove and Its Influences Upon the Home," or "The Forester as the Landscape Gardener of the Nation". Each one of these branches of the subject is interesting and profitable, but no one of them is vital. Two phases of the question are all important and are so closely associated that in many ways they are seen to be not only interdependent but co-extensive. These phases of the subject are (a) Why Forestry is necessarily a national problem, and (b) Forestry as the crowning physical manifestation of civilization,—one of the tests by which the Creator judges the progress of a people and their nation's fitness for eternal life.

When pioneer missionaries in the spring of 1841 cleared, fenced and planted the first little field and garden ever sown in Montana there was great discontent and outcry among the Flatheads. The missionaries had arrived the fall before, just following the buffalo hunt, and they and the Indians were now alike subsisting scantily on roots and bark, the buds of trees, and a few fish caught from the mountain streams. Between them and the buffalo grounds were their hereditary foes, the Blackfeet. The Flatheads and their visitors were alike on the verge of starvation. So when this little field was planted to potatoes, peas, beans, and wheat, from a little store hoarded for seed, a great outcry went up that the white men should be so cruel, so thoughtless, so improvident, and so foolish as to take good food and put
it into the ground to rot. On being told that by rotting in the soil the seed would reappear and greatly multiply, they were mollified but unconvinced. Day after day the Indians gathered about the field and perched upon the fence to see if this miracle of resurrection really would take place. In due time the green shoots appeared, but the famished Indians could not properly appreciate such conservation until they participated in an abundant harvest.

The civilization of any people may be accurately gauged by their ability to capitalize and visualize the future, by their self-control which enables them to save sufficient for a seed-time in order that they may profit by a harvest. It was hard for the savage mind to bridge the gulf of the seasons. After the buffalo hunt it had seemed as though there never again could be a period of want. In the barren months of early spring, the necessity of the day overshadowed all else in the savage mind. To save a little then in order to have plenty in the future did not seem worth while. Today's hunger was so real and tomorrow so far away that the sacrifice seemed disproportionate to the reward. But the missionaries, by foregoing a present satisfaction, made all seasons seasons of plenty. Fifty thousand people now live in abundance where fourteen hundred people then lived in penury. And the Bitterroot Valley is no larger now than it was then; the climate is no milder now than then; and nature no more willing now than then. Only now the sun and the soil and the seasons are directed by man to do their most productive work.

As the Flatheads of 1841 viewed any attempt at agriculture, so do a great many people among us today view any attempts at silviculture. In fact, the story of the progress of agriculture among the Indians finds its counterpart in the story of the progress of silviculture among civilized nations. The savage thought the seed was put in the ground to prevent them from eating it; and many people have imagined that the National Forests were created to prevent the people from using all the timber they want. Even the smallest child among us understands that the seed for that garden was withheld from the natives’ food supply in order that the supply might be multiplied; but without repeated explanations the most enlightened men often forget that when the forester restricts the cutting of immature trees and saves trees that are needed for seed he does so not for the pur-
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pose of reducing the amount of timber used by the community but for the purpose of increasing the amount of timber for use. What agriculture is to ordinary farm crops, silviculture is to wood production. Nature, unaided, raises all the grains and grasses, but unaided makes a very poor agriculturist. Her yield of seeds and grain per acre is pitifully meager. Nature unaided produces all kinds of wild fruits, but the product is poor in quality and scant in quantity. Nature has been in the lumber business for a great many ages; yet nature as a silviculturist is little more of a success than nature as an agriculturist, horticulturist, or exponent of animal husbandry. Our National Forests contain in round numbers 165,000,000 acres. Since creation’s dawn nature has been busy planting and growing trees in these Forests, yet the total stand on this entire area now amounts to a little less than 600,000,000,000 feet of timber, or slightly more than 3,600 feet per acre. Probably the most valuable forests in Utah are limited areas of spruce running as high as 15,000 to 20,000 feet to the acre. Germany has shown us that we may expect as high as 80,000 to 100,000 feet to the acre under climatic conditions little more favorable. In spite of the vaunted prodigality of nature, field, orchard, and forest alike produce tenfold as much when directed by man as when neglected. Our 165,000,000 acres of National Forests may be made to produce as much wood as an unregulated, unprotected area of ten times that extent. For, while it takes 200 years to grow a saw-log, nevertheless a forest, having a fair distribution of all age classes in the stand, may, by proper care, be made to yield a crop of timber every twenty, or thirty, or forty years, often surpassing in volume the crop resulting from 200 years of undirected growth.

