

# **ECONOMIC TREE PLANTING**

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Economic Tree planting by B. G. Northrop

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**B. G. NORTHROP**

**ECONOMIC  
TREE PLANTING**



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BY  
B. G. NORTHROP, LL.D.

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1878.

## ECONOMIC TREE-PLANTING.

BY HON. B. G. NORTHPROP.

Being neither a scientist nor farmer, I have made no original investigations or practical experiments in forestry. Lest I may seem presumptuous in attempting to instruct others on a great subject in which I am myself a novice, reference is made to my opportunities for learning the matured views of those who, devoting their lives to this study, have made investigations and experiments on a broad scale. Three months of last summer were occupied in visiting "the Foresters," forest schools, and forest plantations of Europe. The letter of Governor Hubbard,\* and one from Hon. Wm. M. Evarts, Secretary of State, bespeaking the coöperation of our ministers and consuls, whose aid might be needed, gave free access to all desired sources of information, especially the official "Departments of Forestry," forest schools and their professors, forest plantations, national, communal, or private, and their managers, and the parks and gardens on the Continent and in England. With note-book always in hand, I conferred with numerous authors in this department, as well as practical foresters. Gathering facts from so many experts, and condensing statements from so many sources, it is impracticable in this address to formally quote their language, which I have freely modified and abridged. In addition to the professors of the forest schools visited, and to many diplomatic agents, I

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\* EXECUTIVE DEPARTMENT, HARTFORD, CONN., June 12, 1877.

I have signed these presents for the purpose of duly accrediting the Hon. B. G. Northrop, of the Board of Education of this State, who is commissioned by said Board to visit the Schools of Forestry and Forest Plantations, and the Industrial Schools of Europe, and report the results of his observations for the benefit of the schools and people of this State, and especially to encourage the reclamation of waste lands by the propagation of trees. I beg to commend Mr. Northrop to the courtesies and co-operation of all persons to whom these presents shall come, and particularly to those who are managers of the institutions above named, and are interested therein. In testimony whereof, I have hereunto set my hand.

RICHARD D. HUBBARD.

am especially indebted to Hon. George P. Marsh, the American Minister to Rome, Captain Campbell Walker, Conservator of State Forests in New Zealand, J. C. Brown, LL. D., long Colonial Botanist at Cape of Good Hope, and J. McGregor, Forester of the Duke of Athole, for information given in personal interviews as well as for that derived from their published works.

The literature of forestry, already large, is now rapidly increasing by the coöperation of professors in forest schools, and government officials specially commissioned to investigate different branches of the subject, and many other writers. A German catalogue gives the titles of 1,815 volumes on forestry issued prior to 1842, and the titles of 650 works published in the six years prior to 1876. On an average, over one hundred new books on forestry appear annually in the German language. One of the Spanish Commissioners to the Centennial Exposition, Señor Morera, published a list of 1,126 volumes on forestry in the Spanish language alone.

Little attention has been given in this country to silviculture. Nature has been wonderfully bountiful in the magnificent forests which once adorned this land, but our people have been recklessly prodigal in wasting this rich inheritance. As if they were the enemies of man, forests have been consumed without a thought of renewing them, and fire has been made to help the axe in destroying what it required ages to produce.

The progress of a nation may be measured to a large extent by its consumption of wood. Extensively as brick, stone, and iron may be substituted for wood in building, and coal used for fuel, the timber demand for purposes of utility and ornament will everywhere increase as civilization advances. The railways are enormous consumers of wood. Says Professor C. S. Sargent: "Supposing the life of a sleeper is seven years, the 85,000 miles of track in the United States consume annually 34,000,000 sleepers, or thirty years' growth on 68,000 acres of the best natural woodlands. At least 125,000 miles of fencing are required to enclose the railroads of the country, costing not less than \$48,000,000, with large expenditures for annual

repairs. For the construction of 65,000 miles of telegraph lines in the United States, 2,000,000 trees for poles were required, while the annual repairs must call for 250,000 more." A late Agricultural Report of Illinois says: "The fences of the United States cost more than any other class of property except real estate and railroads; the total amount being estimated at eighteen hundred millions of dollars, with an annual expense of ninety-eight millions for repairs." Desirable as may be live hedges, stone walls or ditches, wooden fences are likely to be long used.

