



Annual Report 1977-1978

TO THE PROVOST OF THE UNIVERSITY:

SIR,

In retrospect the fiscal year just ended was momentous in many ways. Two members of the staff, Dr. Stephen Spongberg and [Dr. Richard Weaver, Jr.](#), completed one and one-half months of field work in Japan and Korea, collecting seeds and plants for addition to the collections of the Arnold Arboretum. Their trip represents the first field expedition for horticultural purposes in temperate Asia since the last trip of E.H. Wilson in 1917-1919.

[Dr. Shiu-Ying Hu](#), retired, made a personal trip to the People's Republic of China, and Dr. Richard Howard was a member of the official delegation of the Botanical Society of America visiting selected botanical gardens and botanical, horticultural, and forestry institutions in eight cities of the People's Republic during a twenty eight-day period. Although only a few seed lots were collected from the wild during Dr. Howard's trip, an official exchange of seeds and herbarium specimens was implemented. The possibility of expeditions and the exchange of personnel seems realistic in the near future, and the exchange of specimens and literature and certainly freer communication appear to be immediate.

Within the living collections phase one of the boundary improvements was implemented with reconstruction of gates and sidewalks in the Forest Hills-Arborway area. Unfortunately the Adams-Nervine property could not be obtained for expansion of the collections.

Two major snowstorms set weather records for the Boston area, with the total snowfall in Boston in January recorded as 35.9 inches. On January 28 the Arboretum recorded 22 inches of snow, and this was followed on February 6 with 29 additional inches. The governor, using emergency powers, officially closed the Boston area to travel for a week, and the deep snow limited access and work in the living collections for nearly two months.

In Cambridge the Harvard Corporation approved the plans for an addition to the Harvard University Herbaria building, and the building plans were placed for bidding at the end of June, with construction to begin in July.

Finally, as an end to one administration and the beginning of another, Dr. Howard requested relief from the administrative duties of director which he has had since February 1,

1954. The Dean and the President accepted this request effective June 30, and the Corporation approved the appointment of Dr. Peter Ashton, University of Aberdeen, Scotland, effective July 1, as the fifth director of the Arnold Arboretum with a concurrent appointment as Arnold Professor of Botany. After a sabbatical year as a Guggenheim Fellow, Dr. Howard will be Professor of Dendrology on the staff of the Arnold Arboretum and within the University. Dr. Bernice Schubert was appointed acting director for Cambridge and Dr. Richard Weaver, Jr., acting director for Jamaica Plain and Weston for the three-month period, July 1 through September 30, 1978.

STAFF

June 30 marked the retirement of George H. Pride from the staff of the Arnold Arboretum. Mr. Pride joined the staff in July 1967 as Associate Horticulturist, with responsibility for the programs in education, the Friends of the Arnold Arboretum, and much of the publicity and film development. He represented the Arboretum well in community activity, especially in the Roxbury-Dorchester programs, and was honored by them at a special dinner. He received a citation from United States Senator Edward Brooke and a gold medal from the Massachusetts Horticultural Society for his contributions to inner-city horticultural programs.

[Mr. Alfred Fordham](#), who retired as propagator last year, received an Honorary Life Membership in the International Plant Propagators' Society at a meeting in Columbus, Ohio. He is only the fourth distinguished horticulturist to be so honored.

Dr. Richard Howard was doubly honored when he received the Liberty Hyde Bailey Medal from the American Horticultural Society at the annual meeting in Pasadena, California, and, later in Boston, when he was presented the George Robert White Medal by the trustees of the Massachusetts Horticultural Society for his work in horticulture and botany. Dr. Howard has received a Guggenheim Fellowship for the period June 15, 1978, through June 14, 1979.

Resignations were received during the year from Kenneth Shaw in horticulture, and Susan Farwell and Sandra McLeod in the library.

Dr. Burdette Wagenknecht, while on sabbatical leave from William Jewell College in Liberty, Missouri, was appointed a Mercer Research Fellow at the Arnold Arboretum for the spring semester.

