



Annual Report 1954-1955

TO THE PROVOST OF THE UNIVERSITY:

SIR,

On July 1, 1954, the start of the fiscal year, the staff of the Arnold Arboretum was actively engaged in the process of moving the non-horticultural specimens and books from its herbarium and library and its non-horticultural activities to the Harvard University Herbarium in Cambridge. The background for this move was reviewed in the Annual Report for the year 1953-54 (*Jour. Arnold Arb.* 35:367-381). Before the move was attempted, the facilities and activities in horticulture which continue to be centered in the Administration Building in Jamaica Plain was reorganized. The books to remain in Jamaica Plain, forming the horticultural library, were segregated. Herbarium specimens needed for the study of plants under cultivation in the living collections of the Arboretum and elsewhere were organized into a unit located on the main floor of the Administration Building. The actual moving of specimens and books to Cambridge was completed on July 9th. Plans were then completed for the proper utilization of the Administration Building in Jamaica Plain and a contract was signed for alterations in that building. The improvements were finished in late October. The changes are many and represent a new unit of greater usefulness and efficiency both for the staff of the Arboretum and the general public who wish to consult the horticultural herbarium or library or to take part in the activities of the Arboretum.

The horticultural library has been established on the first floor in the front part of the building. A spacious reading room, attractively decorated, is lined with steel shelves for volumes and folios. New fluorescent lighting makes this a pleasant room for library purposes. Additional steel stacks were erected on the second floor for the periodicals applicable to horticulture. Three new offices for the director, the horticulturist and the horticultural secretary open off the library reading room. These rooms supply private offices for these staff members for the first time. The convenience of this business office on the first floor and adjacent to the front door has received the compliments of the many visitors who apply for driving permits and who formerly had to climb a flight of stairs. The front hall has been completely redecorated with new display cases for Arboretum publications and flowering displays. New kodachrome prints of flowering shrubs and trees of the Arboretum have been arranged on the walls. The other large room in the front part of the building on the first floor has been redecorated and functions both as a lecture hall and a demonstration room. For lectures it is used for some of

the education classes conducted by the staff and for meetings of garden clubs and similar groups in connection with Arboretum activities. Such a room has been sorely needed by the Arboretum for the proper demonstration and conduction of its activities in the field of horticulture. A generous gift from Mr. Godfrey Cabot helped finance the alterations in this room, which is attractively decorated in a light gray-green color with deep crimson draw curtains. It has been approved by officials of the city of Boston as a meeting place for audiences of 100 to 150 persons. It is our desire to maintain this room as a flexible space; hence folding chairs, movable tables and partitions enable the room to be used for lectures, classes and exhibitions. The continuous use of this room by individuals and groups interested in the horticultural work of the Arboretum has proved its value.

By the removal of the non-horticultural activities to Cambridge, the Administration Building has gained space for current and future activities. Space in the basement formerly used for the storage of herbarium specimens has been turned over to the grounds crews and redecorated for locker rooms and lunch space.

The upper floors of the herbarium wing are used in part for active library stack area, particularly periodicals, in part for library storage and in part for storage of unworked herbarium specimens accumulated over the past twenty years. These specimens represent horticultural as well as non-horticultural species and the collections are from China, India, Indo-China, Burma and countries of South America. As staff time permits, these collections will be identified, specimens added to the horticultural or the non-horticultural herbarium and duplicates distributed to other organizations. This accumulation of unworked material represents a sizable investment of Arboretum funds and will involve several thousand hours of professional staff time before the study of them is completed.

Three staff members retain offices on the upper floors of the building. The rooms formerly occupied by the library are empty at the present time and available for increases either in the staff or the horticultural activities of the Arboretum. Concomitant with the establishment of distinct and organized resources for the field of horticulture, the Arboretum has been able to establish a firmer foundation for the work of its staff in the study of plants not under cultivation and in the native floras of the world.

The non-horticultural specimens and books moved to Cambridge, now properly housed in Cambridge in steel cases in a dust-free building under controlled environmental conditions of humidity and temperature, are available for more efficient use by the staff of the Arboretum and by professional colleagues at Harvard and elsewhere. The relatively short distance between the Arboretum's horticultural collections at Jamaica Plain and its non-horticultural collections in Cambridge allows easy interchange of materials and ideas.

In Cambridge the Arnold Arboretum's collections are housed for the first time in the same building with the Arboretum's wood and pollen slide collections, the Gray Herbarium, and the paleobotanical collections; and these are adjacent to the excellent facilities of the Museum

of Comparative Zoology, the Botanical Museum and the Biological Laboratories. Already these combined and adjacent collections have proved mutually advantageous and useful to Arboretum staff members, as well as to those of the other institutions and to visiting botanists.

The Arboretum's books and specimens are being used more than ever before, to the benefit of all. With the completion of the physical rearrangements in Jamaica Plain, the majority of the herbarium staff turned its attention to the collections of specimens and books which had been moved to Cambridge. The Gray Herbarium had completed its move before any materials were removed from Jamaica Plain. The books of the Gray Herbarium had all been placed on steel shelving occupying one side of the library stack area. Before the books of the Arboretum were transferred to Cambridge they were all carefully catalogued and each book, pamphlet, folio volume or reprint was properly identified with an embossed seal of the Arnold Arboretum on the fly leaf and on several selected pages in the volume. The inner cover face bore a bookplate of the Arnold Arboretum and printed on the back of many of the books was the inscription, "Library of the Arnold Arboretum." All books as they are bound or rebound are to be so inscribed. Pamphlets and similar items bear or will bear an adhesive sticker with the same inscription. The books were arranged on the steel shelves of the other half of the library stack area in the same arrangement which they previously had. Folio volumes are located on special steel folio shelves at one end of the library stack area and are retained in a horizontal position. During the months which have elapsed since the completion of the move of those books to Cambridge, primary attention has been given to correct cataloguing and to the condition of the books. Already we can notice improvement in the condition of the books under the controlled humidity and temperature. Bindings treated in the usual library fashion are holding up better than before.

