



Annual Report 1975-1976

TO THE PROVOST OF THE UNIVERSITY:

SIR,

The Bicentennial celebration continued through the spring of 1976, although the expected large number of visitors to Boston and the Arnold Arboretum did not appear. In cooperation with the official "Boston 200" program, the Arboretum staff supplied new publicity material for many brochures and pamphlets distributed to visitors by the committee. The Arnold Arboretum was awarded a special certificate indicating its primary position as an arboretum created for the purpose, another Boston "first."

For our own contribution to the Bicentennial, the staff propagated plants of *Liriodendron tulipifera*, the tulip tree, and distributed three hundred to New England organizations for commemorative planting.

From the standpoint of horticultural interest, the year will be regarded as anomalous in unusual weather conditions and the effects they had on the flowering of the living collections. We experienced a dry summer and fall when we were plagued with vandal-set fires which caused considerable damage. Moderate and above-average temperatures occurred early in the spring, climaxed by one week in April with subfreezing temperatures on a Monday followed by a weekend with temperatures in the nineties, and then cooler weather.

For the first year on record a great many lilac inflorescences were aborted, and the flowers were destroyed in several species of plants including all specimens of the dove tree. The inevitable contrast occurred in spectacular flowering of dogwoods, rhododendrons, and mountain laurels.

The following notes will indicate that the Arnold Arboretum remains an active organization, nationally and internationally, in participation in and contribution to botanical sciences and to horticulture.

STAFF

[Dr. Shiu-Ying Hu](#) reached retirement age during the year and retired officially on June 30, 1976. Dr. Hu came to Radcliffe for graduate work in 1946, and in 1949 joined the Arnold Arboretum staff under [Professor E. D. Merrill](#) to become a specialist in such groups of horticulturally

important plants as *Philadelphus*, *Hemerocallis*, *Ilex*, and *Paulownia*. In recent years she has spent considerable time in Hong Kong on work directed toward a modern flora of Hong Kong and the New Territories.

Resignations were received from Dr. Gordon DeWolf as horticulturist and Mr. Edward Flaherty as record keeper. Dr. Yin-Tse (Eric) Lee, a Mercer Research Fellow, completed his appointment and returned to Hong Kong.

New appointments to the staff included Mr. John Alexander III as plant propagator, Mr. Gary Koller as supervisor of the living collections, Miss Donna Lynch as record keeper, Miss Margo Reynolds as a staff assistant, and Ms. Jackie Smith as senior curatorial assistant.

Dr. Bernice Schubert was appointed a senior lecturer on biology for the duration of her term as curator of the Arnold Arboretum.

[Mr. Alfred Fordham](#), who has served as plant propagator for the past eighteen years, was given a new assignment as research horticulturist. Mr. Fordham received a professional citation from the American Horticultural Society during the annual meeting in Hawaii. He was recognized as "one of the world's foremost propagators and... particularly noted for work in the woody plant seed germination and the development of dwarf conifers."

In commemoration of the United States Bicentennial, the Royal Horticultural Society selected two hundred American horticulturists as complimentary fellows for the year. Professor Howard was among those selected. He was also appointed to the ISHS commission for horticultural nomenclature and registration. Dr. Stephen Spongberg was appointed chairman of the American Horticultural Society committee on nomenclature and plant registration, and a member of the comparable committee of the American Association of Botanical Gardens and Arboreta. Professor Norton Miller joined Drs. Weaver and Spongberg as an associate editor of the journal *Rhodora* issued by the New England Botanical Club. He has also joined the editorial boards of *Systematic Botany* and the *Journal of the Hattori Botanical Laboratories*.

Professor Carroll E. Wood, Jr., was honored by Harvard University for twenty-five years of service to the University.

