



## Annual Report 1966-1967

TO THE PROVOST OF THE UNIVERSITY:

SIR,

The year 1967 marks the ninety-fifth anniversary of the establishment of the Arnold Arboretum in 1872 by the bequest of [James Arnold](#). Early in the year official greetings were received from several institutions with similar interests around the world. Rather than take particular note of this ninety-fifth anniversary, permission was requested from the Harvard Corporation to prepare special activities for the Centennial year, 1972. Our plans, therefore, are directed toward that year when we may indicate the many accomplishments of the past and the goals for the future.

For nearly a decade a legal [controversy](#) over the Arnold Arboretum had been conducted in the courts of Massachusetts. This proceeding, which involved the President and Fellows of Harvard College as trustees of the Arnold Arboretum, concerned the legal right and questioned the decision affirming the scientific importance of locating a portion of the herbarium, library, and other research collections and the staff in a building in Cambridge occupied jointly with members of the Gray Herbarium and the Botanical Museum. A "working herbarium and library" was to be retained in Jamaica Plain in association with the living collections.

During the preceding fiscal year the Supreme Judicial Court of Massachusetts dismissed the case subject only to the assurance in a report to be filed, indicating that an adequate library and herbarium do exist in Jamaica Plain; that the location of all books is indicated in the general index files; and that a plaque has been placed in the Cambridge building housing the Arboretum materials. A report indicating that these conditions have been met was accepted by Justice Spaulding for the Court and the case finally has been dismissed.

The President and Fellows also approved altering the name of the herbarium building in Cambridge to the [Harvard University Herbaria](#), the plural form being the equivalent of "Laboratories," to indicate the multiple occupancy of the building. A bronze plaque was cast and placed in the foyer of the building listing the several independent collections housed in it, and the date of its completion, 1954.

In 1965, the Harvard Corporation approved the establishment of an Institute of Plant Sciences at Harvard to represent the botanical staff of the University, the Institute to consist of

and represent the staff members of the several botanical organizations at Harvard as well as botanical scientists associated with biological organizations.

During the past year the Arnold Arboretum was invited to join in association as part of the Institute of Plant Sciences. This invitation was accepted and membership has been approved by the Corporation. The Corporation also noted that its vote of January 19, 1953, concerning the identity of the Arnold Arboretum is still in effect and that the procedures for the Director of the Arboretum to submit recommendations for appointments, and approval of budgets, directly to the President are still in order.

#### STAFF

Although changes in the composition of the staff of an organization are to be expected, it is always with personal feelings of loss that deaths and retirements of employees of long association are recorded. Professor Irving Widmer Bailey, Professor of Plant Anatomy, Emeritus, died suddenly on May 16th. Although stricken some weeks earlier with a coronary attack, his recovery had seemed probable when death came quickly. Professor Bailey received his A.B. degree from Harvard in 1907 and, except for a few years during World War I, was associated with Harvard continuously. He became associated with the Arnold Arboretum in 1933 when many members of the Bussey Institution staff moved to Cambridge, and he retired officially in 1955. He continued his research in the laboratory of the wood collection he developed for the Arnold Arboretum, and he worked and published on an active schedule to the day before his attack. Tributes to him and for his work have come from all parts of the world.

Thomas H. Curry, assistant superintendent of buildings and grounds of the Arnold Arboretum, served its living collections in Jamaica Plain for 18 years. He had reached retirement age and would have been retired at the end of the fiscal year. His death occurred after surgery, on April 30, 1967.

A new appointment during the year was necessary in anticipation of another retirement. Mr. Victor Ferenc Marx was appointed librarian of the Arnold Arboretum and, jointly, librarian of the Gray Herbarium on May 1, 1967. This appointment overlapped briefly that of Mrs. Lazella Schwarten who served the library of the Arnold Arboretum for 23 years and, for the last 13 years, held a joint position as head librarian of the Gray Herbarium and the Arnold Arboretum.