In planning the moving of the herbaria of the Gray Herbarium and the Arnold Arboretum, it was decided to incorporate the two collections in one phylogenetic sequence based on a modified Engler-Prantl system of classification. This was the system previously used by both herbaria. The adoption of a single sequence instead of maintaining two independent herbaria in the one building was based on our future plans for integration of the two collections. As the Gray Herbarium moved first, the cases holding herbarium specimens from that institution were spaced on the floors to house the total herbarium. The 440 new herbarium cases purchased for the building were also spaced in a general floor plan. The herbarium specimens of the Arnold Arboretum previously stamped on each sheet with the seal of the Arnold Arboretum were moved in their cases or in the cardboard boxes which housed these specimens in Jamaica Plain. The specimens in steel cases were interpolated in available space in the new building near the same families of the Gray Herbarium sequence. The specimens in the smaller cardboard boxes were placed on top of the new and empty cases in the approximate proper location in the sequence. The planning was almost one hundred per cent perfect. With the cases in place, each case was carefully aligned and wedged for proper fit with adjacent cases and for proper function and seal. Felts were replaced on nearly all the

cases. These felts had been treated with insecticide and each case was reexamined and determined to be insect-free or was fumigated immediately.

During the remainder of the fall and winter months, some of the herbarium staff worked continuously to incorporate those herbarium specimens housed in cardboard boxes into the sequence of classification housed in steel cases. It required 166 of the new steel cases to house properly the Arboretum specimens formerly kept in cardboard boxes.

During the spring months the Arboretum staff undertook another long-neglected task, that of inserting the specimens which had been mounted in recent years. At the end of this fiscal year these housekeeping tasks are nearing completion. For the first time in over twenty years all of the Arboretum's organized collections are housed in steel herbarium cases. For the first time in nearly twenty years, all of the Arboretum's organized collections are in one systematic sequence. There remains ahead for the staff of the Arnold Arboretum and that of the Gray Herbarium the task of placing in association the specimens of each family, genus and species. While all specimens of a given family are now on the same floor and generally within a few cases or rows of cases from each other, it is hoped to organize these specimens gradually in proper proximity. This is a long task and it is planned to spend several years in completing the process. The major move of two large herbaria and libraries has been completed with only brief interruption in the availability of the materials.

During the move all the normal service and professional activities of the Arnold Arboretum continued without interruption. New programs were started, old programs were maintained. The majority of the staff worked devotedly at the task of maintaining and furthering the preeminent position of the Arnold Arboretum among the institutions of its kind in this country and in the world.

THE STAFF

It is with regret that the staff loses through retirement during the past fiscal year two of its members, Professor Irving Widmer Bailey as Professor of Plant Anatomy and Miss Ethel Upham as Herbarium Assistant. Professor Bailey joined the staff of the Arnold Arboretum in ~~133~~ and has been primarily responsible for the development of the wood, slide and pollen collections of this institution. He served as a member of the editorial board of the *Journal of the Arnold Arboretum* from 1941 to the present and was a frequent contributor to the pages of the *Journal* during that period. Miss Ethel Upham joined the Arboretum staff as secretary in 1945 but her abilities as an editorial assistant and herbarium assistant enabled her to play a contributory role to the many facets of this institution.

In September, 1954, Dr. Carroll E. Wood, Jr., joined the staff of the Arboretum as Associate Curator. Dr. Wood received his Ph.D. from Harvard University and was Associate Professor of Botany at the University of North Carolina immediately before his appointment. With an interest in horticulture and in the flora of the southeastern United States and as a

capable teacher and field botanist, Dr. Wood is a valuable addition to the Staff. As one of his many duties, he is in charge of the adult education program at the Arboretum.

Mr. Roger Coggeshall was appointed head propagator on July 1, 1954, following the resignation of Mr. Lipp. Honors came to several of the staff members during the past year. Professor Bailey was awarded the Mary Soper Pope award by the Cranbrook Institute of Science at the meeting of the American Association for the Advancement of Science at Berkeley, California.

At the Commencement of Harvard University on June 16th, Professor Bailey was awarded an honorary Doctor of Science degree with the citation, "Today your university salutes you for your direction of botanical study and for your accomplishment in searching, in the anatomy of plants, for clues to the miracle of growth."

[Dr. Donald Wyman](#) was reelected a trustee of the Massachusetts Horticultural Society at its annual meeting. Dr. Kobuski was elected to the council of the New England Botanical Club and also serves as assistant curator of the herbarium of the club. Members of the staff officially represented the Arnold Arboretum at various scientific and horticultural meetings throughout the country during the year.

Dr. Carroll Wood, Dr. Richard Howard and Dr. Hu attended the annual meeting of the American Institute of Biological Sciences at Gainesville, Florida, in September. Dr. Wood served as chairman at one of the meetings and Dr. Howard took part in symposia sponsored by the American Society of Plant Taxonomists on the "Origin of the Coastal Plain Flora" and by the Society for the Study of Evolution on "The Origin and Evolution of the Biota of Florida." Dr. Howard served as president pro tem at the annual banquet of the American Society of Plant Taxonomists. Dr. Hu spoke on her work on Paulownia. Professor Bailey represented the Arnold Arboretum at the meetings of the Botanical Society of America and the American Association of Arts and Sciences. Mr. Roger Coggeshall served as moderator of two symposia at the annual meeting of the Plant Propagators Society in Cleveland. Both Dr. Sax and Mr. Coggeshall presented papers at the New England Regional Meeting of the American Society of Horticultural Sciences held in Cambridge. Dr. Sax was chairman of a section of the conference on mutations held at the Brookhaven Laboratory in New York and was a consultant at the radiation biology conference held by the Biology Department of the Oak Ridge National Laboratory. The demand for members of the Arboretum staff as speakers to various meetings was high and it is impossible to list all the groups concerned.

Dr. Howard was the principal speaker at the Wellesley College Garden Day program and spoke on "Hurricanes and Horticulture." Dr. Howard also presented one of the downtown lectures for the New York Botanical Garden, where he talked on "Horticultural Highlights of the Caribbean Islands." He talked about the work of the Arnold Arboretum to the Chestnut Hill Garden Club, the Kiwanis Clubs of Jamaica Plain and West Roxbury, the American Begonia Society and to the Tree Wardens of Middlesex County, and on other topics to the Garden Clubs

of Lowell and West Roxbury, Massachusetts, and the Garden Club of Short Hills, New Jersey, as well as the Womens Club of Worcester, Massachusetts, and of Western Massachusetts.

Dr. Wood talked on "Pollination of Plants" at a meeting of the Boston Horticultural Club and of the Gardeners and Florists Club of Boston. Dr. Wyman was one of the principal speakers at the Michigan Landscape Conference of Michigan State College, where he spoke on "New Plants for Contemporary Homes"; at the New York Botanical Garden's Rose Day, where his subject was, "The Wild Roses of the World" and the Rhode Island Shade Tree Conference when he talked on the subject, "Using Trees Wisely." Dr. Wyman spoke to garden clubs in areas ranging from Charlotte, North Carolina, to Durham, New Hampshire.