Members of the staff traveled widely during the year, specifically for field work, or to attend meetings which offered also the opportunity of collecting plant specimens or of study at other herbaria and libraries. The major meeting of the year was the International Botanical Congress, which is held every four years. The 1975 meeting was scheduled for July in Leningrad in the Soviet Union. It was preceded by a meeting of the Nomenclature Section in Leningrad and a meeting of the International Association of Botanical Gardens in Moscow. A number of field trips were scheduled following the Congress. Dr. Spongberg represented the Arboretum and cast the institutional ballots at the nomenclature sessions. Professor Miller attended the Botanical Congress and presented a paper on Quaternary Fossil Bryophyte Assemblages in North America in a symposium on Aspects of Geography and Ecology of Bryophytes.

Professor Howard, as past president of the International Association of Botanical Gardens, was a member of the presidium at the Moscow meeting. He also spoke on the use of computers in registration and analysis of plant introductions. As an honorary vice-president of the International Botanical Congress, Professor Howard was a guest of the Academy of Sciences of the USSR and was presented a Congress medal.

The annual meetings of the American Association of Botanical Gardens and Arboreta, held on Kauai in Hawaii, were attended by Professor Howard and Mr. Fordham. Professor Howard presided and completed his term as president of the organization.

The Northeast Regional Meeting of the American Association of Botanical Gardens and Arboreta was held at Sky lands in New Jersey. Drs. Spongberg and Weaver represented the Arboretum and had the opportunity of special collecting for the herbarium, the living collections, and their own research programs.

Dr. Hu continued her association as a professor at Chung Chi College in Hong Kong, while proceeding with her work toward a flora of the area. She was fortunate to join a group from the college in a visit to the People's Republic of China during the summer. An account of her trip, including observations on botanical gardens, herbaria, botanists, and publications, was published in *Arnoldia*. In late January, Dr. Hu participated in a taskforce on Indigenous Plants for Fertility Regulations sponsored by the World Health Organization (WHO) and held in Mexico City.

Dr. Schubert was a participant in the Fifth Mexican Botanical Congress at Xalapa, Veracruz, Mexico, and continued field work in her search for material of her specialty Dioscorea.

The Arnold Arboretum was represented by Mr. Pride at meetings of the Hemerocallis Society at Raleigh, North Carolina, and by Mr. Pride and Dr. Weaver at the meetings of the American Rock Garden Society in Boston.

Mr. Fordham has attended meetings of the Plant Propagators' Society regularly, including an international meeting in Tallahassee, Florida.

The Arnold Arboretum was asked by the National Science Foundation to be the collaborating institution for two projects in Pakistan supported by the foreign currency program. In October, Professor Howard traveled to Islamabad to consult with Dr. Mohammad N. Chaudhri of the National Herbarium, and to Peshawar to meet with Dr. S.M.A. Kazmi of the PCSIR. Both men are collecting plants of Pakistan, and the first set of duplicates will be deposited with the Arnold Arboretum. Drs. Chaudhri and Kazmi, as well as Dr. E. Nasir of the Stewart Herbarium, arranged field trips for Professor Howard. The fall season also permitted the collection of seeds at higher elevations, which may produce useful plants for cultivation in the United States.

An extended field trip completed by Dr. Stevens permitted him to make field observations and collections of the genus *Calophyllum*. One month was spent in herbaria at Edinburgh, London, Paris, and Geneva en route to Malesia. Bases for field work were established in Malaya, Sarawak, Sabah, and Papua New Guinea. Shorter visits were made in Singapore, Java, and Australia.

HORTICULTURE

By terms of agreements with the City of Boston, dated 1882 and amended in 1896, the [Department of Parks and Recreation](#) assumed responsibility for the roads, paths, benches, fences, and police protection. In return, the collections were to be open to the public "at reasonable hours," with maintenance of the living collections, by the staff, financed solely by unrestricted and restricted funds of the Arnold Arboretum and by special gifts to the Arboretum. The protection of the collections and the visitors is the responsibility of the City of Boston. We receive excellent cooperation from the captain and staff of Station 13 of the Boston Police Department in Jamaica Plain. The station supplies occasional patrols of the grounds during the day and at night, and responds effectively to emergency calls.