The agriculturist deals with an annual crop and is justified by his harvest for which he has only a few months to wait. The horticulturist deals with a crop requiring greater forethought. When, at the end of five years or thereabouts, his orchards commence bearing, he points to their laden branches as justification of his campaign of conservation. The stock raiser saves his calves and cows for greater growth and other generations, and each year is justified by a part of his herd maturing for the market. As agriculture means more grain for use, so silviculture means more wood for use. As horticulture means more and bet-
ter fruit for consumption, so silviculture means more and better timber for consumption; as animal husbandry means more meat and leather by saving the calves and cows, and killing only the matured and proper proportion of the crop, so forestry means more and better lumber by saving the seed trees and saplings and cutting only the matured and proper proportion of the crop. But, since there is a gulf of 200 years between the saw-log and the seed, the forester can never point for justification to the harvest of his own sowing. Yet the harvest justifies the sower, though reaped by other hands; and although the missionary who planted that first garden in Montana died before harvest time, the field would have ripened just as fruitfully in the summer sun and would just as clearly have justified his plan of conservation.

But the forester does not think of his work as being that of managing a crop of timber which is to be harvested 200 years from now. Instead he manages forest areas upon which there are growing, often intermingled 200 crops, one of which ripens for harvest this year, and one of which will ripen next year, and so on each succeeding year through the cycles of time. And the forester considers that it is his special duty to see that this year’s crop is so harvested that another crop will follow in its place 200 years from now; that next year’s crop is in the same way followed by its successor, and so on through the decades, so that as we now have a harvest of wood each year because of Nature’s bounty in the past, so may the generations which follow us have each year a harvest of wood, because we have saved the seed trees and saplings and done our part in our time.

In this great, splendid country of ours we have been inclined to look upon our woods and forests as the spontaneous gifts of nature, as free as air and water, as unfailing and inexhaustible as sunlight and the sea. We have been like simple trusting children. Always and everywhere the American has had an abundance of wood until he has looked upon forests and timber as a universal, necessary circumstance.

While in our scheme of national economy we have instinctively looked upon forests as a self-created, unending, inexhaustible gift of nature still we have not been entirely unmindful of the importance of that gift. I hold it to be true that wood is as indispensable to man’s prosperity and progress as water, light,
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or air. No nation deprived of an adequate supply of wood has ever left a trace on the pages of the past.

About 135 years ago our nation started on its career of continental conquest. Three million people faced the future backed by a continent of timber. The entire country from the Atlantic to the Mississippi was then one vast forest excepting for the puny clearings around the settlements and a few prairies in Illinois and southern Wisconsin. In 135 years we have swept the continent from sea to sea and have carried the banners of civilization onward 10,000 miles in a march around the world. Today, of that vast wilderness, there is left only a fringe in the southern pine belt. Along the Alleghany and Appalachian range, the vast forests that sheltered King Philip and his confederates have been swept by fire and saw. The Government is now buying back those mountain lands with the plan that they shall some day again bear mighty forests regulating their streams in even flow, where now are recurrent floods and drought. In Louisiana and Texas, big mills are shrieking as they slice the last of the great pine and cypress forests into boards, making lumber of hoary giants that stood as sentinels above the bivouac of De Soto's cavaliers. Wagon stock and tight cooperage have swept from Arkansas and Missouri the ancient oaks that fringed the tributaries of the Mississippi as LaSalle floated southward to the sea. The voyagers of New France found Michigan, Wisconsin, and Minnesota, densely wooded with the most magnificent white pine forests ever enjoyed by man. Those vast forests remained almost unscarred until after the civil war. The lumber history of that region dates from the activity which began in 1868. Today those mighty forests are only a memory, and the army of lumbermen has moved onto the Pacific slope, leaving behind only an unproductive waste, sandy barrens, covered with a mixed growth of useless underbrush.