Mr. Williams spoke to the Milton Garden Club on pruning and Mr. Coggeshall was speaker at meetings of the Garden Clubs of West Roxbury, New Bedford, Wareham, Marblehead and Cohasset on the subject of plant propagation. Mr. Coggeshall also spoke on the subject of "How an Arboretum can Aid the Nurseryman" during the short course for nurserymen at the New York Agriculture School at Farmingdale New York.

HORTICULTURE

Two devastating hurricanes ripped through the Arboretum in late August and September with Hurricane "Carol" on August 3 is doing the most damage. Four hundred trees were either blown down or severely damaged. The ground force was able to pull back to an upright position and thus save approximately 25% of these within ten days of the storm. A brush chipper and two chain saws were bought with funds restricted to hurricane repair to aid in the process of cleaning up the debris. Small consolation for the loss could be found in the fact that the brush chipper supplied mulch for the remaining trees. By early spring most of the downed trees had been removed but the damage to branches will require many additional months of careful pruning and tree repair. Of all the trees blown down in these storms, only seven were not duplicated elsewhere in the collections. Attempts were made immediately to propagate these seven clones. All of the clean up work was accomplished by the regular ground force, but the emergency made impossible the annual fall planting schedule.

The hurricanes were followed by a severe open winter. Nevertheless, the flowering display on the grounds during the spring months was one of the best in recent years. The dove tree bloomed profusely and with special publicity was sought out by many visitors. Equally outstanding in the quantity of bloom were the lilacs and the rhododendrons. The Dexter Rhododendron fortunei hybrids on Hemlock Hill have never bloomed as well as they did this year. Although lilac blight was fairly prevalent in surrounding areas this year, there was practically none in the Arboretum due to timely spraying with Puratized Apple Spray. The same can be said of fire blight on the crab apples which have received experimental treatments with "Agri-mycin" one of the newer antibiotics.

Lawn areas in the Arboretum received special applications of fertilizer this spring and the other collections were continued on the regular rotation program of application of fertilizer. Spraying for insect and disease control has taken a great deal of time, forty-seven man days in the past year, but the collections reflect the extra attention given them. Two hundred and fifty species and varieties of plants were added to the major collections in Jamaica Plain during the year. Most of these represented plants new to the living collections of the Arnold Arboretum, although a few were planted to replace some of the older specimens.

Plant materials collected by [Dr. Wyman](#) in Europe in 1952 and since held in post entry quarantine were released during the year and are now being propagated for the Arboretum collections and for distribution. Thirty new varieties of rhododendron were either purchased or given to the Arboretum and will eventually be added to our rapidly growing rhododendron collection.

Nine new or very rare plants were propagated and distributed to thirty-two nurserymen and botanic gardens in the United States, Canada, England and Holland as a continuation of our important plant introduction and distribution program. This year the plants distributed included *Cytisus praecox luteus*, a dwarf form of the species not otherwise available in America; *Larix decidua pendula*, a plant which we feel should be grown more than it is; a male form of *Phellodendron amurense* which is unavailable currently from commercial sources and a new dark red-flowered bush honeysuckle which originated in the Arnold Arboretum in 1947. In addition, the Arboretum continued its efforts in cooperating with other arboreta in the United States and the Department of Plant Introduction of the U. S. Department of Agriculture to make it possible to obtain from foreign sources certain woody plants which formerly have been forbidden entry.

The Arboretum obtained twenty-three species and varieties under this program this year. None of these is currently under cultivation in the United States. During the past year one hundred and twenty-seven shipments of plant materials of four hundred and seventy-three species and varieties were sent from the Arnold Arboretum to other institutions in nine countries. In addition to the United States, such materials were sent to Canada, England, Japan, Sweden, Israel, Iceland, Holland and Switzerland.

In exchange or by special request, subsidy of foreign collectors or by purchase, the Arnold Arboretum received one hundred and forty nine shipments comprising five hundred and seventy-five species and varieties. These materials came from ten countries on three continents other than North America. Many of the plant materials received must be regarded as experimental in nature for trial under the local growing conditions. While all plants are regarded as excellent ornamental trees or shrubs in the area in which they were collected, not all will grow at the Arboretum. An excellent example is the outstanding Glen Dale Azaleas which have been tried on several occasions at the Arboretum or at the Case Estates. Several years ago an attempt to grow the Glen Dale Azaleas without winter protection resulted in the loss of the entire planting. Last year a similar experimental plot was established and the plants were given

normally adequate winter protection. In spite of this, most of the plants were killed or severely injured in what was a "severe" winter for broad-leaved evergreens. The physical plant for horticulture, both the Administration Building and the greenhouses received special attention during the past year.

In addition to the alterations in the rooms of the Administration Building open to the public, the horticultural herbarium was repainted and its appearance generally improved. The basement was cleaned up and locker and lunchrooms established. New safety doors to the building were built. At the greenhouse area the greenhouses themselves received new glazing where necessary and the frame work was painted.

The class room for the plant propagation classes was established and a major overhaul was accomplished on the cold pits. Some of the shade and lath frames were destroyed during the hurricanes and these were rebuilt. An automatic ventilating machine was installed in the east greenhouse during the summer of 1954 and the greenhouse benches were made watertight by lining them with asphalt roofing paper. These benches were then filled with sand and chicken fountains modified for automatic watering were set up at the higher ends of the benches. The chicken fountains allowed the water to seep into the sand and the potted plants on the benches were watered from below by an economical and simple system which is semi-automatic in operation. As the cutting benches holding plants to be rooted are under polyethylene plastic film, the greenhouse can now safely operate without care for periods up to three days.

Dr. Wyman taught three classes in the adult education program during the past year and all were well attended. In addition to editing *Arnoldia* and seeing the Arnold Arboretum Garden Book through the final steps of publication, Dr. Wyman found time to supervise the work of the horticultural department and to lecture to many garden clubs. He was asked by the American Association of Botanic Gardens and Arboretums to revise his "Crab Apples for America" which is now being set in type for fall publication by the Association.

