THE HARVARD FOREST AND HARVARD BLACK ROCK FOREST
1966-67

Harvard University

Annual Report

Petersham
Massachusetts
Harvard Forest

To the Dean of the Faculty of Arts and Sciences:

Sir,—The following is a report on the Harvard and Harvard Black Rock Forests for the year ending June 30, 1967.

STAFF

The staff of the Forest during the year 1966–67 consisted of the following: Ernest M. Gould, Jr., Forest Economist; Walter H. Lyford, Soil Scientist; Jack J. Karnig, Forest Manager for both the Harvard and Black Rock Forests; Richard A. Howard, Research Fellow; J. M. A. Swan, Research Fellow, and myself. Charles F. Upham served as Woods Superintendent, Barbara M. Kelley as Business Secretary and Librarian; and Julia W. Savage as Secretarial Assistant. Additions during the year were Mrs. Barbara M. McCurda as Secretarial Assistant, and Mrs. Vibeke Holm as Assistant to the Librarian.

Dr. Gould took a four-month leave of absence from 1 January to 1 May, 1967. He went to the School of Natural Resources at the University of Michigan where he gave a seminar course in resource economics.

GRADUATE STUDENTS, CONFERENCES, AND VISITORS

Four graduate students were in residence at the Forest during the academic year. Richard K. McHenry and Robert E. Lovegrove were candidates for the Master of Forest Science. They finished their theses in late spring, and were awarded their degrees in June. A. Jon Cassista pursued his thesis research for the Ph.D. in biology, under a fellowship from the Cabot Foundation. Alan Page began work toward M.F.S. in late summer of 1966, but transferred to the University of Massachusetts at the end of the fall term.
The thirteenth annual Conference on Forest Production was held at the Forest 16–28 October, 1966, with 17 members attending. They came from the New England States, Ohio, Missouri, Wisconsin, New Mexico, Oregon and Hawaii. Four were from the federal and provincial forest services of Canada. The group contained representatives of the U. S. Forest Service, state departments of natural resources and extension, the U. S. Soil Conservation Service, and private industry. One was a journalist concerned primarily with resource problems.

The Forest was again host to a group of graduate students of landscape architecture from the Harvard School of Design. They spent about five days (18–22 September) in a study of the natural environments represented in the Forest and its vicinity.

Student and staff visitors from the University in Cambridge or from other schools totaled approximately 275 during the year. These were single individuals, or groups ranging in size from 2 to 40.

Dr. David M. Smith, Professor of Silviculture at the Yale School of Forestry, spent the fall term at the Harvard Forest, on sabbatical leave. Most of his time was given to research and writing, but he took part in many of the Forest's activities and was a welcome and valued visitor.

Dr. Claud L. Brown, of the University of Georgia, was in residence at the Forest for six weeks in the summer of 1966. He was collaborating with Dr. Martin H. Zimmermann of the Cabot Foundation.

**Research and Publications**

Mr. Walter Lyford continued his studies of the roots of forest trees. A basic problem to which he has devoted much of his time is the identification of living tree roots found in any soil profile exposed in the forest. Criteria of tree taxonomy have been restricted almost entirely to above-ground parts, so that methods for root identification must be devised from original observations. In his studies of individual root systems Mr. Lyford has begun intensive investigations of red oak similar to those he has made
on red maple. He spent two months of the summer of 1966 in Sweden, at the invitation of the Royal College of Forestry, where he collaborated with Swedish soil scientists in field studies. He went to Puerto Rico for about 10 days in March of 1967, as soils consultant to a research program on cloud forest conditions being carried on by the Arnold Arboretum.

Dr. Gould’s principal research during the year was a continuation of the simulation project mentioned in my report for 1965-66. Mr. Howard has continued as his programming assistant. This was the final part of a two-year program financed by a grant from the U. S. Forest Service. A collaborator in this study of landscape amenity and timber production planning has been Dr. William O’Regan, a former Bullard Fellow from the Pacific Southwest Forest and Range Experiment Station. Dr. O’Regan made two visits of about three weeks each at the Harvard Forest in the course of the year. Dr. Gould has prepared an invitation paper on “Simulation and forest management” to be presented at a meeting of the International Union of Forest Research Organizations at Munich in September, 1967.

In addition to his work with Dr. Gould on the simulation project, Mr. Howard collaborated with Dr. Brayton F. Wilson of the Cabot Foundation in developing and programming a model representing the growth of wood in cambium. This will soon be published. He is the author of a paper published by the Pacific Southwest and Range Experiment Station on a library retrieval system. In March, 1967, he presented a paper on the application of computer techniques to problems in forestry at a meeting of the New England Section of the Society of American Foresters.

Dr. Swan came to the Forest early in January, 1967. He immediately engaged in a study of species distribution on our lands, attempting an analysis of species composition in a variety of stands. Although much descriptive work has been done on “forest types” here, modern methods of vegetational analysis have never been applied. Dr. Swan is well-versed in these methods, and has initiated tests of their applicability in our landscape.