The control of unauthorized cars and motorcycles, occasional theft, damages to plants by vandal-set fires and malicious breakage, the accumulation of litter and the thefts from cars, is extremely difficult due to the faulty maintenance of fences and gates at the periphery of the property. Pedestrian gates do not close, driving gates are broken, and damaged fences have remained unrepaired for over two years. Several meetings were held during the year with local legislators and with representatives of the Mayor's office in an attempt to obtain some action. There has been no response and the problem remains. Vandals have set fires in the vine collection and in the *Leitneria* and *Hamamelis* plantings, and deliberate breakage was extensive in young *Magnolia* and *Cercidiphyllum* holdings.

The director has been refused permission to make the necessary repairs with Arboretum funds. Until the periphery is secured, any admission charges or patrols are not reasonable. The low priority the Arnold Arboretum has in the budget of the City is perhaps understandable, but it is regrettable.

The resignations of two members of the horticultural staff and the appointment of replacements permitted the reexamination of the work being done, the goals, and the work to be done on the living collections. A complete inventory of the nursery and the permanent plantings in Weston has been completed, and the identification of the plants is being verified. A detailed survey of the living collections in Jamaica Plain is under way to reaffirm the location of each plant, to check the physical condition of each plant, to verify its identification, and to determine the need for labels.

The loss of labels over the last few years has been disturbing, and their replacement time consuming and expensive. A major effort will be required during the winter months to revise many of the maps of the collections, to prepare new record labels, and to redesign the

display labels for the major part of the collection. Utilization of a new computer printout of the inventory by geographic areas will make this work feasible.

In response to requests for material from our collections, 95 shipments of plant material in the form of seeds, cuttings, or plants, comprising 272 taxa, were sent to cooperating institutions, nurseries or scientists in the United States and fourteen foreign countries. A total of 114 shipments, representing 411 taxa, were received during the year from twenty-two countries. These ranged from potential taxa for the hardy collections, such as the forty and thirty-five kinds of seeds selected from seed lists distributed by the Lu Shan and the Yunnan Botanical Gardens in the People's Republic of China, to materials requested by the staff for individual research projects. During their travels, many of the staff members collected plant materials which have been accessioned into our records.

Not included in the records of material shared with other arboreta is that obtained by responsible visitors to whom collecting permits are granted. As an example, cuttings of over 300 taxa were obtained by representatives of the Cary Arboretum during one visit. The practice is reciprocal and reduces the demands on the Arboretum staff when such permission can be granted.

As staff members work on the living collections, any plants which are in poor condition or otherwise need attention are noted and called to the attention of the propagator, the superintendent, and the record keeper. During the year, 222 taxa were propagated to prepare replacements for such specimens. Ninety taxa were processed to acquire or verify propagation data, and fifty-four were propagated in larger numbers to be tested for hardiness in appropriate areas.

[The bonsai collection](#) is under the supervision of our honorary curator of the bonsai collection, who obtains staff help as needed. Most of the smaller plants were repotted during the year. Regrettably, the bonsai collection was the object of two episodes of vandalism. After plants from the outdoor collection were stolen, an alarm system was acquired. The second theft involved subtropical bonsai taken when the greenhouse was entered through a soil bin.

The staff continues to function as registration authority for cultivars of woody taxa not otherwise represented by societies. Dr. Spongberg and Professor Howard serve on national and international committees associated with this activity. Professor Howard was a participant in the symposium on computer processing of cultivar registration held at the American Horticultural Society headquarters in Virginia through the auspices of the Plant Sciences Data Center.

The Arnold Arboretum Achievement Award for Botanical and Horticultural Excellence has been offered in the past to outstanding students in high schools or private schools in Massachusetts. The 1976 award was made to Frederick S. Creager, a graduating senior of Jamaica Plain High School.