Mr. Coggeshall proved himself an inspiring teacher when enrollment required that he offer three sections of his course in plant propagation in the fall and again in the spring. His routine work as propagator resulted in the production of 21,942 new plants for Arboretum activities. Of these, 19,829 were reproduced by cuttings; 1,800 by grafting; 330 by budding and 279 lots of seeds were germinated and processed. With the cooperation of other members of the horticultural staff, various experiments under Mr. Coggeshall's direction were initiated or maintained in the greenhouses. The effects of different hormone treatment and of rooting media are being studied on Magnolia, Stevwartia, Syringa, Azalea and Acer. Various species of Vaccinium are receiving controlled treatments for a study of rooting response to different hormone concentrations. An additional study is being made on these vacciniums to determine the advisability of storing the cuttings before rooting is attempted. Ilex opaca is also being studied for the effects of rooting response to different hormone concentrations and both before and after over-wintering the cuttings in refrigerated space. Replicate experiments are

being run on Hamamelis, Acer, Fagus, Tilia, Aesculus and Betula species to determine the simplest type of grafting procedure possible with these species and to compare the results of graft unions made with polyethylene or waxed string ties. The effects of concentrated sulfuric acid treatment of seeds of species of Rosa and Ilex as a means of hastening germination is under study, as is the effect of polyethylene plastic on bud take of Prunus serrula.

Mr. Heman Howard continued to take colored as well as black and white pictures of the plants of the Arboretum collections and these were added to the reference files in the horticultural library. Mr. Howard was also in charge of the usual winter activity of preparing the wooden display labels and the metal record tags which are placed on all plants in or added to the living collections. He assisted in the routine activity of checking a third of the Arboretum each year in relation to our maps, which are then redrawn if necessary to bring them up to date.

The entire Arboretum staff takes part in the activities of the Arboretum relating to groups of visitors and the answering of many questions. Horticultural queries came from 27 states and 14 foreign countries during the year, with telephone calls too numerous to count. Identifications of plants sent in for naming are handled by both the horticultural and herbarium staffs. Many queries are received relating to sources of plants normally difficult to obtain. The library collection of nursery catalogues are used to answer such questions, in addition to other more standard source books. Services such as these are time-consuming, but an integral and valuable part of the many services the Arboretum staff can and does offer to the public, to nurserymen and to other professional colleagues.

THE CASE ESTATES

Considerable damage was done to the trees about the Case Estates by the two hurricanes, but such damage was in no way comparable to that felt in Jamaica Plain. The staff was able to clean up and remove the debris, although a commercial arborist was hired to assist in the repair of the trees by proper pruning of broken branches. A major reorganization was made in the arrangement of the temporary and permanent nurseries to facilitate a land improvement program and to make new plantings easier.

Since Weston's New Country School just opened on the land adjacent to the lower field, it has received special publicity and many visitors. To improve the vistas from this school area, the overgrown shrubs and some of the trees in the lower field were removed. This new open area materially increases the beauty of this important and much-travelled portion of the town of Weston. Permission was given to the town of Weston to relocate a portion of the stone wall around the ground cover plots to remove a traffic hazard and improve an access road from town property. Experimental work continues at the Case Estates. Rhododendrons were sprayed in the fall with either "Dow-wax" or "Wilt-Pruf" and were in excellent condition the following spring, showing neither bad effects from the treatment nor from winter injury. The application of "Wilt-Pruf" appeared to result in a better appearing plant by spring, although it gave no

indication of better protection. Maleic hydrazide was tried as a control of growth of grass and of a *Prinsepia* hedge but without noticeable results. Careful observation has also been made of our practice of using polyethylene plastic film as a wrapping material in packing plants for shipment. Experiments during the past year showed that dormant, bare-root azalea plants kept tightly wrapped in this material for three weeks grew normally when planted. These experiments showed that plant materials sent from the Arnold Arboretum may be expected to grow if handled properly by the recipient.

Land was made available on the Case Estates for continuation of the work of the Cabot Foundation for the growth of poplar, pine and oak and of the Bussey Institution for growing dwarf apple trees and corn. Over thirty clones of *Rhododendron fortunei* hybrid selections are growing well in the Ericaceous nursery. These have been picked from some of the best plantings in the area from Long Island to Newburyport. Winter injury again disfigured most of the *Deutzias*, *Spiraeas* and many of the *Weigelas* in the permanent nursery, proving once again the wisdom of growing less desirable record plants at the Case Estates instead of in the major collections in Jamaica Plain.

During the spring the *Weigela*, *Philadelphus* and *Deutzia* collection of certified varieties from de Proeftuinte Boskoop, Holland, obtained in 1951, bloomed well and will shortly be valuable for purposes of identification of these groups. The "Open House" held at the Case Estates on May 7 and 8 was well attended in spite of inclement weather. The interest in the shrub and perennial garden made clear the desirability of placing display labels on all the plants in this garden. Formerly only location maps were maintained for this planting. Interest in the ground cover plots and the small tree demonstration area remained high following the Open House.

THE ADULT EDUCATION PROGRAM

In the fall of 1954 the staff of the Arboretum introduced on a regular schedule an adult education program. The classes, offered for a nominal fee to cover the expenses of the courses, were designed to present to the public interested in horticulture and scientific botany an opportunity to become familiar with topics of interest, as well as with the staff members themselves and the resources of the Arnold Arboretum.

Classes were held in the new lecture room at the Administration Building in Jamaica Plain or at the Greenhouses. All of the classes were informal, with no prerequisites and no academic credit given. Each member who attended regularly, however, received a certificate at the completion of the course or a small plant as a "graduation" gift. Many of the classes featured practical laboratory work with plant materials and nearly all called upon the use of kodachromes from the Arboretum's collections to illustrate the materials and methods of the topic.

The four courses offered in the fall were Basic Botany for the Home Gardener by Dr. Wood; Fall Field Class in Ornamental Plants by Dr. Wyman; Plant Propagation by Mr. Coggeshall

and Tropical Botany by Dr. Howard. One hundred and thirteen students enrolled for these courses.

During the spring semester additional courses were offered to one hundred and fifty-two students. These were Maintenance of the Home Grounds by Mr. Williams; Spring Field Class in Ornamental Plants and The Best Woody Plants for New England, both by Dr. Wyman and Plant Propagation by Mr. Coggeshall. The staff plans to continue offering adult education classes on these and other subjects in succeeding years. Interest in this informal instruction in horticulture and more basic aspects of botany is growing. In addition to these courses, the Arboretum staff offered many shorter sessions and conducted tours of the grounds of the facilities of the Arboretum.