HORTICULTURE

Inherent in the title Arnold Arboretum is the development, maintenance, and use of a collection of woody plants. In fact, the indenture establishing the Arnold Arboretum called for the collection of all the trees, shrubs, and herbaceous plants hardy in the vicinity of West Roxbury. The national and international reputation of the Arnold Arboretum is attained largely from the excellent collection of woody plants, their accessibility to scientists as well as to the general public, and the publications of the staff derived from the study of these plants. The Arboretum staff over the years has not only acquired and grown plants but has shared these

material resources in an uninterrupted program. Most of the plants, in fact nearly all those noted for their colorful flowering characteristics, were acquired from eastern Asia at the beginning of this century in a series of [expeditions](#) by [Ernest H. Wilson](#), [Charles S. Sargent](#), [Joseph Rock](#), and [John G. Jack](#) for the Arboretum staff.

The propagation staff kept excellent records of the treatments used to attempt germination of newly acquired seeds, and the horticultural staff maintained records on their growth, performance, and survival. It is these records that serve as background information on the treatment of new introductions, or the need to seek more hardy plants from northern sources or to share marginally hardy plants with other gardens in more suitable locations.

During September and October Drs. Stephen Spongberg and Richard Weaver traveled in Japan and Korea, collecting seeds and plant material for propagation. They assembled and returned expediently by air mail 504 collections representing 326 taxa and 68 families of flowering plants. With full knowledge of what is now growing at the Arnold Arboretum, the majority of the collections represented potential additions to the living inventory. The speed of transport, one week by air on the average, contrasted with the slow passage by boat of the early collectors. Fresh seed requiring no stratification could be germinated immediately, while other seed could be cleaned or properly stored in Boston, eliminating much of the arduous effort previous collectors expended in the field. Germination has been excellent except for the maples, and some seedlings have already been distributed.

A notice of 32 taxa to be distributed was published in the *Newsletter of the American Association of Botanical Gardens and Arboreta*, and resulted in requests from 33 institutions for 226 plants. A large number of taxa will be retained at the Arnold Arboretum for mass plantings in our nurseries for evaluation of form, variation and hardiness.

The director and staff are grateful to colleagues in Japan and Korea for the [assistance](#) afforded Drs. Weaver and Spongberg, and in particular for the help of Mr. Carl Ferris Miller of Korea and Dr. Katsuhiko Kondo and Professor Kankichi Sohma of Japan.

In anticipation of Dr. Howard's trip to China the staff prepared units of seeds of 12 taxa for distribution to appropriate botanical gardens in the People's Republic. In addition, leaves of various cultivars of *Streptocarpus* introduced by the Arnold Arboretum and plants of *Cyrilla racemiflora* were given to the botanical garden at Kamchow (Canton) for internal distribution. From Nanking Botanical Garden Dr. Howard was able to obtain a few seeds of *Sinocalycanthus sinensis* not known in the United States, and to present in return seeds of *Calycanthus floridus* from the United States. A few additional seeds were collected from wild plants near Kunming.

The living collections in Jamaica Plain are subject to continuous, systematic or casual examination by the staff responsible for maintenance, records, and labels, or for the nomenclature of the plants. New additions, or deletions or name changes, are recorded in Arboretum files and reported to the Plant Sciences Data Center of the American Horticultural Society. A new printout of the plants living in our collections is in preparation and will

incorporate additional information on sources. Maps of the plantings are revised on a regular basis, and additional color-coded labels or display labels are provided systematically. The collections of the Arnold Arboretum remain the best named and labeled cumulation known to the staff. Special attention was given to the identifications of the *Carpinus* and *Betula* species, and to an evaluation of the *Syringa* (lilac) taxa. Many of the plants within the Arboretum inventory seem particularly desirable for horticultural use, but for a variety of reasons are not available to the public from commercial sources. The techniques of propagating such plants are being studied, and small plants will be made available in the future.

The New England area escaped the ravages of hurricanes during the fall season and damaging ice storms during the winter. However, new records for snowfall were experienced when 22 inches of snow fell on Jamaica Plain and Weston on January 28, and 29 inches on February 6 and 7. Windblown drifts piled the snow deep, and an emergency situation was declared by the governor of Massachusetts after the second storm. Staff members were not permitted to travel to work, and a special commendation is due Mr. Williams, superintendent of buildings and grounds, and Mr. Kinahan, superintendent of the Case Estates, for the attention and efforts they gave to the facilities of the Arnold Arboretum.

