

HARVARD UNIVERSITY

THE HARVARD FOREST

Petersham
Massachusetts

1929

THE HARVARD FOREST

A model forest to demonstrate the practice of forestry

An experiment station for research in forestry and allied problems

A field laboratory for graduate students

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THE HARVARD FOREST

What and Where It Is

The Harvard Forest consists of 2100 acres of varied woodland, situated in the town of Petersham, in northern Worcester County, Massachusetts, about seventy-five miles west of Boston. Well timbered almost all over, it contains a greater variety of the different stages of forest represented in New England history than can be found on an equal area anywhere else in the region. Besides authentic fragments of the original primeval forest, it has phases of second growth and tree species representative both of the northern and central forests. In addition to the original tract, the Forest has had a number of accessions given for special purposes: in Winchester, New Hampshire, twenty acres of primeval pine and hemlock forest, one of the very last remnants of such forest in New England and of great value for scientific purposes; in Hamilton, Massachusetts, 120 acres of coniferous plantations, established and given to the Forest by the late Nathan Matthews and embodying one of the earliest and most extensive experiments with native and exotic softwoods yet made in the country; in Petersham, a fifty-acre tract of mixed woods, given by G. F. Schwarz for demonstrating adaptations of forestry to landscape architecture; and finally a valuable stand of timber covering more than 150 acres and contiguous to the main tract, loaned by the New England Box Company for an indefinite period for joint experimental work in forest management. Contained in the Petersham ownership is a thousand-acre bird refuge of unusual interest and value, which is jointly maintained by the University and the state. The Forest also conducts a nursery for the raising of tree seedlings. This contains usually about a quarter of a million trees, which are used in part for planting in the Forest and in part to supply neighboring land owners with planting stock.

What It Is Used For

The Forest was originally acquired to serve for the students in the department very much the purpose of a hospital for students of medicine. By 1915 it seemed plain that, because so many institutions were teaching

elementary forestry and because the Harvard Forest possessed unique qualifications as a forest experiment station, it should be devoted primarily to research, and instruction confined to advanced or graduate students. Thus, since 1915, the Forest has been managed with three main objects:

1. A model forest to demonstrate the practice of forestry.
2. An experiment station for research in forestry and allied problems.
3. A field laboratory for graduate students.

In adopting this policy the Forest has been the only university department of its sort in the country devoted exclusively to research.

What It Has Accomplished

When the study of forestry began actively in this country about thirty years ago, almost nothing was known about the silvicultural characteristics of American forest trees and, in the absence of that knowledge, it was impossible to translate into terms of American practice the principles which were being applied in the older countries, or to apply new principles with any confidence. The great body of classified, factual information which is the first essential of any science or art was lacking. It is easy to understand that knowledge concerning long-lived organisms like forest trees will take a long time to accumulate. The Harvard school was fortunate in being first to obtain a sizable tract of land whereon the physical conditions, tree species, and forest ages were at once so various and so typical that valuable observations and numerous instructive experimental operations could begin immediately. For twenty-two years the school has maintained records in the form of maps, annual descriptions, and operation costs which already amount to a body of data of unique interest and importance. The cost records have been kept in terms of labor/hours as well as money, so that they can be translated in terms of business conditions prevailing at any date. From these records and studies precise and new knowledge has been derived. With this as a basis the Forest should now be enabled to enter even more actively than heretofore upon the experimental stage to which every science turns eagerly as soon as enough preliminary data have been gathered to warrant. The position of leadership which the Forest has attained by reason of the cultivation of its fortunate opportunities during these twenty-two years is clearly indicated in the following section.

With respect to all its objectives the Forest has made a record of distinguished service. Being now the oldest scientifically managed forest in the United States, it is able to show the tangible results of different methods of cutting or treatment of forest crops which only time can produce and which are to be seen nowhere else short of foreign countries. These results are shown each year to large numbers of persons concerned in professional forestry or woodland management. In its function as experiment station, the Forest has now in the press the seventeenth of a series of bulletins which have embodied important contributions to American forest science and practice. Most of these bulletins, as well as numerous articles in technical journals, have been the result of research projects conducted by graduate students in collaboration with members of the Forest staff. Through plantations, logging operations, marking for cuttings, etc., planned and supervised by members of the staff, the Forest has contributed to the development or reforestation of nearly 50,000 acres of land in the Petersham region; and with much of this area the department still maintains an advisory connection.

One of the principal reasons why the lessons of the Harvard Forest have been convincing is that it has been managed from the start as a paying enterprise in which the developing measures for maintaining and increasing production were more than paid for by the income from cuttings. Today, the Forest has a larger volume of timber and a substantially higher annual production than it had twenty years ago; and in the meanwhile nearly four and one-half million feet of lumber have been cut and profitably marketed. The Forest is thus the most highly developed example in the country of the means whereby forests can be made to do their own reforesting and thus keep on producing indefinitely.

What Is Thought of the Forest

The following comments from professional, scientific, and business men who have visited Petersham indicate the progress which the Forest has made toward fulfilling its objects of management.