During the peak of the spring flowering season the staff explained the work of the Arboretum and offered tours of the grounds to thirty-five groups. Groups varied in size from the minimum of twenty-five persons required for a guided tour to the over four hundred persons who attended the annual Field Day of the Massachusetts Horticultural Society at the Arnold Arboretum. Special demonstrations of pruning, plant propagation or other techniques for maintaining trees and shrubs were conducted for the Field Day of the Massachusetts Horticultural Society and for the meeting of the Horticultural Chairmen of the Federated Garden Clubs of Massachusetts.

EXHIBITS AND DISPLAYS

The newly available demonstration room in the Administration building of the Arnold Arboretum offered to the staff the opportunity of presenting exhibits and displays of plant materials. The first exhibit held during the past year was a display of original paintings of tropical flowering trees and shrubs. The collection of twenty-nine paintings in tempera depicted the most spectacular flowering plants of the Caribbean area. The paintings by Bernard and Harriet Pertchik were all included in the book, "*Flowering Trees of the Caribbean*," published by Rinehart and Company in 1951. The paintings were sponsored by the Alcoa Steamship Company and their loan to the Arnold Arboretum was appreciated by the staff as well as the many residents of New England who saw this exhibit.

During the Christmas season the featured exhibit at the Arboretum was a collection of evergreens for Christmas. The most common evergreen trees and shrubs and those used as Christmas trees or in Christmas greens were on display with appropriate botanical information supplied on labels. Additional displays at this time centered attention on plant materials for wreaths and on the methods of improving the keeping quality of Christmas greens. A large Douglas fir, a victim of the September hurricanes, served as a Christmas tree for the occasion and was decorated with painted fruits and seeds from native plants. The excellent newspaper coverage given this display drew many visitors to the Arboretum during the Christmas holidays.

A collection of outstanding large-sized photographs by Dr. Wyman and Mr. Heman Howard, of the best trees and shrubs, formed a display for the early spring months and was

replaced in April by an exhibit of pruning methods and materials prepared by the horticultural staff. Many of the trees damaged or destroyed by the hurricanes which swept through the Arboretum the previous fall showed evidences of both good and bad pruning at an earlier date. These plant materials were used to advantage in the pruning exhibit.

The example of a tree destroyed because a forgotten guy wire was left in place made a forceful reminder to those visitors who had supported trees in such a manner following Hurricane Carol. Examples of trees which died because of girdling roots or an earlier pot bound condition, as well as trees which suffered rot for lack of protective paint following pruning were used to illustrate proper and improper tree care.

The exhibit of the Arnold Arboretum at the Spring Flower Show of the Massachusetts Horticultural Society featured ground cover plants in a setting designed to show the type of plant to be used for a variety of exposures. The exhibit had a favorable location in the hall and attracted much attention and comment. Again this year the Arboretum was awarded a gold medal for its exhibit.

Mrs. Schwarten prepared special library exhibits for meetings of the Bio-Historical Club and the Harvard University Library Club. Both organizations met in the Harvard University Herbarium and were particularly interested in the library, its management and its resources.

During the annual meeting of the Federated Garden Clubs of Massachusetts held at the New Ocean House in Swampscott, Massachusetts, the Arboretum exhibited a collection of flowering trees and shrubs as well as [ektachrome](#) display panels. As two other conventions were in progress in the hotel during the course of this exhibition, the plants received unexpected attention.

The Arboretum was fortunate during the year in having excellent cooperation from the newspapers, radio and the television stations in publicizing all of its activities, as well as the flowering season at the Arnold Arboretum. Without this cooperation our attendance would not have reached the gratifying stage it did. Over 300 newspaper or magazine clippings (or notices) about the Arnold Arboretum have accumulated during the year. Channel 2, Station WGBH-TV, through its "Images" program, featured the plants of the Arboretum by using kodachrome slides from the Arboretum collection. While we all wished colored projection were possible to bring out the full beauty of both the slides and the plants, the inquiries following these programs indicated a receptive audience.

The Arnold Arboretum staff served as hosts to visitors at two well publicized "Open Houses." On December 17 and 18 an "Open House" was held at the Administration Building in Jamaica Plain and in spite of inclement weather a sizable group attended to inspect the alterations in the building and to see the exhibits. On May 7 and 8 an "Open House" was held at the Case Estates in Weston. Parking became a problem on both of these days on the narrow Weston road, for the location of the Case Estates is away from public transportation. Our best estimates are that 3,000 people visited the Case Estates during those two days and were

particularly interested in the perennial garden, the woods garden, the ground cover plots and the various nursery collections of new introductions. It is our hope that annual open houses can be conducted at both Jamaica Plain and at the Case Estates in future years.

LIBRARY

The actual move of the larger part of the Arboretum library to the new quarters in the Harvard University Herbarium in Cambridge was completed in the first month of the past fiscal year. During the remaining portion of the past year Mrs. Schwartz, the librarian, capably assisted by other staff members, has devoted her time to rearrangement, labelling, cataloguing and reconditioning the books in both the horticultural library in Jamaica Plain and the non-horticultural library in Cambridge. It is with gratitude that acknowledgement is made of the efficient and devoted care being given the books of the Arnold Arboretum. Throughout the move, routine library activities were unhampered and requests for interlibrary loans, assistance to staff members attempting research and consideration of interested visitors were accomplished. At the completion of the new library quarters in the Administration Building in Jamaica Plain, the books and reference volumes were arranged on steel shelves in the reading room on the first floor. A special table is devoted to the display of current periodicals as they are received and back numbers of current volumes are on special shelves and readily available.

On the second floor of the Administration Building, steel shelves were erected to accommodate the bound volumes of periodicals dealing with horticulture and horticultural subjects. A complete card catalogue of all horticultural holdings, including a periodical catalogue, is maintained. The major task of arranging on steel shelves the books moved to Cambridge was accomplished through efficient and flawless planning. These books are receiving continuing attention for correct placement, cataloguing and labelling. All volumes are being cleaned and bindings are being treated as required. A master card catalogue is maintained to indicate horticultural holdings in Jamaica Plain as well as those volumes in the non-horticultural library. During the past year 536 volumes were added to the libraries either by gift, purchase, exchange or binding, bringing the accessioned total number to 49,209.

Pamphlets received and added to the library collections numbered 3,400, bringing the total to 15,750. One thousand nine hundred and seventy-five catalogue cards were added to the master catalogue and 4,066 cards to the Gray Herbarium species card index.

The library of the Arnold Arboretum received many useful gifts of books, pamphlets and photographs during the past year. It is a pleasure to acknowledge the gift mentioned elsewhere from Mr. and Mrs. F.H. Palmer, as well as particularly fine gifts from Mr. Arthur Shurcliff and Mrs. Roy Arthur Hunt. Mr. Shurcliff presented a copy of *Miller's Gardener's Dictionary* and Mrs. Hunt a gift which included two manuals of Gardening from English manuscripts in her own collection.