The clear skies that followed the storm were accompanied by strong winds that did cause burning and desiccation of the tops of plants above the snow line. Many broad leaved evergreens were seriously damaged, and flowering of others in the spring was restricted to the lower branches. Rodent damage under the snow was particularly severe. The grounds at Jamaica Plain and Weston were inaccessible for many weeks after the storm as our own equipment could not handle the deep snow. The staff took the occasion to do inside work with the refurbishing of the administration building in display areas, the library, and the locker room for the grounds staff. A combination internal fire alarm and emergency alarm system was also installed in the administration building.

In a previous report mention was made of the effort to acquire the land adjacent to the Arnold Arboretum known as the Adams Nervine property. Restrictions on the use of the buildings in their designation of historical significance led to the withdrawal of an offer presented to their trustees. Subsequently the property was sold to a consortium of commercial developers who are proposing a change in zoning to permit the construction of high-rise apartments. The proposal to create a boardwalk over a storm sewer through the meadow in front of the administration building, also reported previously, was approved by the Harvard Corporation. However, before the contracts could be prepared, a second proposal to the city was approved to permit the Arnold Arboretum, through its own funds, to reconstruct deteriorating sidewalks and gates. Although these are stated in the lease to be the responsibility of the City of Boston, their poor condition was not only unsightly but hazardous. During the spring two contracts were completed to renovate the large driving gates and the pedestrian gates along the Arborway, and to remove and replace two 1,000-foot units of

sidewalk from the Forest Hills gate to the lilac collection on one side and the ponds on the other.

For many years the Arboretum has hired students for work on the grounds in Jamaica Plain and in Weston during the summer months. During the spring and summer of 1977 a Horticultural Trainee Program was organized on a trial basis, permitting the students to enroll in the Harvard Extension Division, pay tuition, and receive a formal training with four hours of academic credit.

The course Biology E-146C, Botanical and Horticultural Practices at Arboreta, was developed and supervised by Dr. Spongberg and Dr. Weaver, with the participation of many other members of the staff. Regular class meetings were scheduled as lectures, as tours of the Arboretum collections, and as tours of other plant collections in the New England area. Each student chose a special research project and, in addition to taking an examination, presented an oral and written report on the project.

Thus 32 hours per week were devoted to regular assigned work on the grounds, and eight hours to instruction and research. Eleven students from seven colleges and universities participated for credit; four students were not eligible for college credit, being high school students. Several research projects were deemed worthy of publication, and one on *Cornus dunbarii* was published in *Arnoldia*.

On the basis of staff experience with the 1977 program, that of 1978 was revised and restricted to students working in Jamaica Plain. The entire program will be reevaluated at the end of the summer of 1978. Mr. Henry Goodell, assistant superintendent of buildings and grounds, assumed full responsibility for grounds crew and student work assignments, freeing some time for the other responsibilities of the superintendent, Mr. Williams.

A three-quarter-acre section of the South Street tract was made available during the spring of 1978 for community gardening projects on a trial basis. A local committee of interested persons was established to have full responsibility for the garden area. At the end of the spring over 75 garden plots had been assigned and seemed to be productive.

The horticultural staff in Jamaica Plain, with the help of volunteers where possible, handles all visitors to the grounds, answers questions in person and by telephone and letter, supplies identifications of plant specimens, and conducts guided tours for professional visitors and interested groups. To ease one aspect of this work, an answering device, delivering a recorded message, has been installed on a 24-hour basis on the primary telephone line. Miss Nancy LeMay prepares the message weekly, supplying information on hours, directions, exhibitions, lectures, and classes, and on the plants in flower. Specific requests are referred to a second line. The service has reduced the number of office hour calls for general information, and has provided coverage outside of regular hours and on weekends.

In the previous annual report reference was made to a questionnaire which was distributed to the visitors on the grounds. The information obtained was often specific as to conditions on the grounds or the goals and needs of the visitors, and has prompted some changes and improvements in the facilities. A new questionnaire, distributed by mail to the Friends of the Arnold Arboretum, produced a good percentage of returns, with references to services, facilities, publications, and programs. We can respond with changes that will increase the support of the Arboretum, improve our contributions, and adjust programs more to the needs of the public. The often-stated request for a guidebook to the living collections has spurred staff efforts to produce a new publication within the next year.

Special tours during the year were arranged for such professional groups as the American Nurseryman's Association's annual convention, the Garden Writers' Association, and the Massachusetts Horticultural Congress. Groups of students, with a capable instructor, or requiring a staff or volunteer guide, representing 21 colleges, high schools, and technical or vocational schools, came to the Arboretum for study of the general collections or for some specific requirement, e.g., a visit to the herbarium, library or greenhouses.

