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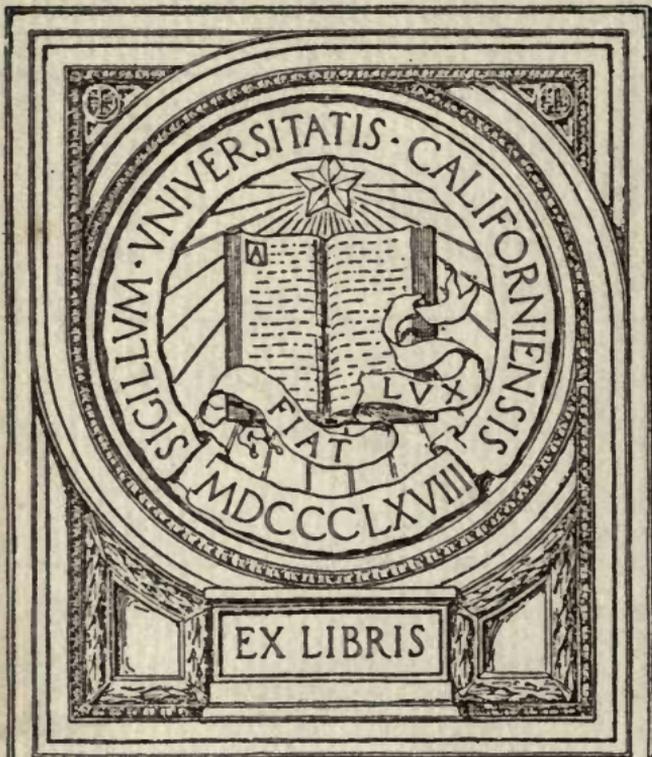
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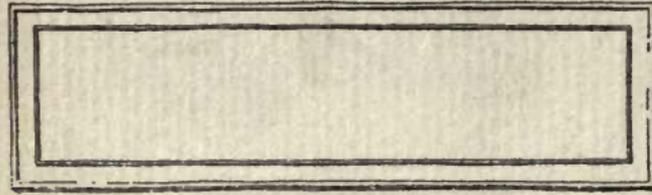


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FOREST BUILDING IN NEW YORK  
Leaflet One  
Reforestation  
N. Y. College of Forestry.



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# Forest Building in New York

Leaflet 1

## Reforestation



Published by  
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## Dormant Wealth in Idle Acres

Bulletin No. 19 by Prof. J. W. Stephen, M. S. F., contains complete information on this subject. Free on application.

There are over 12 million acres of forest land in the State of New York. A large portion of it is absolutely idle. The amount of timber that could be grown on that area in fifty years baffles the imagination. In round numbers,—the entire crop, if harvested at one time, would be sufficient to supply the whole United States for upward of ten years. The United States uses 56 million board feet of sawn lumber per annum.<sup>2</sup>

The exact number of New York's idle acres is not known; but we do know that a single acre of second grade land, planted to pine, will yield over 40 thousand board feet of lumber in fifty years,—because plantations made in New York and other eastern States in the early seventies are here to-day to prove it. The plantation shown on the cover of this leaflet measured 30 thousand feet to the acre, and there is no record of its ever having been cared for in any way from the day it was set out.



500,000 WHITE PINE TRANSPLANTED FOUR YEARS OLD  
SYRACUSE EXPERIMENT STATION

### The Time for Action is Here

There never was a time when reforestation was not practical and advisable. To-day it is more than that, it is indispensable. New York could hold out a little longer than most states, in spite of her millions of idle acres, because she has large reserves of timber locked up and protected by law. But the time would not be long before she would arrive at the place where the country in general now finds itself. The situation is this:

*"Three-fifths of the timber we once had in the United States is gone. Over two-thirds of our original forest area has been culled, cut-over or burned. Of our virgin forests, one-sixth remains. More than eighty million acres have been devastated, and, so far as production is concerned, are practically desert. We are cutting woods of all kinds from our forests more than four times faster than it is being replaced by growth. Not only is there less wood year by year and day by day in the United States, but there is less land growing wood. We are living beyond our income and destroying our invested capital at the same time."*<sup>3</sup>