An award was made to Walter Judd, a graduate student, to support field studies of the genus *Lyonia* in the United States and the Dominican Republic.

THE CASE ESTATES

The Case Estates in Weston comprise approximately 10 acres, and serve several important functions in the work of the Arnold Arboretum. Plants from the greenhouses or the small nursery area in Jamaica Plain are grown to larger size in Weston. Plants we wish to preserve, but for which space is unavailable in Jamaica Plain, are maintained in low-maintenance areas. Some display collections have been developed. The area is ample for staff research projects, and the buildings are used for classes and public lectures.

The Weston location is maintained by a small permanent staff, which is increased by several student horticultural trainees during the spring and summer months. We are also grateful to the Arboretum Volunteers who take the responsibility for guided tours of the Case Estates during the year.

Renovation work continued on an irrigation system for the nursery area. The ground cover display section has been consolidated for more effective display and maintenance. The staff completed a new inventory and evaluation for all temporary and permanent nursery collections.

The Arboretum donated seventy-five trees to the Town of Weston during the year for roadside plantings in the town.

Work, by the town, is under way to widen Wellesley Street along the Case Estates property, which will create sidewalks and reduce some curvature and visual obstacles. The Arboretum lost approximately one acre of land to this renovation, but has preserved the historic "hen's tooth" stone wall and the row of *Malus* 'Henrietta Crosby'. The area should be safer for pedestrians and visitors to the Case Estates. New plantings will be established where some vegetative screens were removed.

HERBARIUM

The crowded conditions of the herbarium in Cambridge, mentioned in previous reports, remain a major problem in day-to-day operations, and relief remains several years ahead. The architects hired by the University to consider the problem concluded that the logical expansion area would involve an addition to the front of the Harvard University Herbaria building. Preliminary floorplans have been submitted for staff and University consideration. The use of compactors to house herbarium specimens in the new structure appears to be a necessity. An architect's drawing of the façade of the building is under study by the University Planning Office. If all aspects of appearance, floor design, and costs are approved, such plans, along with a brochure describing the work carried on in the building, will be used in a campaign to raise money for the construction.

In the meantime, heroic measures are being taken by the herbarium staff to accommodate the specimens added to the collections annually. The use of cardboard storage cartons on top of the regular cases is both an inconvenient and an inadequate storage method. The boxes now total 2,708 with the addition of 312 units during the year, and such additions will increase. The purchase of steel herbarium cases, to be placed in space created by the move of the fern collection, has become a necessity. Some additional space has been provided in the regular herbarium sequence by removing to a basement storage area the specimens identified only to family. Unfortunately, this reduces the occasions when such material will be consulted by staff and visitors.

The overcrowded storage units have impeded the proper care of the type specimens which have been located at the end of each taxonomic and geographic unit. To afford these specimens better curatorial care, all type specimens are now being placed in an alphabetical generic sequence at the end of each family of plants, and the collection is shifted as required. Procedures have been adopted to photograph routinely all type and authentic specimens on loan to staff members, as well as those belonging to our herbarium. Documentation against possible loss or damage to specimens sent on loan is thus assured.

The special collections of fruits and seeds have been receiving care, and all collections, excepting the Cactaceae, are now completely protected in plastic bags and catalogued. As a result of all this curatorial work, shifts of specimens have altered locations and require the relabeling of cases and editorial changes on indices.

The curatorial work has been supported in part by a grant from the National Science Foundation to the Harvard University herbarium collections considered of national scientific significance. The staff is grateful for this grant which has been extended for another year, at which time a new long-term application must be submitted. To justify the grant, the organization agrees to make its specimens available on loan to qualified investigators, and to maintain the financial level of curatorial assistance contributed previously by the recipient. Some record keeping which seemed onerous at the time has revealed interesting figures. All visitors using the herbarium are asked to register, and during the present fiscal year 146 individuals from eighty-seven institutions used the herbarium for periods ranging from a few hours to several months. Records must be kept of requests for information requiring the use of the herbarium or the library, and these numbered over 300 from the office of the director alone. When the information is compiled for all herbarium and library staff members, the service aspect of the work of the Arnold Arboretum is clear.

