

Harvard Forest and Harvard Black Rock Forest

To the Dean of the Faculty of Arts and Sciences:

Sir, — The following is a report on the Harvard Forest and the Harvard Black Rock Forest for the year ending June 30, 1961.

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STAFF

The technical staff of the Forest has remained unchanged during the year 1960-61. It consists of Mr. Walter H. Lyford, Soil Scientist; Dr. William F. Murison, Forest Biologist; Mr. Jack J. Karnig, Forest Manager for both the Harvard and Black Rock Forests; Dr. Ernest M. Gould, Jr., Forest Economist; and myself. Dr. Gould was away on leave of absence after September 15. Marion S. Hambleton has continued as secretary, and Dorothy B. Waid has worked about half time in the library except during the summer. Elizabeth Carpenter, our business secretary and librarian, retired June 30, 1961, after 37 years of continuous service to the University. Mr. Charles F. Upham remains as superintendent of wood operations.

An event of major significance in the staff structure of the Forest has occurred during the past year. Our research staff has always been employed on short-term appointments, at most five years in length. This has been due first to the fact that for many years the financial resources of the Forest were not sufficient to support permanent appointments; and second, to the fact that both the research staff and its program have been in a formative stage in recent years when more adequate funds were available. This situation, however, could not be expected to continue, for it

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would be necessary to offer permanence to first-class men if and when they appeared. Such an instance came up during the past year, and our Forest Economist, Dr. Gould, has been given an appointment without limit of time beginning in September 1961.

WOODS OPERATIONS AND BUILDING IMPROVEMENTS

All of our woods operations of the past year were highly conditioned in one way or another by the severity of the winter. Snow came in November, and began to accumulate in quantity about the second week of December. It remained at varying depths in the woods until the first week in May. Woods operations were greatly hampered by several severe storms, so that a great deal of time and labor had to be expended merely in snow removal around the Forest buildings and in retrieving cordwood that had been stacked in the forest. With the snow, for short periods in January and February, came extremely cold weather, when temperatures exceeded 20 degrees below zero F.

In spite of these difficult conditions two operations were successfully accomplished. One of these was the result of the sudden appearance of a market for red pine poles and posts, which are cut as thinnings in our red pine plantations. This market is particularly advantageous to us because it allows us to sell trees which are too small for most uses. Furthermore, with the current ravages of a root rot disease in the red pine plantations, caused by *Fomes annosus*, we are able to realize something on trees that would almost certainly be lost anyway. Several of the plantations are near the Headquarters buildings, so that it was possible to get into them in March and begin cutting poles and posts in spite of the deep snow.

The other operation that proved feasible in the heavy snow took place along the Prospect Hill Road which runs from the Administration Building through the northerly part of the Prospect Hill Tract and around its northern boundaries. This is a town road which is much used because it forms the principal access to the northern part of our land and also to the fire tower

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on the top of Prospect Hill. The Town has kept the road itself in good condition, but the roadsides had gradually so grown up to large trees that it had become almost impossible to make the road usable for trucks if there was much snow in winter. With the enthusiastic permission of the Town Tree Warden, and also that of the only other property owner served by the road, our woods crew thinned out the trees between the roadway and the stone walls, and did a general clearing operation as far as the Petersham-Phillipston town line. Almost six weeks were spent at this work, which netted us 40 cords of fuel-wood and something over 2,000 board feet of logs.

With the improvement in the weather during the spring, salvage and improvement cuttings were made in Compartments V and VII of the Prospect Hill Tract. These yielded a good volume of wood which has put us well ahead in our cordwood needs for the coming year. Adjacent to the cutting area in Compartment V is one of the oldest plantations in the Forest, established in 1913. It is a row-wise mixture of five species, eastern white pine, Scots pine, western yellow pine, Norway spruce, and Douglas fir. It was severely damaged by the hurricane of 1938 which left many of the trees bent or partially blown over. Although it is a small plantation (1.6 acres) and now of doubtful significance so far as its original purpose is concerned, because the crew and their equipment were near by it was decided to clean it up. Trees that were too malformed to be of any future value were removed, and complete records were made of each of the five species that was left.

Improvement in the heating system of Shaler Hall, made during the summer of 1960, proved to be highly satisfactory. During the winter the improvement was extended to the library, common room and three of the offices in the north end of the building.

RESEARCH

Work on long-term research operations has continued as usual. Measurements were made of a low thinning experiment begun

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in 1956 in Compartment I of the Tom Swamp Tract and intended to be measured at intervals of five years. In the years immediately following the hurricane of 1938 a number of sample plots were laid out for the study of post-hurricane regeneration. Dr. Muri-son has relocated all of these sample plots during the year. Although Mr. Lyford has made some general surveys of the soil situation in the Forest, he has concentrated most of his efforts in Compartment I of the Tom Swamp Tract. He had already begun research in a part of this area in the years before he came to the Forest as a member of the staff, but has now extended it into study of the soils as related to forest distribution and development in the whole compartment.

Dr. Zimmermann's research on the physiology of trees under the aegis of the Cabot Foundation continues to be a welcome and stimulating part of the work that goes on at the Harvard Forest. An additional research program supported by the Cabot Foundation is planned to begin in the autumn of 1961. It will be under the direction of Dr. Brayton F. Wilson, Jr. His research will be concerned with experimental studies on the growth of wood.

In June of 1961 we employed three forestry students, one from the University of Oklahoma, one from the University of Massachusetts, and a third from Rutgers University. The work we have for such men as these, though often routine, requires skills and attention to detail for which they are trained. We gave each of them one or two high school boys as field assistants, and Dr. Murison has planned and will supervise all their operations.