That the need is recognized by the more thoughtful citizens, and by forestry organizations, departments and educational institutions throughout the country, is apparent from the recent activity in forest planting. The memorial tree movement is a step in the right direction, but it finds its most practical expression in the establishment of a forest plantation. The College of Forestry, in addition to planting many thousands of

<sup>1</sup> This figure is according to the best available estimates. The Conservation Commission reports 125,000 acres in need of immediate reforestation on the State preserve. The College of Forestry estimates that there are seven million idle acres on the farms of the State alone.

<sup>2</sup> From U. S. Dept. of Agriculture Report on Senate Resolution 311.

<sup>3</sup> From a recent article by former U. S. Forester Gifford Pinchot, Feb. North American Review.

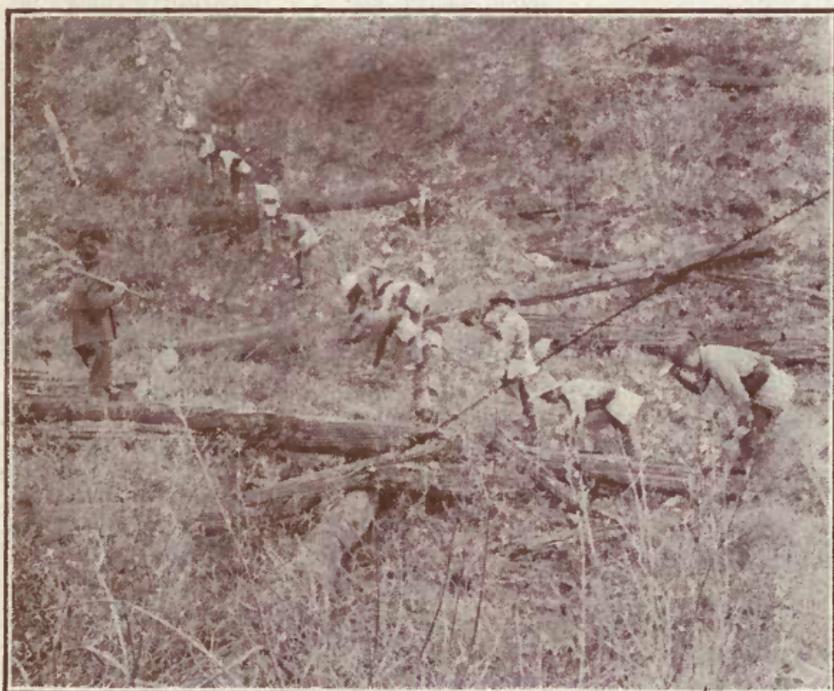
M. N. W.  
trees throughout the State, has directed forest planting among the Boy Scout organizations and the schools, for purposes of civic betterment, and to foster respect and love for the forests among the youth of the State.

## The Forest Builders

It appears that timber will be scarce and high; that the forest builder of to-day and to-morrow will not only render distinctive service to his state and country, but will also enjoy profitable returns on his labor and investment.

### Are You One of Them?

How many acres of waste land do you own in New York? How many would you buy at \$5 per acre, to reforest at \$5 to \$14 per acre, if you knew that their value would begin to increase at once and keep right on increasing, until at the end of forty or fifty years each acre had a value of \$500 or over?<sup>1</sup> If you are frankly selfish in the matter of waiting for the ultimate return, how many acres would you undertake to reforest if you could feel sure of a good return within the next ten or twelve years?



PLANTING TREES WHERE FIRE DESTROYED ORIGINAL FORESTS

## Plant Now

**For Investment.** An acre of waste land is worth from \$1 to \$10 according to its location. The same acre planted to suitable forest trees is worth from \$10 to over \$500, according to the kind of trees planted and the time they are left to grow.

A crop of Christmas trees, fence posts, or popular pulp wood can be grown in fifteen years or less.

A farm on which all the land is working is worth more to own, to buy or to sell than the farm that carries idles acres. Ask the real estate man or the farm agent whether it pays to grow trees on the poorer soils and unused sections of the farm.