Specimens added to the herbarium during the year totaled 28,365, bringing the total herbarium holdings to 1,054,824 sheets, of which 161,661 comprise the herbarium of cultivated plants housed in Jamaica Plain. The Arboretum received 111,292 specimens during the year: 8,473 by exchange with other institutions; 1,838 by gifts from individuals; 916 by subsidy; and 65 sent for identification, which were worthy of retention. The largest lots came respectively

from Western Malaysia, Papuaia, India, Australia, and the United States, with smaller numbers from other areas.

Requests for our specimens on loan for study came from fifty domestic and twenty-nine foreign institutions, representing 185 and 83 loans respectively, totaling 21,647 sheets. Although it is professional procedure to loan specimens for an indefinite period of time, excluding only types, each institution expects that specimens will be studied and returned as soon as possible. A review of our records during the year indicated that some specimens have been on loan to institutions since September of 1938, and that at present a total of 93,909 specimens are out on loan. Fortunately, not all of these will be returned simultaneously or our crowded conditions would become critical.

The development of federal legislation on threatened and endangered species has involved both staff knowledge and the resources of the herbarium. Congress assigned to the botanists at the Smithsonian Institution the responsibility of assembling a list of plants, and an original list was circulated to botanists at other institutions for comments and additions. Puerto Rico and the Virgin Islands, as well as Hawaii, were included in the area to be covered domestically, but the list also comprised many plants of scientific interest in other countries. Some plants listed are used in staff research or teaching programs, and so the wording of the proposed legislation and the involved cooperation with similar foreign agencies is pertinent to our work.

The research of the staff is varied and includes floristic studies, manual preparation, monographs, and investigations of single species of plants. The bibliography of published papers indicates the type of projects completed and published during the past fiscal year. Such studies may require initial or continued fieldwork and/or be laboratory or herbarium oriented. The basic resources of the Arnold Arboretum are a living collection, a herbarium, and a library, and appropriately equipped offices and laboratories. The use of these facilities is excellent.

LIBRARY

The curatorial grant from the National Science Foundation permits the use of some money for retrospective work including cataloguing and binding of older material. One library assistant was assigned to this work during the past year, and in four months seventy-two titles of the backlog were catalogued and ninety-four titles completely recatalogued or revised in classification. Current cataloguing by other staff members is done with the assistance of the publication, *Cataloguing in Publication (CIP)*, for the majority of books in the English language, as well as through a systematic search of the National Union Catalog when orders for Library of Congress cards are not filled. CIP is rapidly replacing the Library of Congress card orders as a cataloguing source. The remainder, including specialized volumes and those of foreign languages, require original cataloguing.

A net increase in volumes and pamphlets during the fiscal year was 748 items, bringing the total holdings to 85,094. A total of 723 periodicals are received.

The use of the library in Cambridge increased 8 percent, based on the number of volumes returned to the stacks, as compared with the previous year. Interlibrary loan requests numbered 478, an increase of 12 percent over the previous year. Although the majority of these are filled by supplying photocopies of the desired pages, a number of requests were refused due to a "no loan" policy or the inability to photocopy because of age or condition of the volume.

Binding of current items as well as older items continues on a regular schedule. Volumes which cannot withstand rebinding are placed in boxes lined with acid-free paper.

A book treatment program recommended by the conservator of the Harvard University Library has begun on the collections in Jamaica Plain. Books are removed from the shelves, which are then thoroughly cleaned. The volumes are dusted and the leather bindings treated with a special preservative dressing. Call number labels are being replaced by Identastrips of acid-free paper. A new shelving guide and shelf labels improve the ease of use of the library.

Volunteers have brought up to date the scrapbooks of clippings pertaining to the Arnold Arboretum, and have prepared an alphabetical list of genera as an index to the collections of Wilson photographs.