Dr. Harrison Leigh Flint whose appointment as Associate Horticulturist was effective on July 1, 1966, for five years, came to our staff from the University of Vermont. Gordon Parker DeWolf was appointed Horticultural Plant Taxonomist effective March 15, 1967, for a period of five years. He served as an Associate Professor of Botany at Georgia Southern College before joining the Arboretum staff. Two Mercer fellows completed their studies during the year. Mr. Pablo Legname returned to his position at the University of Tucuman in Argentina and Miss Sandra Shannon accepted a position at the Waltham Field Station of the University of Massachusetts. Dr. Charles C. Tseng completed his studies of the flowers and fruits of the

Araliaceae conducted during the summer as a Mercer Research Fellow and returned to his position at Windham College in Vermont.

## HORTICULTURE

Recent reports have referred to the drought of the last five years. The rainfall for 1966 was 41.14 inches, 5.55 inches below the normal for Boston. During this period the three conspicuous ponds in the Arboretum were at their lowest since 1937. Watering with metered water was continued through the summer of 1966. The dry spell was broken during the winter, however, and between January 1, and May 3, 1967, approximately 25.6 inches of rain were recorded at the Arboretum. This was an excess of 5.02 inches over normal. A total of 7.32 inches in May made in the second wettest May in 97 years of official U.S. Weather Bureau records. The wetness was accompanied by unusual cold so that the common lilacs did not come into full bloom until June 3, the latest flowering time in the 36 years we have kept such records.

A severe ice storm again occurred in New England in February causing considerable branch damage. In the Thuja and Chamaecyparis collection, much pruning and repair was needed and duplicate, old, and broken plants were removed to give the healthy specimens additional space.

Work continues on the terracing of the slope below the Larz Anderson bonsai house near the Dana Greenhouses. Field stonewalls, graded paths and steps made of railroad ties have enhanced the appearance of the area where more than 125 taxa of dwarf conifers have been planted and mulched with gray stone.

The old Centre Street roadbed in the northwest corner of the Arboretum was excavated to an average depth of two feet. Large quantities of mulch and any available soil were used to fill the road bed. Grading was hardly completed when snow stopped further work; seeding and some planting were delayed until Spring. The cost of reclaiming this old road area amounted to \$7,000 for contract labor with heavy machinery.

During the Winter it was possible to begin a clearing and cleaning operation on the low land adjacent to the Hebrew Rehabilitation Center for the Aged. This hospital was built on land formerly called Joyce Kilmer Park, acquired from the City of Boston. It is adjacent to land owned by Harvard University for the Arnold Arboretum and not under lease from the city. The unkept low land served as a barrier during the construction of the Hospital, but the present operations anticipate development of the area as a formal part of the Arboretum. A major expenditure will be required for fencing, development of roads and paths, and redevelopment of top soil before the land can be fully utilized.

The threat to the Peters Hill plantings from the bill filed in the Legislature to create a ski tow in the Arboretum required action this year to control access in the Winter. The area is normally not ploughed by the City and our own equipment is inadequate for the purpose. A chain link fence was installed for half a mile along Bussey Street giving immediate protection

to the half of the area most readily approached by automobile. The police were requested to enforce the regulations of the Park Department regarding skiing. Eventually, additional expenditures for fencing may be required to prevent skiing on the hill and to protect the younger plantings.

During the past year air pollution legislation prohibiting open fires was adopted in Boston. Withholding of permission to burn debris and trash from the grounds has proven to be extremely inconvenient and the added expense of commercial waste disposal is inevitable. Previous reports have referred to changes proposed for the buildings in Jamaica Plain if legal directives did not require the return of materials from Cambridge. During the year the first of these changes was completed by the addition of a glass unit consisting of three controlled environment sections to the Dana Greenhouses. In addition, air conditioning was installed in the laboratory for cytology and morphology, new lighting was installed in the library of the Administration Building and safety flood lights added on to the front and rear of the building for automatic operation during the Winter. New lunch room and additional rest room facilities have been completed.

Plans have been developed for the construction of a new garage and vehicle repair facility which will stand free yet close to the Administration Building, permitting the removal of motor vehicles and grounds equipment from the basement. Architects' drawings are being prepared prior to a request for bids on construction. Also under construction is a laboratory for plant hardiness studies, including those in cryobiology, in the basement of the Dana Greenhouses. A "Gro-Mor" greenhouse of polyethylene plastic over aluminum frames 1 x 96 feet has been erected in the greenhouse area.