The library of the Arnold Arboretum also received from the Baker Library of the Graduate School of Business Administration a collection of thirty botanical volumes from the Winthrop collection in particularly fine bindings.

Frans Verdoorn, Research Associate, spent much time, during the past year, on the preparation of a revised edition of his *World List of Plant Science Institutions*. The new, fifth edition will include more than twice as many entries as the fourth edition of 1938. Work on the biographical card index of plant scientists, being prepared as a basis for the *Index Botanicorum*, continued as in previous years, with the aid of three assistants. The index consists now of about a million cards. Work towards an annotated bibliography on Linnaeus and his Time was continued in an effort to display Linnaeus' life and manifold activities in their full historical context.

HERBARIUM

The facilities of the Harvard University Herbarium and the additional space now available in the Administration Building in Jamaica Plain has afforded the herbarium staff the desired opportunity for expansion and proper organization of the herbarium collections of the Arnold Arboretum. The herbarium in the Administration Building in Jamaica Plain is devoted to specimens of plants under cultivation anywhere in the world, with particular emphasis on those cultivated at Jamaica Plain. These cultivated specimens are supplemented with specimens of spontaneous taxa to allow proper study and determination of the cultigens. The horticultural herbarium was expanded during the past fiscal year to loosen the specimens in each case. The entire herbarium was checked for coverage in relation to such manuals as those by Rehder and Bailey. Specimens needing repairs are being afforded the treatment required in a systematic fashion.

The horticultural herbarium has been indexed not only by family but by genus as well, for the convenience of visiting horticulturists. It is of interest to note that during the past year visitors were often interested in either herbarium, but rarely did their work involve both. The specimens moved to Cambridge were transported in the steel cases or cardboard boxes used to house those specimens in Jamaica Plain.

During the year Miss Perry, with the assistance of two student workers, completed the major task of inserting into the steel cases in their proper sequence all specimens formerly contained in cardboard boxes in Jamaica Plain. When this task was completed the long-delayed distribution of recently mounted specimens was begun. Currently the work is also under way to place in proximity the specimens representing families of flowering plants in the herbaria of the Arnold Arboretum and the Gray Herbarium.

During the past year 6,655 specimens were mounted and added to the two herbaria, bringing the total accession count to 681,747 specimens in the herbaria of the Arnold Arboretum. Additional collections and specimens were received, totaling 13,716 numbers. Of these, 10,133 were received in exchange and 3,211 by purchase or subsidy of expeditions or

collectors. The remainder were received as gifts or in exchange for identifications. Ninety-four percent of the specimens received represented plants from Malaysia, Asia, Africa, Europe and Australia in that order.

In recent years the Arnold Arboretum has contributed to the financing of expeditions to New Caledonia, Northern Burma and Kenya Colony. The botanical results of these expeditions are now being made available and the specimens received in terms of subsidy were from these important areas. Requests for loans of herbarium specimens in the collections of the Arnold Arboretum remained high and in spite of the move in progress, all were handled promptly.

Requests were honored for 86 loans to 511 institutions and the loans averaged 130 specimens. The staff feels that the time spent in locating, removing and packing these specimens for shipment to fellow scientists is not only repaid in kind but also enables us to maintain an active herbarium, with specimens determined by specialists. Nevertheless, it is acknowledged that preparing the loans and replacing the sheets in their proper position when the loan is returned is expensive in terms of staff time. The largest number of requests for material on loan came from botanists in the United States, with other requests coming from Europe, Canada, South America, Asia and New Zealand, in order of frequency.

During the year staff members conducted research on plant families and areas of their specialty. Dr. Howard continued his work on the vegetation of bauxite soils in cooperation with the botanists of the Institute of Jamaica, British West Indies. He also was able to devote some time to his studies of petiole structure, the horticultural plants of Florida and the American tropics and to general Caribbean collections.

Dr. Wood made two field trips to the southeastern states and worked on the determination of these plants. He continued his studies of the genus *Hedyosmum* and completed work on *Drosera*. Dr. Kobuski devoted almost full time to his duties as curator of the herbaria in supervising the work in progress. In addition to his work as editor of the Journal of the Arnold Arboretum, Dr. Kobuski prepared a new edition of a glossary of horticultural terms and continued his studies of the Asiatic members of the *Theaceae*. Dr. Johnston taught his course, "Phylogeny and Classification of the Flowering Plants" and devoted the remainder of his time to his research on the *Boraginaceae*. He gave special attention to the morphology and classification of *Echiochilon* and related genera from the deserts of Africa, Arabia and southern Asia. His studies of the poorly understood genus *Microula* of Tibet and western China are well advanced. He has prepared three long papers on the *Boraginaceae* for publication. Dr. Perry devotedly gave her full time to arduous work in the organization of the herbarium. It was largely through her efforts that the specimens housed in cardboard boxes were efficiently transferred to their proper positions in the regular herbarium.

In the latter part of the year Miss Perry was able to turn a small part of her attention to her own research interests on the vegetation of New Guinea and she was able to resume her work on the extensive collections of [L. J. Brass](#) from Papua. Dr. Hu, botanist of the [Flora of](#)

[China Project](#), efficiently supervised the work of Dr. Liu and Dr. Ting. Together they have continued the indexing of Chinese plants and the preparation of a card file to record the Chinese vegetation. Dr. Hu and Dr. Liu together have completed a treatment of the family Malvaceae as it occurs in China.

COMPARATIVE MORPHOLOGY

During the past year the wood, wood slide and pollen slide collections of the Arnold Arboretum formerly housed in the Biological Laboratories were transferred to the Harvard University Herbarium. These collections occupy a large room on the first floor adjacent to the paleobotanical collections and convenient to the herbarium. Professor Bailey and his assistants completed the necessary rearrangement of materials in the new cases housing these collections. The wood collection is now in the same systematic sequence as the herbarium.

The most valuable additions to the collections in the past year are the specimens secured in Fiji by Dr. A. C. Smith and the specimens of the genus *Coccoloba* collected by Dr. R.A. Howard in the Caribbean Islands. During the year valuable specimens of the woody Compositae were contributed by Mr. Carlquist of the University of California; numerous slides of the Magnoliaceae by Professor Canright of Indiana University and valuable slides of *Garrya* by Professor Moseley of Santa Barbara College. The wood collection, and particularly the microscope slide collection related thereto, have become increasingly significant in the study of plant relationships and classification and in the identification of fossil woods. In addition, they have rendered a public service in solving problems raised by art museums, archeologists, criminal divisions of the police department, timber users and others.