In 135 years we have consumed two-thirds of our nation's supply of timber. The world is as young to us today and life is just as much worth while as it was 135 years ago to the founders of the republic. As they had their problems then, so we have our problems now. And one of our greatest problems today is this simple question in arithmetic: If two-thirds of a continent of timber last 3,000,000 people 135 years, how long will one-half as much timber last thirty times as many people?
"Oh, but," you say, "We don't need to worry about that; all kinds of substitutes are being found for wood. We are using iron, steel, brick, stone, cement, concrete, now where we used to use wood." And so we are; but we are also finding new uses for wood, and this, together with every labor-saving invention increases our capacity to consume. In spite of the fact that during the past thirty years substitutes have taken the place of wood for many purposes, our consumption of wood per capita has increased out of all proportion to our increase in population. With a population of nearly 100,000,000 people, and with 67 per cent of our capital stock of timber already gone, we have reached the point where we may well take stock of our resources and take heed for the future.

Our present stock of timber of merchantable size will last us about thirty years at the present rate of consumption—perhaps twenty years if the present ratio of increase continues. And what then? A timber famine? I cannot think the American people so blind. There is sufficient forest area in the United States to furnish, if properly managed, an adequate supply of timber for our future needs.

I have undying confidence in the ability of the American to pull himself out of the worst kind of a hole. All he needs is to see the danger and he will find and apply the remedy if one is to be found. The danger lies in the way our forest areas have been handled in the past. The remedy lies in proper management in the future, in safeguarding against waste, and in securing from our forest areas the great yield of wood which is possible under intelligent human direction.

I do not mourn over the wasted forests of the Lake States in so far as those forests were drawn upon for forest crops. One of the most beautiful things in nature is the spreading glory of a mighty tree. There is true poetry in the forester's phrase "crown cover." But far more worthy and sublime, far more inspiring to true poetic insight is the conception of the same tree giving its life, and strength, and substance to form a little home on the prairies for the American pioneer. I have no regrets for the hundreds of billions of feet of white pine which those great forests gave to build homes and barns and fences on the prairies of the Middle West. The splendid growth and marvelous wealth
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of that great empire repaid a hundred-fold the value of what was used in the building.

But only 50 per cent of the great forests of the Lake States was ever sawed into lumber and used. The other 50 per cent was burned, wasted, and destroyed. The Iowa farmer and Nebraska pioneer refused to build their fences of lumber having knot holes. So only the butt cut of the log was used (the cut free of knots) and the remainder of the tree was left in the woods. Fields were fenced with the finest cork pine, such as now sells for cabinet wood in New York at the same price as mahogany. A third or a quarter of the tree was taken and the rest wasted. As lumber advanced in value, utilization was more complete, and in the last few years of cutting, many mills have taken out of the woods any piece of white pine that would cut a stick fifteen inches long four inches in diameter, using such material for picket stock, block stock, and such purposes. But in the halcyon days of "Paul Bunyan" only the straight, clear shaft of the tree was taken, the rest was left unused, to menace with fire any remaining living growth.

The name "Paul Bunyan" is an interesting one in the unwritten lore of the lumber woods. Mention the name "Paul Bunyan" in the presence of some old Michigan lumberman and you will catch his attention at once, and life, for him, will for the time acquire an added zest and interest.