Through the efforts of Dr. Flint a new cooperative hardiness testing program has been initiated to obtain more reliable information on the characteristics of some of the more important woody ornamental plants in parts of New England colder than the Boston area. This program is to be carried out with the assistance of about 25 cooperators selected as uniformly as possible in hardiness zones 3 and 4 and is expected to reach full scale in 1968. More than 40 taxa have been propagated for distribution and testing in 1967, 1968, and 1969.

At the Maryland meetings of the American Association of Botanical Gardens and Arboreta the Arnold Arboretum was again appointed National Registration Center for woody plants not otherwise represented by Societies. The International Society for Horticultural Sciences approved the designation of the Arnold Arboretum as International Registration Authority for cultivars in Weigela and accepted the list published in *Arnoldia* as the International Registration List.

At a special meeting of the IABG Dr. Howard was appointed funding coordinator for a project to test the methods of electronic data processing in relation to the record systems of botanical gardens. The Arboretum will work in cooperation with the University of Tennessee Arboretum where this work will be developed, using the computer systems at Oak Ridge. Much

of the time of the propagation staff is devoted to filling requests for plant parts for propagation or as the basis for special research studies.

During the year 66 taxa were propagated for such special requests as part of 184 shipments of material to other gardens and to scientists in 17 countries. We supplied healthy material for other gardens to grow, aberrant material for special developmental studies, diseased material for pathological investigation, foliage for animal food in special research projects, and dried materials for chemical extractions. The propagation staff received 231 shipments of materials from 32 countries comprising 845 taxa.

#### HERBARIUM

During the year 24,264 specimens were mounted and added to the herbarium, bringing the total number of specimens to 849,269. Of these 5,861 were added to the herbarium of cultivated plants which is maintained in Jamaica Plain. That collection now contains 130,531 specimens. In order to correct some of the unbalance of content in the herbarium of cultivated plants, a program of special collecting and special exchanges has been emphasized recently. It is hoped that the result will be an increased representation of cultivated herbaceous plants and a better indication of the range of distribution of many cultivated woody plants. Such development will increase the significance of this particular collection and broaden its function of providing definitive information.

We sent 10,675 specimens in exchange to other institutions; 899 as gifts; and 70 in exchange for identification. For studies by staff and students a total of 76 loans were requested and received from 26 institutions, 14 in the New World and 12 in the Old World. The total of 7,152 specimens represented an average loan of 84 specimens. We received requests for material from our collections and made 143 loans to 78 institutions which averaged 115 specimens and comprised a total of 16,539 specimens. These were made to 28 foreign institutions and to 45 within the United States. These series of figures do not indicate the great amount of organization and labor involved in maintaining high standards of quality in the herbarium and in keeping the collections in good order so that the many routine requests for information, photographs, identifications and so forth may be competently filled. Although the growth of the herbarium and the increase in its use is desirable and commendable, such growth continues to present problems of space in light of which plans must be considered seriously for future additions to the collections and the buildings.

The use of the herbarium comprises the basis for diverse studies in the field of botany and may result in monographic work of wide extent, floristic studies, manuals of wild or cultivated plants of extensive or limited geographic areas, and as a complement to field studies produce most valuable data for work on breeding programs, chemical analyses and various other avenues of research. In short, the projects of the staff often develop into studies of broader aspect than is immediately apparent.

## LIBRARY

The end of the fiscal year marked the retirement of Mrs. Lazella Schwarten as Librarian of the Arnold Arboretum, a post she has held for nearly 24 years. During that time the library has grown from the 59,440 books and pamphlets recorded in the Director's report of 1945 to a present total of 53,784 bound volumes, and 20,879 indexed pamphlets for a total of 74,663.

The high quality and good condition of the library, plus the ready availability of the books through the willingness of the librarian and her staff to assist scholars, have made the library of the Arnold Arboretum outstanding among international botanical libraries. During the past year 488 bound volumes were added to the collections of which 138 were in areas of horticulture and were deposited in Jamaica Plain. Pamphlets numbering 285 were of value and were indexed and added to the collection.

Three additional major changes made during the past fiscal year are not included in the figures cited above. Bound volumes numbering about 600 on temporary deposit in the library of the Biological Laboratories since the 1930's were returned as were over 2,000 books and volumes of periodicals on the subject of forestry from the Harvard Forest.