But aside from the need of fencing, and the demands for railway and telegraph companies, there are nearly seventy occupations enumerated in the last United States census which in whole or in part use wood as their raw material for manufacture, employing more than one million of artisans, such as carpenters, cabinet-makers, chair-makers, coach-makers, coopers, boat and ship builders, wheelwrights, manufacturers of brooms, brushes, matches, furniture, agricultural implements, machinery and the like. There are 63,928 establishments manufacturing articles made entirely of wood, employing 893,387 persons, and using materials worth \$309,921,403 annually. There are, besides, 109,512 establishments in which wood is an important material, as for example, in pianos, carriages, bridges and ships, employing 700,915 persons, and using materials worth \$488,530,844. With these facts before us, there need be no fear of an over-production of wood. It is estimated that in our whole country over three million acres of wood-growing land are cleared annually, and this usually without any proper plans for reforesting them. Favorably situated as Connecticut is, in the midst of these industries and near the great market centers, and with new calls for exportation, there is sure to be a growing demand for all desirable lumber.

George Peabody, who did so much to encourage schools and learning, originated the motto, so happily illustrated by his own munificent gifts to promote education: "Education—the debt of the present to future generations." We owe it to our children to leave our lands the better for our tillage, and we



wrong both ourselves and them if our fields are impoverished by our improvidence. But much as foresight is admired when its predictions are realized and its achievements made, all history too plainly tells that the mass of men are not easily persuaded to provide for exigencies far in the future. It was more than two centuries after the death of Bernard Palissy, the famous "Potter of the Tuilleries," and after many sad lessons of devastating mountain torrents resulting from excessive forest denudation, before France learned to heed his earnest warning. Expressing his indignation at the folly of such general destruction of the woods he said: "I call it not error, but a curse and a calamity to all France. When I consider the value of the least clump of trees, I marvel at the great ignorance of men who do now-a-days study only to break down, fell and waste the fair forests which their forefathers did guard so choicely. I would think no evil of them for cutting down the woods, did they but replant some part of them again, but they care naught for the time to come, neither reckon they of the great damage they do to their children." In 1680, the eminent French statesman, Colbert, said to Louis XIV.: "France will perish for want of wood."

It was not, however, till 1859 and 1860 that stringent laws were passed for the protection of existing woodlands and the formation of new forests. The former of these laws passed the Assembly by a vote of 246 against 4, and the latter with but a single negative voice. The unanimity with which these laws were enacted, though they seriously interfere with the rights of private domain, shows at last the strength of the popular conviction that the protection and extension of forests were matters of national interest and necessity, and would arrest the devastations of mountain torrents and river inundations. The law of 1860 appropriated 10,000,000 francs, at the rate of 1,000,000 a year, in aiding the replanting of woods. In 1865 a bill was passed for securing the soil in exposed localities by grading, and the formation of greensward.

This measure, proved to be beneficial in France, Mr. Marsh highly recommends for adoption in the United States. The leading features of this system are marking out and securing

from pasturage and browsing a zone along the banks of ravines, which is carefully turfed and planted with shrubs and trees; consolidating the scarps of the ravines by grading and wattling and establishing barriers of solid masonry, or more commonly of fascines, or other simple materials across the bed of the stream, and cutting narrow terraces along the scarps. Many hundred ravines, formerly the channels of formidable torrents, have been secured by barriers, and by grading and planting, and the success of the system has far surpassed all expectation. The plan of *circling*, long used in this country, is now adopted in France. This plan prevents the wash of the surface, and provides irrigation by running horizontal furrows along the hill-sides, and thus cheaply securing a succession of small terraces, checking the rapid flow of the surface water, obviating one cause of inundations, and greatly fertilizing the lands thus irrigated.

The evils of widespread forest denudation both as regards climatic changes, *uniform* flow of springs and streams, devastation by mountain torrents, and the exhaustion of once fertile lands, have been long and sadly felt in the Old World. Many rich and fertile countries have become arid wastes when denuded of trees. The Mediterranean coast of Africa is a case in point. Tunis and Algiers were once fertile regions, supporting a dense population. Their decadence is traceable largely to the destruction of their forests. Rentzsch ascribes the political decadence of Spain almost wholly to the destruction of the forests.

Mr. George P. Marsh says: "There are parts of Asia Minor, of Northern Africa, of Greece, and even of Alpine Europe, where causes set in action by man have brought the face of the earth to a desolation as complete as that of the moon, and yet they are known to have been once covered with luxuriant woods, verdant pastures, and fertile meadows; and a dense population formerly inhabited those *now* lonely districts. The fairest and fruitfulest provinces of the Roman empire once endowed with the greatest superiority of soil, climate, and position, are completely exhausted of their fertility, or so diminished in their productiveness as, with the