A special gift for the purchase of a voice projector has eased the tour leaders' task. During the fiscal year 225 shipments of plant materials, comprising 1,004 taxa, were distributed to cooperating institutions and nurseries, or supplied following specific requests for study material from individuals in 13 countries. In addition, approximately 2,000 rooted plants of *Salix melanostachys*, the Black Pussy Willow, were mailed to Friends of the Arnold Arboretum.

A total of 197 shipments, consisting of 1,293 taxa, were received from 27 countries as gifts or distributions, or in response to requests from the staff for plant material for research programs. Following an examination of our living collections, 263 taxa were propagated to prepare replacements for specimens that appeared to be failing, or that suffered severe winter damage. Another 141 items were propagated for distribution programs or for staff research programs. The greenhouses of the Arnold Arboretum are primarily for research. Areas of the greenhouses are available to students working with staff members for research associated with thesis preparation. Such diverse plants as *Brunfelsia*, *Lyonia*, *Portlandia*, and *Viburnum* currently are maintained for study, but propagations of tropical species not hardy in the Boston area will be distributed at a later date to more appropriately located gardens. Staff members maintain plants in the greenhouses in work associated with research projects on the Gentianaceae and Gesneriaceae, and on the floras of southeastern United States and the Caribbean Lesser Antilles.

The greenhouse staff is largely responsible for the acquisition and preparation of plant materials to be used in educational programs and exhibits. The Arnold Arboretum exhibit at the Spring Flower Show of the Massachusetts Horticultural Society was entitled "Up against a Wall," and involved urban space of walls and small garden plots treated in four different ways. The walls supported vines, espaliers, or hanging plants, while the garden areas were developed for vegetables, herbs, pot plants, and living space.

The staff was represented at many meetings of professional societies during the year, usually presenting contributed papers or taking part in symposia. Included were the annual as well as regional meetings of the American Association of Botanical Gardens and Arboreta, the International Plant Propagators' Association meetings, and meetings of the American Horticultural Society, the Hemerocallis Society, and the Massachusetts Horticultural Congress. Staff members served as judges at the Spring Flower Show of the Massachusetts Horticultural Society; and took part in the programs of the Roxbury-Dorchester Beautification Committee, the Massachusetts Science Fairs, and the Worcester County Horticultural Society Day lily Show.

Mr. Koller was elected to the board of directors of the Jamaica Hills Association, the neighbors of the Arboretum in Jamaica Plain, and was elected a trustee of the New England Wildflower Society. He also organized and chaired the Plant Collections Committee of the American Association of Botanical Gardens and Arboreta. The Arnold Arboretum has collaborated for many years with societies and individuals in the registration of new cultivars, primarily of woody plants.

Dr. Stephen Spongberg serves officially as the chairman of the Nomenclature and Registration Committees of the AABGA, and those of the American Horticultural Society. In such capacity he is also a member of the International Commission on Nomenclature and Registration of the International Society for Horticultural Science.

CASE ESTATES

The Case Estates of the Arnold Arboretum in Weston, Massachusetts, are located 13 miles from the principal living collections in Jamaica Plain. The 110 acres of the Case Estates are open to the public, are used for classes and research, and serve primarily as nursery areas for developing plants and a holding area for plants which cannot easily be accommodated in Jamaica Plain.

We were very much pleased when the Case Estates were awarded a gold medal by the Massachusetts Horticultural Society with the citation: "A long overdue award to a valuable teaching and testing resource, including natural areas specializing in herbaceous and woody materials of year-round interest." In addition to the annual spring open house, the grounds were included in a tour of the prizewinning gardens, and the number of visitors seems to increase as the area becomes better known.

One of the showy portions of the Case Estate plantings in recent years has been the result of the breeding work of George Pride with Hemerocallis, the daylily. Two of his selections received Junior Citations as seedlings during the year. His work with tetraploids has had national recognition, and several of his selections recently introduced have been featured in horticultural publications during the year.

HERBARIUM

The herbarium collection of the Arnold Arboretum is divided, with a herbarium of plants under cultivation housed in the administration building in Jamaica Plain, and non-cultivated specimens, representing the native floras of the world, located in Cambridge. The herbarium in Jamaica Plain is housed adequately in metal cases, and has room for expansion. Currently it includes the majority of the specimens of *Crataegus* assembled in support of the work of [Charles Sargent](#) and [Ernest Palmer](#), and the collection of *Yucca* gathered for the studies of [Susan McKelvey](#).