EDUCATION

The Arnold Arboretum functions as an educational organization at many levels and in many ways. The nearly 400 acres of organized collections, nursery areas, and greenhouses of labeled plants offer the greatest educational exposure to botanical and horticultural subjects. The grounds are open to the public for casual visits or for organized tours. Regular classes are offered as tours of the grounds or in the form of lecture series in Jamaica Plain and in Weston. Staff members generally conduct the tours for professional groups, but we are fortunate to have the help of talented and well-trained Volunteers to conduct tours and offer some classes for other visitors.

Questions are received and answered by telephone and by mail, and the staff shares this responsibility. During the year the staff prepared two exhibitions for the display area of the Administration Building. One exhibit focused on the herbarium, explaining the preparation, housing, and use of herbarium specimens.

A second exhibit related to the living collections and displayed the methods by which plant material is received, processed, and then planted in the collections. The nature of the care and maintenance of the collection was easily documented in the display, as were the records and record keeping, the labeling, and, finally, the use of the collection in staff research or in supplying material for other scientists.

The Arboretum staff had prepared an exhibit on the seed propagation of woody plants for display at the New Hampshire Spring Flower Show.

The photographic files of the Arnold Arboretum are also used in educational efforts of the staff. The historic collection of the photographs taken by [E.H. Wilson](#), primarily in China, has had much use in recent years. The photographs not only show the life and buildings of China in the early part of the twentieth century, but represent the plants that were sources of seed introduced into cultivation. An attempt is made to have every plant species that flowers or fruits in the Arboretum represented in the photographic collection.

During the past year Peter Chvany has added hundreds of pictures to this collection. Prints of specific plants are requested regularly by staff and by others for use in articles. Prints are also supplied regularly to University publications for publicity of the collections of the Arnold Arboretum.

The two films developed by the staff are now distributed in sales and rentals by a commercial firm, with royalties returning to the Arnold Arboretum. The film on Poisonous Plants continues to be a popular one and was awarded a Red Ribbon as the second best educational film entered in the American Film Festival in New York City. Staff members use the film regularly in speaking to local groups which have included the Harvard Community Health Center, the New England Medical Center, and several universities, among others. Using the royalties, special gifts from the Friends of the Arnold Arboretum, and a matching fund grant from the Massachusetts Society for Promoting Agriculture, work has been started on a film on plant propagation. This type of educational effort may well become self-supporting and permit the development of less popular but important educational films on such subjects as collection management and herbarium procedures.

The Arnold Arboretum cooperates with the Boston Poison Information Center by handling referral of calls concerning the ingestion of plant material. Calls received at the Center in the Floating Hospital (Tufts-New England Medical Center) are referred to the Arboretum office during the daytime and to various staff members in the evening hours. Although most calls involve nontoxic plants, a sufficient number of potentially toxic plants have been identified to make the service offered worth while.

During the year the staff has collaborated with the Massachusetts Horticultural Society in two new programs. One involved joint sponsorship of a distinguished visiting horticulturist. Another involved tours to distant areas of horticultural interest. Professor Howard led a plant study tour to Florida, centering in the Miami area. Mr. Pride led a tour to Monaco. In each case the Massachusetts Horticultural Society staff handled the solicitation of participants and the arrangements before and during the trip. Each participant made a financial contribution which was shared by the two organizations.

The care of the living collections and maintenance of the grounds are the responsibility of a few individuals who supervise a small but skilled crew of employees. This group is supplemented during the growing season with selected students of botany or horticulture who have applied for summer employment. The students are designated horticulture trainees,

selected for their abilities and the usefulness of the practical experience to their academic programs. They have represented an average of fourteen colleges, universities, and high schools. Participants receive student rate wages as approved by the Harvard Personnel Office.