From P. W. Barr, Chief of Research, British Columbia Forestry Branch, January 22, 1928:

“As one who is interested primarily in the practice of forestry in the woods, may I assure you that your Forest offers much more in the way of instruction and inspiration than any place I have visited.”

From the “Blister Rust News” of the Department of Agriculture, 1928:

“Asked what he considered the most instructive example of forestry in America, Mr. von Maltzahn (of the Mecklenburg Forest Service) stated that he was most impressed by the Harvard Forest at Petersham, Mass., and that every German forester might be able to learn in this forest.”

From W. B. Greeley, Chief Forester of the U. S. Forest Service, April 21, 1928:

“The two days at Petersham last August stand out as red letter events for many reasons, among them that I felt closer on that occasion to native American silviculture than at any other time in my life.”

From Charles H. Keith, President of the New England Box Company, Greenfield, Mass., June 27, 1924:

“I can say so far as the New England Box Company is concerned that the research work which is being done (at the Harvard Forest) and which no individual can afford to do, is going to have a very important place in the reproduction of timber for New England. We are convinced of its practicability because it has made profits for us.

“Professor Fisher is spending a good deal of time to improve the marketing of Forest Products and has demonstrated to us a possible saving of \$30,000 a year in the lumber being used by us to make boxes. At the Harvard Forest they show you results and not theory. . . . They are making constant progress in converting lumbermen and manufacturers to the value of the quality of the service they render.”

From D. E. Lauderburn, consultant for lumber and paper companies, 1929:

"It is very fortunate for our profession that there is such an organization as the Harvard Forest. . . . Such studies . . . are very helpful to us who are in private and consulting work, trying to establish such silvicultural work as is financially possible, but without the training and opportunity for much silvicultural research."

From the "Nature Magazine" for July, 1927, an article, "Show Windows of Forestry" by Tom Gill:

"The Harvard Forest at Petersham is a perfect forest laboratory, the most interesting in the United States."

From the "New England Homestead" for August 22, 1925, an editorial, "Farm Forestry Made Easy":

"Experience in the Harvard Forest and the facts it has proven in field and laboratory give to the results actually achieved by Director Fisher and his co-workers a value that is as intensely practical as it is thoroughly scientific. Because of this truth, because the lessons learned here are just beginning to be applied by farmers and lumbermen throughout New England, and because these easy methods mean profits instead of loss from waste lands, a study of Harvard Forest results has been made by our President, Herbert Myrick, and will be featured in The Homestead through the coming winter in time to be of most seasonable interest—a series of stories and pictures of human interest and much practical value."

From the "Service Bulletin" of the U. S. Forest Service for May 4, 1925, an article, "The School of the Woods" by Ward Shepard, Assistant Chief of the Public Relations Branch of the U. S. Forest Service:

"Every forester in the United States ought to visit the Harvard Forest to see the possibilities not merely of growing timber, but of forestry as a craft, an art, a satisfying pursuit."

From the "Yale Forest News"—the alumni journal of the Yale School of Forestry, which is the oldest and most influential professional school of its sort in the country—for April, 1926:

"This record of continuity in intensive silvicultural practice is probably unequalled in America and it is to the cumulative results of this management that Fisher's contribution to forestry owes its great value."

“The Harvard Forest gives to the profession that which is most needed now and which will continue to be our most urgent requirement for decades to come—a demonstration area where the actual working out of forestry practice as a successful business venture can be studied at first hand without having to visit a foreign country to convince ourselves that it can be done. Fisher represents the new idea in America, which must supplant the old pioneer psychology of prodigal waste.”

Why the Forest Needs Funds

Up to a few years ago the Forest had had no financial support other than the income from forest products and the tuition fees from research students, necessarily few in number. In the last five years the necessary expense of scientific work—maintenance of records, enlargements of equipment, upkeep of buildings, etc.—has reached an amount which the income from cuttings cannot and should not be expected to meet. On the contrary it is felt by a large number of the scientific and business friends of the Forest that some of the area should be withdrawn from the necessity of periodic cutting (with consequent reduction of income) because of its special and unique value either as illustrating conditions that are vanishing or because of the demonstration value of the results of certain treatment. Furthermore, the members of the staff are very inadequately paid and their continued service is largely due to the special professional value of connection with the Forest and to faith in its future. At present, although the Forest is producing as great a revenue as ever, there is an annual deficit, which has been met by annual gifts. If the fruits of twenty years of building are to be realized and secured for the future, the Forest must have a substantial increase in its resources for unrestricted application to the maintenance of the plant—both buildings and forest—and to the organization for research and record at Petersham.