The herbarium in Jamaica Plain is particularly useful in the identification of cultivated plants, and specimens are filed first systematically and secondarily in geographic arrangements. Thus during the past year a collection of cultivated plants from Kenya and from New Caledonia could be identified readily from the plants assembled in the herbarium in Jamaica Plain, even though the taxa were not represented among the holdings from the two countries. An attempt was made to have represented in the herbarium all taxa included in Rehder's *Manual of Cultivated Trees and Shrubs*, and as new cultivars are registered and herbarium specimens supplied, these, too, are added to the herbarium of cultivated plants. Specimens added during the year numbered 1,707, bringing the total number of sheets to 163,268.

The herbarium collection in Cambridge is housed with that of the Gray Herbarium, and represents one of the most significant collections in the United States. As of June 30, 1978, the total number of accessioned herbarium sheets in the combined herbaria is 2,860,070, of which 1,780,682 are the property of the Gray Herbarium, and 1,079,388 belong to the Arnold Arboretum. Crowded cases and inadequate housing have been mentioned in many previous reports, and "temporary" housing in cardboard boxes has increased annually to the present total of 2,677 Merrill cartons so employed.

Within the last two years some steps have been taken to improve conditions to help resolve curatorial, educational, and research problems created by the limited space in the Harvard University Herbaria building. Preliminary approval by the University permitted the employment of architects to consider the problems and propose solutions. In last year's report it was indicated that the Corporation had approved an addition to the front of the herbaria building, and preliminary plans were used as a basis of cost estimates and a quest for funding for the construction and for the establishment of an endowment to cover future maintenance and operations.

The search for funds was less than successful, but after further consideration of our needs, the Corporation approved the construction of the building with funds available. The future operational charges are to be handled in annual budgets unless or until additional money becomes available.

The addition to the building will represent 19,950 square feet gross space, and 14,450 square feet of programmed space in a basement and four floors compatible and freely

connected to the present building. The present building has 41,500 gross square feet. One new professorial suite will be designated, but remain unfinished. Office-laboratory units numbering 12 will be included in the addition. The library area will gain 1,360 square feet in the present building, with renovations increasing the reading room space, and developing an archival area and a workroom. The herbarium will lose space in the present building, but will gain 5,200 square feet in the addition. The use of a compactor storage system of movable cases will provide ultimately the equivalent of approximately 1,176 new cases. The *Crataegus* and *Yucca* collections housed in Jamaica Plain will be moved to Cambridge.

All material currently held in cardboard boxes will be accommodated in steel units. Although space will be available for 24 compactor units, available funds may limit the initial installation to 16 units or fewer, the equivalent of 784 cases. Additional compactors will be purchased when funds are obtained. A large lecture room of 1,152 square feet and a smaller conference room will be created on the ground floor. The present basement seminar room will be renovated as a second laboratory, replacing one lost in the development of the professorial suite. A cold room, a growth chamber area, an instrument room, and a chemical room will be built. A small lift will aid the access of handicapped persons to the lecture rooms and rest rooms. Construction documents were distributed in June for bids returnable July 13, 1978, with construction to be completed for occupancy by December 9, 1979.

Much staff time has been spent in committee meetings, planning the details of the herbarium addition. The use of compactors for storage often requires explanation to those who have not seen these mobile units. The compactor saves floor space by utilizing custom-built units of herbarium file cabinets on tracks which permit units to be moved together for sealed storage or separated for access to the specimens. Although such units are commonly used for storage in libraries, and by various companies for records, their use in herbaria is less well known.

The earliest units were in use 15 years ago in Geneva, Switzerland, and they have been adopted recently for herbarium use by the Missouri Botanical Garden and the California Academy of Sciences. The compactors proposed for the herbarium addition will not be motorized, but will be operated by hand levers. The units are to be housed in small rooms which can be fumigated individually to overcome problems of insect infestation and leakage of fumigants.

During the year 8,335 specimens were received for the herbarium of the Arnold Arboretum: 5,623 in exchange programs; 412 as gifts; 460 purchased by support of expeditions; 1,522 collected by the staff; and 318 accessioned from material sent for identification. The largest numbers came from the United States and Canada, Australia, Papua New Guinea, India-Pakistan, South America, and the West Indies. Specimens mounted totaled 11,459, representing another slight inroad on the backlog of accumulated specimens.