These volumes have always been included in the total count given in annual reports. Their deposit away from the main library of the Arnold Arboretum reflects the crowded conditions existing in Jamaica Plain prior to the construction of the Harvard University Herbaria building and the move to Cambridge. The relocation of these books necessitated changes on all file cards and, in the case of the forestry books, some recataloguing which is in progress. All cards in the general and combined library index of the Arnold Arboretum and the Gray Herbarium now are marked to indicate ownership of the book and its location by code number and by letters on shelves in Cambridge or in Jamaica Plain.

Under the direction of [Miss Stephanie Sutton](#) much work was accomplished on the historical correspondence of the staff of the Arnold Arboretum. Letters of former staff members have been arranged chronologically in new files and organized by correspondents in alphabetical order. A master card file indicates the number of letters in each folder and their dates.

## COMPARATIVE MORPHOLOGY

For many years the contributions of the Arnold Arboretum in the area of comparative plant morphology have been primarily those of Professor Bailey and his students and assistants. Our loss is great with his death. Hopefully, we shall seek younger contributors to utilize the great collection of wood samples and microscope slides of plant parts built up during his many years of study. Professor Bailey had completed his investigations of the leaf bearing cacti, a group which had long occupied him during summer work in Arizona. The final paper of the series will be published posthumously in this Journal. The Marcgraviaceae is a tropical family Professor Bailey knew from British Guiana. Upon completion of his cactus studies he turned to it and his

excitement over the initial preparations indicated that another study series would be developed. Regrettably, these observations will be denied to us.

#### EDUCATION

Two regularly scheduled classes within the College of Arts and Sciences of the University were offered by Arboretum staff members. Dr. Hartley taught the course in general botany offered by the Harvard University Commission on Extension Courses. In addition, the staff assisted in the supervision of the research or writing of graduate students and participated, as speakers or as commentators, in the seminars open to undergraduates and graduate students. Non-credit courses were offered throughout the year in Weston and in Jamaica Plain as a contribution of the staff, and open to the public.

Guided tours of the grounds of the Arnold Arboretum led by the staff, and special tours of the Case Estates were available to groups on written request. These are most frequent in the Spring. Because of the unusual weather this year, many trips had to be repeated when flowering conditions became more satisfactory.

Open houses, including tours, were held for the Harvard Dames, the staff of the Department of Biology, and several national touring parties of horticulturists. A cooperative program in training in horticultural and botanical sciences has been conducted with Keuka College and the Jamaica Plain High School. Students from each of these schools have been given short periods of employment under supervision in order that they may learn curatorial, laboratory, or greenhouse techniques from the Arboretum staff.

At Weston Junior High School an Interdisciplinary Team Teaching program this Spring selected the Arnold Arboretum and the Case Estates as a study area.

#### GIFTS AND GRANTS

The Arnold Arboretum is fortunate to receive contributions from many people who as Friends contribute regularly. These gifts for current use have been assigned to support the work in horticulture in Jamaica Plain except for the few specified for other purposes. A grant from the National Science Foundation was received to continue the work on a Generic Flora of the Southeastern United States under the direction of Dr. Wood. Forty-five scientific papers treating 76 families and 249 genera of flowering plants have been published for this study in the [\*Journal of the Arnold Arboretum\*](#).

An additional bequest from the estate of Laura Lucretia Case was added to the endowment funds. We are pleased to acknowledge the many gifts of plants, books, manuscripts, and similar botanical materials items which increase the value of the Arnold Arboretum as a research and reference institution.

## PUBLICATIONS

Two regular publications of the Arnold Arboretum are the horticultural journal, [\*Arnoldia\*](#), and the scientific quarterly, the [\*Journal of the Arnold Arboretum\*](#). During the year several invitational articles of special interest were included in *Arnoldia*. Among them was the description of plant hardiness research in the Soviet Union by Dr. Peter Lapin of the Main Botanic Garden, Moscow. Dr. Wyman and Dr. Flint collaborated in the issuance of a new map indicating the zones of hardiness within the United States. This bright and clear new color reproduction was distributed to botanists and horticulturists throughout the country.

RICHARD A. HOWARD, Director