"Paul Bunyan" was the mythic hero of the Lake States lumberman. In "lumber jack" literature he is what Robin Hood is to a certain period of English literature—as real as Thor to the Vikings, or as Romulus and Remus to the Romans. By the big box stove in the bunk house I have listened to some old Michigan lumberman tell tales by the hour of the wonderful prowess of "Paul Bunyan". How he was with "Paul Bunyan" the winter of the blue snow. How he helped "Paul Bunyan" drive "Round River", "Round River" being a mysterious stream located in some distant and indefinite point in the north woods. It flowed in a circle, revolving like a liquid "merry-go-round". He tells of the magnificent scale of Bunyan's operations. How the cook shanty in his camp covered 40 acres and the waiters in the dining room traveled on motorcycles; how hot-cakes were made in such quantities that to grease the griddles it kept six big negroes each with a side of bacon strapped to each foot skating on them in
furious haste. How Bunyan was the first man to make railroad ties, by strapping a broadaxe to each foot, climbing a cedar tree, scoring both sides as he went up, then let go all holds and, moving his feet with lightning-like rapidity, clipped off a tie every eight feet as he dropped. He describes the wonderful physique of the men in "Paul Bunyan’s" camp. "Bunyan" would employ only the most powerful men. How he had 2,600 men in one camp, every one of them nine inches between the eyes and an inch high in the eyebrows, and with mingled sentiments of pride and modesty, this grizzled old giant closes by saying: "I ought to know, for I was 'Paul Bunyan's' chore-boy the winter of the blue snow."

As I have said, in the days of "Paul Bunyan" only the finest logs were taken out of the woods. The rest were left to form a fire trap of monstrous proportions. Fire followed and killed the few pines the woodman's axe had spared, and the fire has been followed by a growth of worthless underbrush. And the sad thing about it all is that with a little care and pains we might still have had the same useful houses, fences, and barns on the prairies, and still have in the Lake States as great forests of white pine as though they had never been touched. The unthinking, shortsighted, so-called "practical" man points at the pine barrens and says: "Of course, you cannot expect to have your loaf and eat it". True, but you can eat your loaf and at the same time raise other grain as grist for grinding. You can have lumber and still have trees and forests.

If the entire usable part of the tree had been cut, those great forests would have as much timber left now for the settlers as they have already enjoyed. Not only that, but had proper disposal been made of the tops and refuse, and other necessary safeguards been taken against fire, the trees which were left from the first cutting would now be ripe for the axe. Not only that, but had only just a little discretion been used and the older trees been cut first, leaving the more immature trees to make a second cutting and reseed the area, there would be as many billion feet of timber in the forests of Michigan, Wisconsin, and Minnesota as there ever were, in spite of the building of the west.

And so, I say, while I have no regrets for the billions of feet of timber that were used, I do regret, and every good citizen should regret, the still greater billions that might now be avail-
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able for use if only a little care and a little forethought had been exercised in the exploitation of our forest wealth. Use is a virtue; waste is a sin. It is the great sin of forest waste that is the forester’s mission to correct.

Forest waste is a national sin and as such can only be reached by a national remedy. While silviculture is comparable to agriculture and horticulture in many respects, in one very important respect it is vitally different. Silviculture and its two companion "cultures" are alike in that each has to do with the production of a crop and that man by intelligent direction may increase the crop many-fold over the best efforts of nature. But agriculture and horticulture are by nature particularly suited for private enterprise, while forestry, in most nations, is necessarily a public problem. Excepting as it may increase the supply and thereby affect the market price, the influence of a farm crop or fruit crop scarcely extends beyond its owner’s fence. What I plant in my field does not affect my neighbor. My success I enjoy alone, my failure is shared by none. How I cultivate or use my field neither adds to nor subtracts from the fertility of my neighbor’s field. But such is not the case with the lands which are most suitable for forest growth. The mountain slopes of the Appalachian ranges, the sandy barrens of Minnesota and Wisconsin, the steep, broken, granite ridges of the Rockies, the Sierras and Cascades, are the sites most suited in our country for forestry purposes.