I completed two research papers based on my Greenland
studies, and sent them to the printers in Denmark. In addition, I finished drafts of seven others which will require minor revisions. I contributed to two symposia during the year: one on the nature of the plant community at Antigonish, Nova Scotia, and the other on modern concepts in forestry at a meeting of the Alleghany Section of the Society of American Foresters held at Baltimore. Both of these papers will be published in Proceedings.


Bulletin No. 20, on "The history of land use in the Harvard Forest," by H. M. Raup and R. E. Carlson, was reprinted in the spring of 1967. This bulletin, published in 1941, has long been out of print, but has been in continuous demand.

An account of the Cabot Foundation's research for the year 1966–67 will be found in another report. However, it should be mentioned briefly here because of the Foundation's increasing activities at the Harvard Forest. Dr. Martin H. Zimmermann and Dr. Brayton F. Wilson, in their studies of the physiology and anatomy of trees, have found many points of common interest with members of the Forest Staff, leading to active and profitable research collaboration. Two of the papers prepared during the year resulted from this collaboration.

**Bullard Fellows**

Four Charles Bullard Fellows were in residence at the Forest during the year. Dr. F. David Morgan, a forest entomologist from the Waite Institute, Adelaide, Australia, came in February, 1966 and left about mid-December, 1966. Dr. Robert Zahner, who also came in February, 1966, was here until August of that
year. Dr. Arthur M. Gill came from the University of Melbourne in October, 1966, to be here for a year; and Dr. Milford D. McKimmy came from Oregon State University in July. Two Bullard Fellows resident at the University in Cambridge, Dr. Sherret S. Chase and Dr. James R. Wallis, utilized the Forest's library on several occasions during the year.

**FOREST OPERATIONS**

Approximately 255 cords of fuel wood were utilized during the year, and about ten thousand feet of sawlogs were cut. Most of this wood came from thinning, improvement and harvest cuttings in Compartments IV and VII of the Tom Swamp Tract. The drought of the last few years appears to have been broken. Precipitation was abundant throughout the fall, winter and spring.

**BUILDINGS AND RESEARCH FACILITIES**

Alterations proposed in my report of last year for Shaler Hall were completed in the spring of 1967. The basement of the south wing of the building and the main basement corridor were changed to form three new offices and two new laboratories. At the same time the Fisher Museum basement was altered to house a workshop. A new office was also placed adjacent to the laboratories on the first floor of the building, and a new stairway constructed to the second floor in the south wing. Most of the work was paid for from Cabot Foundation income. Even with these additions to our facilities, it was becoming clear by the end of June that all available space would be occupied in the coming year by staff, students and research fellows.

With enlarged research operations have come increasing demands upon our living space for families. A new apartment was made during this year in our Higginson House in the Village of Petersham. This brings to 14 the number of families we can accommodate.
The Harvard Black Rock Forest

Activities at the Black Rock Forest were notably increased during the past year due to several events which improved its facilities and made it more attractive to visitors. Over 200 people toured selected portions of the area in organized groups under the guidance of the resident manager. This number does not include casual visits by metropolitan hiking clubs whose presence is not readily recorded.

Research and Publications

Research on diameter growth patterns in red oak following understory poison treatments was brought nearly to completion by Mr. Karnig. An analysis of diameter-crown relationships may be desirable in order to substantiate observed differences in the growth of differing diameter classes. Two temporary student employees during the summer of 1966 reviewed and analyzed tree data from several pairs of 30-year-old plots. These men also measured and stem-mapped a plantation of sugar maple that was established many years ago. Each tree in this plantation was tagged to provide a reliable basis for future studies of growth and form.

Three Black Rock Forest Papers were published during the year: No. 26, "Recreation use within the Harvard Black Rock Forest," by Jack J. Karnig; No. 27, "The issues in the Storm King controversy," by Calvin W. Stillman; No. 28, "The price of open space—the need for Research," by Calvin W. Stillman. Interest in the Forest has been stimulated by the printing of a revised map of the property. Much of the revision was done in 1966 by the student employees mentioned above. The map shows all roads, trails and major access highways.
The Black Rock Forest is located just north of a crescent-shaped upland extending southwest to the Delaware Water Gap and bordering metropolitan New York-New Jersey. This thinly populated mountainous area of nearly 2000 square miles, due to its nearness to some 20 million people, presents a unique opportunity for orderly development of recreational potential. A newly organized interstate body called the “Appalachian Highlands Association” was started in June, 1967, to focus attention on this development. Mr. Karnig is one of the directors of the Association.

**Buildings and Woods Operations**

In November, 1966, the new building for office and living quarters, mentioned in my report for 1965–66, was completed, furnished and occupied. Adequate space is now available for library, office and storage. Living accommodations are provided for up to twelve visitors.

General improvements were made during the year in the appearance of the Forest property surrounding the main buildings. This was done by the removal or replacement of outworn fencing, and by judicious landscaping. A small building that houses a workshop was reroofed and insulated.

Woods operations consisted of a contract thinning and improvement cutting in the southwest corner of Compart ment XVI. This cutting yielded about 40 cords of fireplace wood which has been stored under shelter, and another 20 cords left in the woods to cure. Most of this wood will go to local customers in the winter of 1967–68. A temporary employee in the summer of 1966 worked on road and trail maintenance.

Hugh M. Raup
Director