What the Forest Needs and for What Purposes

The amount required to secure these objects is a minimum of \$300,000. At least \$275,000, should be an endowment for salaries, building maintenance, and to meet the general overhead of conducting unproductive and experimental work in the woods and releasing from cutting such areas as are most valuable for demonstration and scientific purposes. \$25,000 is needed for necessary alterations and improvements in the headquarters building. The present building is ample in size, but a dangerous fire-trap and unsuitable in design. It needs a small fireproof wing for records, maps, etc., a central heating plant, new and safe wiring for electricity, a garage for the Forest cars, and a separate cottage for the superintendent, so that the wing now occupied by him may be used for other purposes. Mr. Bulfinch, of the firm of Coolidge, Shepley, Bulfinch & Abbott, estimates that these alterations will cost from \$20,000 to \$25,000.

Present Status

<i>Income</i>		
Forest Production Research Fund, \$100,000	\$ 5,500.	
Bliss Fund, \$60,000, salaries	1,500.	
scholarships	1,500.	
Tuition fees (average)	1,000.	
Sales of forest products	15,000.	
Rent of cottage and student rooms	600.	\$25,100.
<i>Expenditures</i>		
Forest operations	\$10,000.	
Maintenance of buildings, equipment, unproductive experimental and woods labor and other over- head	6,000.	
Salaries:		
Director	3,000.	
Assistant director	3,000.	
Research associate	1,200.*	
Forest assistant	2,500.	
Expenses of research: supplies, equipment, transpor- tation, etc.	1,500.	
Scholarships	1,500.	\$28,700.
Deficit, \$3,600.		

Status with Required Endowment

<i>Income</i>		
Forest Production Research Fund, \$100,000	\$ 5,000.**	
Bliss Fund, \$60,000	3,000.	
New Endowment (\$300,000 less \$25,000 for building)	13,750.	
Tuition fees	1,000.	
Sales of forest products (reduced operations)	12,000.	
Rent of cottage and student rooms	600.	\$35,350.
<i>Expenditures</i>		
Forest operations	\$10,000.	
General overhead: supplies, equipment, roads, book- keeping, town gift in lieu of taxes, insurance, unproductive woods work, and general superin- tendence	6,000.	
Salaries	15,000.	
Director, Assistant director, Research associate, Forest assistant.		
Building maintenance	1,000.	
Scholarships	1,500.	
Research expenses: supplies, equipment, transporta- tion, etc.	1,850.	\$35,350.

* Toward this salary an equivalent sum is contributed by the U. S. Forest Service.

** Safe expectable rate of return.

STAFF OF THE HARVARD FOREST

Richard Thornton Fisher, A.B., M.F., M.S. (hon.), Director.

Albert Collins Cline, S.B., M.F., Assistant Director and Instructor in Forestry.

Paul Rupert Gast, Ph.B., S.M., S.D., Instructor in Forestry and Research Associate.

Neil Wetmore Hosley, S.B., M.F., Forest Assistant.

PUBLICATIONS OF THE HARVARD FOREST

Bulletins

- No. 1. The Management of the Harvard Forest, 1909-1919, by Richard Thornton Fisher. 1921.
- No. 2. Growth Study and Normal Yield Tables for Second Growth Hardwood Stands in Central New England, by J. Nelson Spaeth. 1920.
- No. 3. The Life History and Control of the Pales Weevil (*Hylobius Pales*), by H. B. Peirson. 1921.
- No. 4. Red Oak and White Ash, by Reuben T. Patton. 1922.
- No. 5. Control of the White Pine Weevil by Forest Management, by H. B. Peirson. 1922.
- No. 6. A Statistical Forest Survey of Seven Towns in Central Massachusetts, by R. C. Averill, W. B. Averill, and W. I. Stevens. 1923.
- No. 7. Quality and Growth of White Pine, as Influenced by Density, Site and Associated Species, by E. E. Tarbox, with field assistance, by P. M. Reed. 1924.
- No. 8. Mixed White Pine and Hardwood, by A. C. Cline and C. R. Lockard. 1925.
- No. 9. Red Pine in Central New England: A Preliminary Study with Volume and Yield Tables, by Paul M. Reed. 1926.
- No. 10. The Marketing of Lumber in New Hampshire, 1925, by A. C. Cline. A Survey Conducted for the New Hampshire Lumbermen's Association. 1926.
- No. 11. The Growth of Hemlock before and after Release from Suppression, by Robert Marshall. 1927.
- No. 12. The Wood-using Industries of Massachusetts, 1926, by J. B. Downs, with field assistance by C. B. Gutchess. 1928.
- No. 13. Form and Development of White Pine Stands as Influenced by Growing Space, by S. R. Gevorkiantz and N. W. Hosley. 1929.

In Press

- No. 14. A Thermoelectric Radiometer for Silvical Research, with Preliminary Results on the Relation of Insolation to the Growth of White Pine, by P. R. Gast.
- No. 15. The Evolution of Soils as Affected by the Old Field White Pine—Mixed Hardwood Succession in Central New England, by B. G. Griffith, E. W. Hartwell, and T. E. Shaw.

**Prepared at the Harvard Forest and Published by the
Massachusetts Forestry Association**

Pruning for Profit, as Applied to Eastern White Pine, by A. C. Cline and E. D. Fletcher. 1928.

Forest Weeding, with Special Reference to Young Natural Stands in Central New England, by A. C. Cline. 1929.