Every town along the Atlantic coast is interested and affected by the forests of the Appalachian range. When those mountains were clothed with forests, the streams ran bank full, ships came to harbor in deep water, manufactories driven by water power ran steadily all year long. Since the destruction of those forests the country has suffered from alternate floods and drought, great manufacturing centers have lost their steady supply of power, harbors are filled with the burden of silt from the mountainsides, fields, once fertile, are covered with a barren sheet of gravel and sand deposited by the ungovernable stream.

Even more intimate is the relation existing between the irrigated farm in the West and the forested mountains upon which it depends for its water supply. The utter helplessness of the southern plants along the Mississippi in the face of the mighty
flood has been shown in terrible tragedies embracing vast stretches of inundated lands.

The resident of the Atlantic Coast, the farmer on irrigated lands, the southern planter, all realize that like the wise physician, the nation should prescribe treatment for the cause rather than the symptoms. The floods must be controlled by treatment at their source.

Mountains, and the snows and rain that fall upon them, are all subject to the law of gravitation. In addition to this both are subject to another very important physical law, that is: that the carrying power of a stream increases as the sixth power of its velocity. In other words, double the velocity of a stream and you have multiplied its carry capacity by 64; increase its velocity ten times and you multiply its carrying capacity by 1,000,000. A little delay in the raindrop’s journey from the mountain side to the valley prevents the flood. The forest cover which checks the rain from beating directly on the bare ground, the pine needles and humus which delay it for a few moments while gravity and capillary attraction reach up and draw it down into the soil, prevent floods, preserve the life of springs and streams, safeguard the fertility of fields, and ameliorate the rigors of the climate.

The influence of a forest covering on the mountain side represents as solid and substantial values as the trees of which the forest is composed. By a little care and forethought the forest can be used and the ripened trees cut and removed without ill effect. A sudden removal of the entire forest cover from a large area means disaster to those below. When the forest on the mountain slopes belongs to individuals they can dispose of the timber recklessly and wantonly, pocket all the profits, while the community below suffers all the loss. On the other hand, if the timber owner foregoes a portion of his profit, the community enjoys all the benefits while he bears the burden alone.

The lumber baron of Minnesota considered that the management of his timber lands was only an individual problem. He believed it to be nobody’s business but his own. He was mistaken. His view was a narrow one. The management of his lands and of several million acres of similar land near the headwaters of the Mississippi and Ohio Rivers is a national problem,
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a problem which affects the planter below Natchez, Mississippi, just as vitally as the lumberman above Winona, Minn.

It is not fair to ask the timber owner to voluntarily forego a part of his profit for the welfare of the public. It is unreasonable to expect him to leave trees standing for seed trees or a second crop, when his timberland is so heavily taxed that he cannot afford to retain the title to the land and reap the harvest he has made possible. Not only that, but he cannot be expected to safeguard against fire the forest growth on land which he cannot afford to retain.

The protection and proper management of forests upon the mountain slopes is decidedly a public problem. Private ownership is inadequate, since private interest and private responsibility are not sufficiently far-reaching. This is the lesson that has been learned by every civilized nation on the globe, the lesson which, I blush to say, our nation and China have been the last to learn.

Excepting China, every other civilized nation on the globe had an established forest policy long before—in some cases centuries before—we awoke to that need. Japan has a national forest policy dating back to a period 1,500 years before Christ; our epoch of actual activity in forest management dates from February 1, 1905, when our forestry work was all centered in the hands of the Department of Agriculture.

Switzerland has a forest policy dating back six centuries. Certain of the German states have systems of forest control which have been in effect several hundred years; Norway, Sweden, Russia, Austria, and India, all have vast national forests which make them independent of the world in the matter of wood supply. Italy is making an heroic effort to redeem herself and replant the slopes of the Apennines. France was once the great exponent of conservative forestry and is once again entitled to special recognition. But in the period of reckless individualism following the French Revolution, she forgot the lesson of the ages. An impatient people, clamoring for immediate gain, cut down the forests which preceding generations had nurtured on the mountain sides. The result was overwhelming. Fernow tells us:

"In 1803 the agricultural society of Marseilles complains as follows: 'The winters have become severer, the summers drier and hotter, the beneficial rains of spring and autumn fail; the
Mejeanne River, flowing east and west, tears away its banks with the smallest thunder-storm, and inundates the richest meadows; but nine months of the year its bed is dry, since the springs have given out; irregular destructive thunder-showers are of yearly occurrence, and rain is deficient at all seasons.