CYTOGENETICS

New hybrids of *Forsythia*, *Rhododendron*, *Philadelphus*, *Prunus* and *Malus* developed at the Arnold Arboretum were grown in the nursery in Jamaica Plain and in test plots at the Case Estates in Weston. Four of the best of the apple hybrids which merit distribution have been named in honor of associates of the Arnold Arboretum. These were published in *Arnoldia* and are *Malus* X "Henrietta Crosby," *Malus* X "Blanche Ames," *Malus* X "Henry F. duPont," and *Malus* X "Mary Potter."

An analysis of the relations between aneuploidy and morphological characters among the progeny of triploid *Forsythia* and *Philadelphus* was made by Dexter Sampson. The various techniques used for producing dwarf fruit trees which have been tested at the Arnold Arboretum in Jamaica Plain and in Weston have now been used to produce dwarf ornamental trees. The use of dwarfing rootstock has given promising results with several species of maple which would be equally desirable as dwarf trees. Two chemical preparations for use with plant materials have been developed which are proving of interest and value to horticulturists. A compound of 10% weed killer (equal parts of 2, 4, 5-T and 2, 4-D) in a paste of lanolin or similar grease can be used to kill poison ivy growing in among vines or shrubs without injury to the adjacent plants. A second compound of 10% wettable chlorodane in a lanolin or grease base

when painted on the trunks of peaches and similar trees effectively controls boring insects. Both compounds will soon be available from commercial sources. The work on the effects of ionizing radiation, supported by the Atomic Energy Commission, has led to the use of X-rays to promote earlier flowering in certain plant species.

Ornamental trees and shrubs from the Arnold Arboretum are being grown in the "gamma field" at Brookhaven, Long Island, for the induction of bud mutations in collaboration with the Brookhaven National Laboratory.

INSTRUCTION

During the year various staff members continued their cooperation with the Department of Biology of the University in presenting formal courses, informal seminars and guiding the work of graduate students. Dr. Ivan Johnston offered an advanced course in plant taxonomy in the spring semester. [Dr. Karl Sax](#) continued his guidance of the work of Mr. Dexter Sampson and Julian Jaffee. Mr. Jaffee completed his thesis and received his degree at midyear's. Dr. Richard Howard supervised the graduate work of Miss Siri von Reis on the botanical activities and travels of Erik Ekman and of Mr. Tchang BokLee, an UNKRA fellow from Korea who is working on the forests and forest products of Korea. Cooperation was also offered to the School of Landscape Design of Harvard by Dr. Howard, under whose direction several classes studied the plant materials on the grounds of the Arboretum.

Many of the staff members attended and took part in the seminars offered in the field of plant systematics for graduate students and staff at the Harvard University Herbarium. An average of thirty persons attended these weekly seminars, which were conducted throughout the year.

Dr. Wood spoke on "Hybridization in Drosera"; Dr. Perry on "Plant Exploration in New Guinea"; Dr. Kobuski on "Problems in the Theaceae" and Dr. Howard on "The Use of Anatomical Characters of the Petiole as an Aid to Plant Classification. "

TRAVEL AND EXPLORATION

New horticultural introductions as well as herbarium specimens came to the Arboretum through the field efforts of its staff as well as through expeditions by foreign collectors supported by the Arnold Arboretum.

Of the staff members, Dr. Howard and Dr. Wood carried on botanical explorations during one trip to southern Florida and the Bimini Island group of the Bahamas in the British West Indies in February. On this trip they collected in the Florida Everglades National Park and visited the Fairchild Tropical Garden, the Kampong (the home of Mrs. David Fairchild), the Coconut Grove Plant Introduction Station of the U. S. Department of Agriculture and the Gifford Arboretum of the University of Miami.

In the Bahamas they were guests of the American Museum of Natural History at the Lerner Marine Laboratories where they continued explorations of those islands begun by Dr. Howard in 1948. In addition to field studies, work was done on the cytology of tropical plants and in anatomical investigations of tropical plant species. Dr. Howard also continued the cooperation between the Arnold Arboretum and the Institute of Jamaica in Kingston, Jamaica, British West Indies. He spent three weeks in September working with the botanists of the Institute in conducting a survey of the vegetation on bauxite soils which are to be mined by several aluminum companies.

In April Dr. Wood travelled and collected in North Carolina and Georgia. He brought back to the Arboretum over fifty living collections, species and hybrids of Robinia, the rose acacia, for addition to our living collections or for testing and study in connection with his investigations of that genus. Dr. Wood was also able to obtain living material of Liquidambar styraciflua var. rotundiloba, named by [Dr. Rehder](#) but not currently in the Arboretum's collections. During the year the Arboretum supported expeditions in Australia, Japan and South America and from these expeditions obtained seeds of ornamental plants for trial in the United States.

GIFTS AND GRANTS

The Arnold Arboretum is fortunate to have the new and renewed financial support of a large group of benefactors known as the Friends of the Arnold Arboretum. The support of our work by these loyal benefactors among whom are many organizations is deeply appreciated by the entire staff. Gifts from the Friends to Harvard University for the purposes of the Arnold Arboretum, unless specified for particular purposes, are assigned to a fund known as Gifts for Cultural Purposes. During the past fiscal year such funds were used to employ additional seasonal labor in the maintenance of the grounds, to carry on experiments in the winter protection of evergreens, particularly rhododendrons, and to afford research assistance to members of the staff for work on horticultural projects.

In addition to these gifts for unrestricted purposes, the Arboretum has received gifts and grants for special research projects and special purposes. The largest of these from the China International Foundation supports the work of three botanists and two secretaries in investigations of the flora of China.

Grants from the Stark Brothers Nurseries for the work of [Dr. Karl Sax](#) has supported investigations in methods of dwarfing trees by the control of growth. Dr. Sax has also received grants from the atomic energy commission for study in the effects of radiation on cell division and growth and in the transport of materials through the body of plants. Dr. Carroll Wood received a grant from the American Association for the Advancement of Science through the American Academy of Arts and Sciences for exploration and collection of materials in the Gaspé Peninsula of Canada. This work will be completed during the coming summer months.