Tours and special lectures by the staff are offered every week so that the students not only receive on-the-job training in caring for the living collections, but have the opportunity to see other aspects of the work of the Arboretum staff, as well as other gardens, businesses, and horticultural practices in the Boston area.

Formal courses are taught at Harvard by several staff members. During the year Professor Wood offered Biology 103, an elementary course in plant taxonomy, and shared the teaching of Biology 18, Diversity in the Plant Kingdom, as well as the Summer School course, Plants of the Tropics, offered in Florida. Professor Miller offered Biology 138, the Biology of Mosses, Liverworts, and Hornworts, and participated as well in Biology 18. Professor Howard, Miller, and Wood and Dr. Schubert supervised the work of graduate or undergraduate students in numbered research courses.

PUBLICATIONS

The two regular publications of the Arnold Arboretum are the [*Journal of the Arnold Arboretum*](#), issued quarterly, and *Arnoldia*, issued six times a year. The four issues of the *Journal* published during the fiscal year comprised 429 pages and twenty articles by twenty-two authors. Six numbers of *Arnoldia* were also published, comprising 259 pages and seventeen articles by eleven authors.

Of interest to the staff was a complimentary article in Russian, by T.G. Chubarian and P.I. Lapin, entitled "Through the Pages of *Arnoldia*," which appeared during the year in the *Bulletin of the Main Botanical Garden, Moscow*. The demand for reprints of the *Arnoldia* article on "Poisonous Plants" remains high, and a recent issue on subtropical bonsai also had an enthusiastic audience. The issue on low maintenance perennials was republished as a paperback volume by Quadrangle/The New York Times Book Company, and is income-producing through royalties.

Priority is given to manuscripts from the staff for publication in the *Journal of the Arnold Arboretum* and *Arnoldia*. During the year the staff published sixty-five papers in these two journals and in sixteen other periodicals.

The copyrights have expired on several early publications of the Arnold Arboretum, and commercial publishers have issued facsimiles. In the United States a Dover reprint of the 1930 edition of [*Aristocrats of the Trees*](#), by E. H. Wilson, is now available. The Koeltz science publishers in Germany have reproduced *The Bradley Bibliography* and *The Catalogue of the Arnold Arboretum*. Such reprints do not require permission, nor do we derive royalties from them.

GIFTS AND GRANTS

The Arboretum and its staff have been fortunate in the support offered in the form of gifts, grants, and materials from many individuals and sources. The Friends of the Arnold Arboretum respond regularly to requests that they renew their membership contributions, and the staff is grateful for this continuing support. Such funds are without restrictions, although most are used in the work associated with the living collections. A bequest was received from the Estate of Miss Harriet Rantoul, and memorial gifts were accepted in memory of Mrs. John E. Thayer and Ms. Virginia S. Coen.

A matching fund grant was obtained from the Massachusetts Society for Promoting Agriculture for the production of a film on plant propagation. The generosity of the Society was matched promptly by gifts from interested Friends. A similar grant from The Stanley Smith Horticultural Trust provided for the preparation of illustrations for a new manual of cultivated woody plants, and again matching funds were received from interested Friends. One gift was specified for support of work in plant propagation under the direction of Mr. Fordham, and two gifts were received to be applied to the care of the bonsai collection. A most welcome grant was received from the Charles E. Merrill Trust following our request for funds to support publication of three items of staff research nearing completion.

Gifts in kind included many books and artifacts, including letters and photographs, relating to the history of the Arnold Arboretum. Many nurseries have donated the plants we ordered for our living collections, and these were accepted with gratitude.

The grant from the National Science Foundation, shared with other botanical collections at Harvard, is truly significant in the curatorial work in the herbarium and the retrospective work in the library. Support of field work for Dr. Stevens' trip to Malesia was obtained from the Atkins Fund.

The Tozier Fund of Harvard granted a request by Professors Miller and Wood for photographic equipment, and one by Professor Howard for the development of visual material useful in teaching the families of flowering plants.

RICHARD A. HOWARD, Director