**For Protection.** Planted forests, like natural-grown forests, protect the land from erosion, regulate stream flow and hold vast quantities of water in storage following rain and snow.

They furnish shelter to valuable game birds, many of which in turn protect crops from insects, and furnish food and sport.

<sup>1</sup>The price of waste land in New York varies with its location. In the west of the State, where a new State Park is being advocated, a considerable area can be bought at from 50 cents to \$5 per acre. The average cost of waste land in the State is somewhere around \$5 to \$7 per acre.

They act as a wind break to homes and crops, and are a protection in this respect to a distance of one rod for every foot in height.<sup>1</sup>

**For Beauty.** The architect draws his plans with an eye to beauty as well as service. But without a definite plan, save that the trees should be spaced to promote the best growth, the forest builder creates a thing of beauty, capable not only of practical returns in money, but of great recreational values.

## HOW TO REFOREST

**Planting Stock.** The pioneers in forest building in New York used pasture trees, and planted them in furrows behind the plow. It is much more satisfactory and profitable to use nursery-grown seedlings and transplants, because of their compact root system and uniform size; and the grub hoe is superior to the plow for planting purposes. The State nurseries are filled with ideal stock for reforestation, both seedlings and transplants. These are available at cost of production for planting on any lands within the State. There are also a large number of reliable commercial nurseries in this and nearby states from which stock can be obtained. State trees are applied for to the Conservation Commission at Albany. The applicant agrees that they shall not be sold or given away, and that they shall be planted on land that will be devoted to continuous forest production. These requirements do not hinder the owner from making improvement thinnings or harvesting the crop when it is mature. A law was passed in 1920 to provide for free trees. As these must be grown in the State nurseries and charged against the actual money appropriated for that purpose, seedling trees will not be available until the fall of 1921 and spring of 1922, and transplants after 1922.<sup>2</sup> For large scale operations the forest builder should install his own nursery, and the best guides are bulletin 76 of the U. S. Forest Service, and the bulletin on nursery practice by C. R. Pettis, published by the Conservation Commission at Albany.

### Kinds to Use

In general, the cone bearing trees are the best, because of their greater lumber value, variety of uses, the shortage of mature pine, spruce and hemlock timber, and because the soil of the State is so well adapted to the growing of evergreen trees. Hardwoods may be grown for special purposes, or used to advantage in mixture with conifers. When planted in mixture with evergreens they help to protect the latter from their natural enemies.

The following list contains the species best adapted for planting in New York, and the uses to which they may be put when ready to cut. Our Bulletin 19 describes most of these in detail and gives their requirements for growth and their uses.

### Short Time Crops

(10 to 20 years)

<b>Lumber</b>	<b>Fence Posts</b>	<b>Pulp Wood</b>
Carolina Poplar	Black Locust	Carolina Poplar
	Carolina Poplar <sup>3</sup>	
<b>Christmas Trees</b>		<b>Baskets</b>
Red Spruce		Willow
Norway Spruce		(For immediate
Balsam		profit beginning at
		end of first year. <sup>4</sup>

<sup>1</sup> See Circ. 19 of the New York State College of Forestry.

<sup>2</sup> Seedlings are trees grown one or more years from seed without having been moved. Transplants are trees that have been grown in the nursery and moved at least once from their original position as seedlings. See Bul. 19, State College of Forestry.

<sup>3</sup> Poplar fence posts can be made durable by creosoting. Write for "Prolonging the Life of Farm Timbers," by Lawrence Lee, Instructor in Wood Technology, N. Y. State College of Forestry, Syracuse.

<sup>4</sup> See Circular 18, Basket Willow Culture by John Wallace Stephen, M. S. F.