"Yet in spite of these early warnings, which were supported by theoretical discussions of such sound reasoners as Boussingault, Becquerel, and others, action to stem the destruction and to recuperate the lost ground was obtained only within the last forty years, after at least 1,000,000 acres of mountain forest had been denuded, and all aftergrowth had been destroyed by fire and excessive grazing, in consequence of which the mountain streams, turned into torrents, laid waste about 8,000,000 acres of tillable land, and the population of eighteen departments had been impoverished or driven out. Now, although with the expenditure of more than $40,000,000 only a small part has been recuperated, the efficiency of a forest growth in holding the soils of the slopes and retarding the run-off water seems experimentally demonstrated beyond peradventure."

The destruction of 1,000,000 acres of mountain forests cost France the fertility of 8,000,000 acres of tillable land and the expenditure of $40,000,000. This is about thirteen times as much as the net cost of forestry to the United States from the year one down to the present date. What France, by reason of the courage and frugality of her people, has been able to do, has proven a task beyond the powers of many other nations. Through the destruction of its forests Asia Minor has replaced fertile valleys with lifeless deserts. Northern Africa, once a land of untold fertility, has become a parched and unproductive waste. Sicily and Southern Italy, Spain and Portugal, have been ruined by the destruction of their forests and the resulting impoverishment of the soil. The rise and fall of nations in the past was governed not by social and political changes, but by physical changes. Assyria, Greece, Rome, Carthage, and Spain, rose through the power of the riches of their natural resources and declined with the impoverishment of the soil; and, in a mountain land, forests on the slopes are indispensable to fertility in the valleys.

As the sins of the fathers are visited upon their sons, so the sins of the mountains are visited upon the valleys. The control
of forests must, therefore, be placed in the hands of a power as far reaching as forest influences, a power responsible for both mountain and plain.

By the passage of the Weeks' bill, Congress has legislatively voiced the sentiment that the forest fire problem, even on private land, is not only no longer a private problem, is not even exclusively a state problem, but is a joint problem and duty to be borne by State and Nation, share and share alike. Forest fires are now looked upon as a public enemy rather than a private menace, and the Federal Government now assists in fighting fires even on private land from Maine to Oregon. And so the entire forestry problem widens and expands with the broader view of a thinking people until it welds into one the responsibility of the individual, the state, and the nation. It combines in concrete form all the elemental requirements of good citizenship, and one is as essential to the permanency of the Republic as the other. No nation has ever long endured without a stable, national forest policy. I believe the American Republic to be as enduring as the fields of Egypt whose fertility depends upon the great forests of darkest Africa. Conversely, I believe our national forest policy will endure until the Creator repeals the law of gravitation.

Our nation's everlasting life depends upon the fertility of the soil and that in turn depends upon the forethought of a stable citizenship with courage to save for a sowing in order to profit by a harvest, a citizenship generous enough to do for posterity what nature has done for us, a broad-minded, liberal, farsighted, citizenship, believing that the nation and the race are just as entitled to a future life eternal as the individual, who look upon justice and cooperation between generations as being just as essential as justice and cooperation between communities, who believe that we have no more right to rob a future generation of nature's intended bounty than the traveler in the desert has to poison the spring from which he never expects to drink again, who believe that the divinity which shapes our ends works most nobly from within, who enshrine self-control as exemplified both in man and nation as the most compensating cardinal virtue, and who believe that the glory of the future depends upon the courage of the present to use wisely and well what God has given us, and through wise creative use increase the bounty of the
present as the heritage of the future, leaving the earth in all things better and richer because this generation had lived and had made its life, in a fair degree, a stepping stone for future generations instead of the grave of the greatness of a world.