One of the men is spending most of his time in the small detached piece of about 45 acres, known as the Schwarz Tract, that we have in the western part of the town of Petersham. This came to the Forest by bequest in 1928 for the express purpose of developing the esthetic aspects of forest management. A small endowment came with it, the income from which can be used for this purpose only. Careful management plans for the tract were made in the early 1930's, but they came to naught when the hurricane of 1938 devastated the area. Very little has been done since then except to let the trees grow. This year we are

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carrying out at least the beginnings of new plans for realizing the original purpose for which the tract and the endowment were intended.

A second student is spending the summer on another detached tract, in the town of Hamilton, Massachusetts, where we have about 60 acres of miscellaneous plantations, most of them of exotic conifers. These plantations came to the Forest by bequest in 1929, also with a restricted endowment. The plantations were all quite young at the time they were acquired by the Forest, and although they were carefully surveyed and mapped, little was done to effect any improvements in them. They have suffered some damage from fire and the hurricanes of the early 1940's, and in 1955 we did some thinning and salvage cutting in them. In the current summer our student forester will make a thorough review of all the plantations, and evaluate their present condition. He will clear out the trails that give access to them, reopening many trails that have fallen into disrepair.

The third student will work primarily on thinning, improvement cutting, and measurement in plantations on the Prospect Hill Tract at the Forest in Petersham. Seven different plantations will be given treatments ranging from routine weedings for the removal of hardwoods, to the harvesting of red pine poles. A particularly complex project will be the weeding, pruning, and remeasurement of a Norway spruce provenance experiment that was established in 1944.

STUDENTS AND VISITORS

No full-time graduate students were in residence during the year 1960-61. One new student is expected to arrive in September, 1961. He is a graduate of the forestry school of the University of Wales, with principal interests in forest management and economics.

The Forest and its facilities have a steadily increasing flood of visitors from this country and abroad. During the past year there have been a great number visiting the museum, which is open to

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the public. Those we try to keep a count of are the ones with whom we spend time in discussing our research either at the Headquarters Building or, as in most cases, in the woods. In the past year we have spent time with about 330 people. Approximately 20 of these have come as individuals, while the remainder have been in groups ranging from three to as many as 40. Some have been here for only a day or half a day, but fully half of them, about 165, have been accommodated for at least one night and some of them for longer. Most of those staying overnight have been supplied with meals.

I shall not attempt to list the groups of visitors or the places from which they came. We had, as usual, students from the principal forestry schools of New England, adjacent New York State, and New Jersey. Harvard students came from the Department of Biology and the Graduate Schools of Design and Education. There were an unusual number of foreign visitors, largely because of the World Forestry Congress which was held in Seattle in August of 1960. A considerable number of these people lingered on in the United States during the autumn, visiting research and educational institutions.

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The Harvard Black Rock Forest is owned and administered by a separate educational corporation in New York State. It is supported by funds held in trust for the purpose by the President and Fellows of Harvard College.

Locally the Forest is managed by Mr. Jack J. Karnig, Forest Manager. Woods operations and research are planned in consultation with Harvard Forest personnel who have visited Black Rock on several occasions during the year. Cutting and other work in the woods are done by local contractors.

WOODS OPERATIONS

During January and February 1961, woods operations were almost completely halted by deep snow, as they were for a longer

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period at Petersham. In the year as a whole, however, the amount of wood cut was about average. The total yield was approximately 26,921 board feet of sawtimber and 340 cords of fuelwood. This came from thinnings and improvement cuttings in seven compartments. Most of the summer of 1960 was devoted to repair of roads. Portions of all existing roads were resurfaced with gravel, and about half the roads were smooth-graded.

RESEARCH

In April, 1961, an experiment to assess the effect of the removal of an undergrowth of sprouts in a stand of deciduous trees was established in Compartment III. Growth study plots were installed, and a group of trees was fitted with calibrated bands by which diameter increment can be measured. The understory trees were killed with chemicals. The experiment will be continued through the active growing season of 1961 and probably longer. It duplicates in somewhat different form a similar experiment begun at the Harvard Forest in 1956.

In the spring of 1961 some 2,000 Norway spruce trees were underplanted in a hardwood stand that had been heavily thinned early in 1960. This is to test the feasibility of growing Christmas trees in situations of this kind. All hardwood sprouts had previously been killed back with chemical sprays, and will be kept in check by the same method.

The Black Rock Forest, situated as it is in the Hudson Highlands, has many areas of great natural beauty. Although it has a rather elaborate network of roads and trails, very little conscious effort has been made to reveal the esthetic values that are present in abundance. During the twenty-five years in which I have been visiting there, the trees have grown to such an extent that they have obscured many scenes that were once most pleasing. In the past year the first of a series of experimental renovations was established, along the Chatfield Road on the westerly side of Tamarack Pond. An area of woods covering about an acre between the pond and the road was treated in such a way as to

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develop a view of the pond, and at the same time make a silvicultural improvement in the forest. The undergrowth was killed with chemical sprays, and all newly cut stumps were treated with chemicals to prevent sprouting. Cost records were kept on all operations, and the cost of maintenance will be recorded in the future.

Use of the Black Rock Forest for research in forest land management for purposes other than the traditional ones leading to wood production probably will grow in future years. Small experiments such as the one mentioned above may well lead to more extensive developments of similar nature, and possibly to experimental studies in the use of the Forest for recreation. This is a field of forestry that is greatly in need of study, for the pressures upon both publicly and privately owned forest lands for recreational use have grown to staggering proportions in recent years.

HUGH M. RAUP
Director