## Long Time Crops (30 to 50 years)

Lumber	Pulp Wood	Ties
White Pine	Norway Spruce	Red Pine
Red Pine		White Cedar
Norway Spruce		Scotch Pine
European Larch		European Larch
White Ash		Red Oak
Red Oak		Black Walnut
Poles	Fence Posts	
Black Locust	White Cedar	
Scotch Pine	Scotch Pine	
European Larch	European Larch	
White Cedar	Red Oak	

### Age and Size

Seedlings may be used where grass is short and general vegetation is light. Transplants are better for all-around planting. Three and four year transplants are recommended for evergreens; one-year old seedlings for locust and ash; two-year old seedlings for oak and larch. Poplar is easily grown from cuttings, which should be rooted for one year before being planted on their permanent site.

### When to Plant

Forest trees should be planted in the spring as soon as the frost is out of the ground and before the year's growth is under way, or in the fall after growth has ceased, and a month or so before the soil freezes. Spring planting is slightly better for trees, and fall for labor. The ideal time will come between April 1 and May 15, and between September 1 and October 15. The forest builder must study the season.

### How to Plant

**Heeling In.** As soon as the trees are received they should be taken to the planting ground, unpacked and "heeled in." The heeling in process consists of digging a trench 8 or 10 inches deep and placing the roots of the trees therein, covering them with fresh earth which is packed about them firmly and kept moist by watering daily. Trees may be left in the trench for a week, or during the period of planting, but should be set in their permanent places as soon as possible.

**The Planting Crew.** The number of men engaged depends upon the size of the job to be done. They should be divided into crews of two men each, one to make the holes and the other to follow up with the trees, which are carried in a pail. It is advisable to keep about three or four inches of a mixture of soil and water in the bottom of the pail, thus the roots of the trees will be kept moist.

**Spacing.** The usual spacing is six feet apart each way, or 1210 trees to the acre. If a pole is set at each end of the field, and moved over a distance of six feet as the end of the course is reached, the lines of trees will be kept fairly straight. After making the hole with a grub hoe, the digger takes two steps, makes another hole, and continues on in this way to the end of the field, sighting on his own pole or stake to keep the line straight. He should dig the hole deep and wide enough to allow the roots to lie in a normal position, and should leave the soil by the side of the hole in a convenient position for the planter who follows close behind.

**Covering and Firming In.** The planter places the tree in the hole, packs the loose earth about the roots, and when all the soil except the sod is replaced, he firms it with the foot, taking care not to injure the bark. The roots should be placed slightly deeper than they were in the nursery to allow for the loose ground to settle, but the final position should be as in the nursery. This is especially important when planting spruce. The entire tree should be made firm enough to resist loosening action of the wind, and should stand erect.

**Advantage of the Six-Foot Spacing.** The close spacing is intended to kill off the lower branches as the trees grow, to shade out other vegetation and to produce tall, straight and clear timber. Trees planted six feet apart will require thinning at the end of fifteen or twenty years, and a second thinning, on which some profit will be realized, can be made in thirty years. On short-time crops, such as posts, the thinning is not so important, as the trees will enter the crowding stage just at the time when they are ready for use. If planted trees are left too long a time without thinning they will thin themselves in the natural way—by killing each other off.

**Underplanting.** If there is already a thin stand of trees on the land, plantings can be made in the open spaces. The trees already present will force the transplants to seek light and they will grow more tall and straight as a result of this pressure. Where there is overhead shade spruce and hemlock should be used. Where the shade is too dense underplanting is not advisable.



GREAT BEAR SPINGS PLANTATION, OSWEGO, N. Y. 7 YEAR GROWTH

## Care of the Plantation

No cultivation is given a forest plantation as a rule, because the land is unimproved. The plantation must be protected from fire, and stock must be kept out at all times. As the trees grow they will meet with opposition from several sources, and these will be described in our leaflet on Forest Protection.

## Results

We now come to the final and practical question, "What do we get?" Large numbers of bulletins have been written by government and State experts, by technical men in the colleges, and by foresters in the field in answer to this question.

If you have planted for a long-time crop, you will get, on average soil, at least twelve thousand feet of pine in thirty years, and just four times that amount in fifty years, or approximately fifty thousand board feet per acre. The poorest soil will give you forty thousand feet per acre in fifty years in addition to the thinnings previously made for the purpose of removing the crowded trees. If hardwoods are planted in the mixture, these can be cut at intervals after the fifteenth year, leaving the pine as the ultimate crop.