A gift for the specific purpose of "repair of hurricane damage" was received from the Association for the Arnold Arboretum, Inc. With the approval of its president and board of directors, this gift was used to purchase a brush chipper and chain saw to facilitate the removal of fallen trees.

A non-departmental gift from Mr. George R. Cooley for taxonomic work at the joint discretion of Dr. Reed Rollins, Director of the Gray Herbarium, and Dr. Richard Howard has been utilized to support field work and research on the vegetation of the southeastern states and the adjacent Caribbean Islands. Travel leading to collections and determinations of the woody ornamental plants under cultivation as well as the native and spontaneous plants of the area has been made possible through this gift.

Gifts in kind, including books for the library as well as herbarium specimens, have been received from many sources. Mr. Harvey Templeton, Jr., kindly presented to the Arnold Arboretum an experimental intermittent mist propagation system which has been erected near the greenhouses. This gift will enable Mr. Coggeshall and others to run comparison tests of rooting techniques on woody plants under the polyethylene plastic and under the intermittent spray systems.

The Arboretum is particularly indebted to Mr. and Mrs. F.H. Palmer of Wellesley, Massachusetts, for a gift of 150 bound volumes of books and periodicals from their library, many of these originally in the library of [Mr. H.H. Hunnewell](#). This important gift of volumes in fine bindings not only adds several valuable items to the libraries but gives us a number of reserve copies for volumes in continuous use and receiving wear.

From the trustees of Lingnan University the Arboretum has received a gift of 8,058 herbarium specimens representing plants of China. These specimens were borrowed by staff members of the Arboretum prior to the war years and were packed ready to be returned at the outbreak of World War II. As the specimens were being kept apart as a loan to be returned, they could not be studied or cited and were difficult to afford proper care. The trustees of Lingnan University, recognizing the value of these specimens, if accessible, to the work of the Arboretum and other institutions, presented them to be incorporated in the herbarium. The specimens were all stamped with a special imprint recognizing the date of this gift. When it is possible to reestablish botanical work in China at the Lingnan University, the Arboretum will replace this gift with comparable specimens from its collection of duplicates of plants from China.

PUBLICATIONS

The breadth of interest and the nature of the activities and the contribution of the staff of the Arboretum is always indicated in the bibliography and published writings given at the end of the annual report. I wish, however, to call special attention to the publications of the past year. The request for out-of-print numbers of articles which appeared in the *Bulletin of Popular Information* and in *Arnoldia* led to the reprinting of many of these articles as *The Arnold*

Arboretum Garden Book. This book of 354 pages, published by D. Van Nostrand Company, Inc., was edited by [Dr. Wyman](#). It has been widely and favorably reviewed and meets the needs of the public interested in woody trees and shrubs for information on selection and care of such plants. Dr. Wyman also completed the manuscript and the proofs for a new edition of *Crab Apples for America*, to be published by the American Association of Botanic Gardens and Arboretums. Two other books by staff members were published during the course of the last fiscal year and two others were seen through proofs and will appear shortly.

The Botany of Cook's Voyages, by [Dr. E. D. Merrill](#), was published by *Chronica Botanica* and appeared in December, 1954. This book is in one regard a summary of many of Dr. Merrill's investigations in the origin and distribution of the plant life of the Pacific Islands. The *Chronica Botanica* Company also published a selection of the research papers of Professor I. W. Bailey in December, 1954, under the title of "Contributions of Plant Anatomy." The staff takes pride in the fact that almost all of the papers reprinted in this book appeared in the [Journal of the Arnold Arboretum](#) during the course of Professor Bailey's active career.

[Dr. Sax](#) completed work on his study of population problems among the world's people and this book entitled, *Standing Room Only* is to be released in July by the Beacon Press. [McKelvey](#) is also completing the index to her book, *Botanical Exploration of the Trans-Mississippi West, 1790-1840*, which will be published in the fall.

New brochures describing the activities, resources and personnel of the Arboretum were prepared and have been distributed to garden clubs and in connection with the various open houses held. Twelve issues of *Arnoldia* were prepared under the editorship of [Dr. Wyman](#). An issue was distributed on September 24th reporting on the hurricane damage and was followed on October 15th by a special number devoted to the "Rehabilitation of Trees Injured by Hurricanes of 1954."

In response to many requests for an earlier issue of *Arnoldia*, now out of print, Mr. Coggeshall brought up to date the information on the uses of polyethylene plastic at the Arboretum. Appropriately, at Christmas time Dr. Wyman published a delightful biographical sketch of Wilfrid Wheeler, "the Holly man" and listed with descriptions the best of the fruiting hollies named by Mr. Wheeler. [Dr. Karl Sax](#) described the work of the Arboretum staff in the field of plant breeding in the April issue of *Arnoldia*, while other issues appropriate to the season covered the subjects of forcing woody plants for early bloom, lilacs and old fashioned roses.

Four quarterly issues of the [Journal of the Arnold Arboretum](#) were published under the editorship of Dr. C.E. Kobuski. The articles in the Journal are more technical in nature. Priority of publication goes to staff members of the Arboretum and, in general, articles are accepted by other authors if they are based on materials in the collections of the Arboretum. Many of the articles dealt with basic investigations in horticultural subjects such as "The Control of Tree Growth by Phloem Blocks" by Dr. Sax, "Polyploidy and Apomixis in Cotoneaster" by Mrs. Sax,

"Induction of Early Flowering of Ornamental Apple Trees" by Karl Sax and Albert Johnston and "A Monograph of the Genus *Philadelphus*" by Dr. Hu. Other articles, such as "The Cyperaceae Collected in New Guinea by L.J. Brass, IV" and "The Cryptogams of the 1948 Archbold Cape York (Queensland) Expedition," were submitted by specialists who worked on collections made by an Arboretum-sponsored expedition.

The April and July numbers of Volume 36 of the *Journal of the Arnold Arboretum* were combined in a special issue dedicated to Professor Bailey by the editorial board. All of the papers were prepared at our request by former students and associates of Professor Bailey. The combined number carried the following dedication: "On the occasion of the retirement of Professor Irving Widmer Bailey, after twenty-two years on the staff of the Arnold Arboretum and forty-seven years of service to Harvard University, we, his associates on the editorial board of the *Journal of the Arnold Arboretum*, dedicate this issue to him." The authors of the articles in this special number of the *Journal* represent only a few of the students and associates of Professor Bailey who would pay tribute to him at this time. We honor him with this issue in recognition of his contributions, his high standards of research, his integrity in science and personal life, and his guidance of and inspiration to students in the field of botany."

RICHARD A. HOWARD, Director