If your planting has been done with the short-time crop in view, your returns will be found among the following:

(1) A crop of fence posts every ten years, four posts to the tree, at a return of about \$70 per acre per year.

(2) A crop of pulpwood, box board or excelsior stock in fifteen years or less, followed by a similar crop every eight or ten years thereafter, the largest trees being taken at each thinning.

(3) Christmas trees yielding about \$120 per acre per year, the first crop coming at the end of five to seven years.

(4) Basket willow, a ton of inferior rods the first year, three tons of first grade rods the second, and for the next twelve to twenty years from six to ten tons per acre. The present price of rods is \$25 per ton.

### Summary

Forest building, through the medium of reforestation, is a subject worthy of the attention of all right-thinking people. The need is vital, the field is wide, the work carries inspiration, the method is simple, the profits are sure. The trees adaptable to use in restoring the waste areas of the State offer a wide choice, both in connection with the type of forest desired and in the length of time which the individual wishes to set upon the investment made.

This leaflet is not technical, although based on technical research, experiment and study of the oldest forest plantings of which we have record. Its object is to "plead the case" of the idle acres to the owner who has hitherto given no study to the problem, and to encourage those who have made a beginning in reforestation to a deeper study and greater effort. Reference has been made to several bulletins, both of a technical and non-technical nature; if the foregoing pages have been followed with reasonable care, the literature referred to will be easily understood and will prove of increasing interest. The college stands ready to give advice and supervision, to answer inquiries by mail and to furnish literature on the various phases of forestry practice. This is a part of its educational work.

The use of growth tables and money yield tables has been omitted from this leaflet, since figures have been used freely throughout the text. It is fitting, however, to give a condensed statement on the growth, the cost and the return on one of our best known and most valuable forest trees—the white pine; for it is around this tree that reforestation, both in New York and in other Eastern States has been largely built.



WHITE PINE, SHARON, MASS., 56 YEARS

### The White Pine Lumber Yield Per Acre \*

Age (Years)	Soil Quality 2 Feet Board Measure
30 .....	12,500
35 .....	24,400
40 .....	32,800
45 .....	40,600
50 .....	46,500

\* Foot note page 8.

## Money Yield Per Acre \*

(Standing timber at \$8 per thousand feet)

Age (Years)	
30 .....	\$100.0
35 .....	195.0
40 .....	262.4
45 .....	324.8
50 .....	372.0

There are a large number of old white pine plantations in the State of Massachusetts. These have been accurately measured and compared with yield tables of natural grown pine in the same forest region. Our own Conservation Commission in New York State bases its table of profits derived from reforestation on the Massachusetts measurements. Both of these State departments are conservative in their figures but they find, after figuring the accrued taxes on the land, and compound interest on the entire cost, that a white pine plantation is a 6 or 7 per cent. investment at present stumpage rates. Any increase in stumpage values (and these are bound to increase materially as time goes on owing to the present scarcity of timber) will mean a corresponding increase in the returns. The forest builder of the present day can safely assume that he is investing for a 12 per cent. return rather than a 6 per cent. return. The two authorities above quoted are in substantial agreement on the figures listed below.

### White Pine Plantation

Age, 50 years. Area, 1 acre. Soil, quality 3 (poor).  
Record of taxes, cost, interest, profits and net returns.

Board Feet 37,600	Stumpage Value @ \$10 per M \$376.00	Total Investment \$39.56
Total Cost and Accrued Interest \$235.74	Profit Gross (money) \$336.44	Net in Excess 5% Compound Interest \$140.25

\* From Forest Mensuration of the White Pine, State Dept. Forestry, Massachusetts.

### How It Is Done



STUDENTS OF THE NEW YORK STATE COLLEGE OF FORESTRY SETTING OF  
YOUNG TREES ON MT. OLYMPUS, ONE OF THE COLLEGE  
EXPERIMENT STATIONS

Gaylord Bros.  
Makers  
Syracuse, N. Y.  
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