The activity of the herbarium may be judged by a number of items. Professional visitors, as recorded in a visitors' book, numbered 123 people using the herbarium, and representing 64 institutions and 12 countries. A total of 263 loans were made in response to requests, 161 domestic and 102 international, representing 14,261 and 12,469 specimens respectively, or a total of 26,730.

Loans of 1,099 specimens were received by staff members, and 1,795 returned. Loans for students represented 1,166 specimens, with 2,196 specimens being returned as students finished their work. The total number of specimens from the combined herbaria remaining on loan at the end of the fiscal year numbered 104,670, 60% to domestic institutions, and 40% international.

The crowded conditions in the organized herbarium necessitated the removal to dead storage of specimens unidentified at the genus level, to permit fully identified material to be inserted. Since this practice is clearly undesirable, individual staff members attempted, when time permitted, to supply identifications at least to the generic level. Dr. Peter Stevens devoted considerable time and identified the great majority of the Western Malesian material, and in a series of meetings with graduate students and staff in informal sessions once a fortnight began identification of undetermined material from South America.

Work continued on integrating photographic negatives, formerly housed in Jamaica Plain, with the larger negative file in the combined herbaria. A total of 4,000 negatives of types or authentic specimens have been catalogued and curated, with about 1,000 remaining to be done.

During the administration of [Dr. E.D. Merrill](#), and before the days of convenient photographic methods, rubbings were made of herbarium specimens in many European herbaria, and fragments of the specimens were obtained. A substantial number of these are types, and those from Berlin may be especially important because the original specimens may have been destroyed. A collection of 4,000 additional rubbings and fragments were found in storage, and curating work on them is under way. Labels are prepared for the rubbing and/or fragment, and the material placed in acid-free envelopes or packets for appropriate insertion in the herbarium.

Much of the herbarium curatorial work is possible through a grant from the National Science Foundation which supports work in several herbaria as well as in the libraries of the Gray Herbarium, Botanical Museum, Arnold Arboretum, and Farlow Herbarium. A sum for the acquisition of compactors for the building addition is included in this recently approved grant renewal.

The projects of individual staff members are various, and completed publications as books and papers numbered 39 for the fiscal year. The work in progress ranges from studies of fossil to modern floras, and involves many geographic areas. Dr. Hu, although retired, is preparing a Flora of Hong Kong and the New Territories. Dr. Hu's research also involves

medicinal plants used by the Chinese people, with special interest in ginseng, and she has been appointed to the editorial board of the *American Journal of Chinese Medicine*.

Dr. Howard continued his work on the *Flora of the Lesser Antilles*, and in two field trips visited 14 islands for field studies and collection of plants poorly represented in herbaria, such as aquatic flowering plants, Araceae, Agavaceae, and Cactaceae. While on the island of St. Kitts he spoke on the local flora to students at the Behavioral Science Foundation, conducted several field trips, and helped identify plants apparently used as food by the local populations of monkeys. Under Dr. Howard's direction Ms. Annette Aiello completed her doctoral dissertation on "The Genus *Portlandia* (Rubiaceae)" and received her degree in March.

Dr. Miller continued cooperative studies with Professor Gary C. Thompson of Salem State College on the late-glacial plant fossils from a site in northern Vermont-New Hampshire. Mr. Peter Albert, under the direction of Dr. Miller, is investigating the ecological significance of poikilohydry and desiccation tolerance in desert mosses. Miss Cecilia Lenk is conducting field studies on the Gaspé Peninsula, Quebec, investigating the pattern of late- and postglacial vegetation development.

Dr. Lily M. Perry, officially retired but very active in daily work in the herbarium, finished her manuscript on Medicinal Plants of East and Southeast Asia: attributed properties and uses. The work has been accepted by the M.I.T. Press for publication and distribution.

Dr. Bernice Schubert is writing treatments of the genus *Desmodium* for the *Flora of Ceylon*, which is being prepared at the United States National Herbarium; for the Flora of Panama, being prepared at the Missouri Botanical Garden; and for a revision of the genus for all of Africa.

Dr. Stephen Spongberg continues his work toward a manual of cultivated trees and shrubs with a series of family treatments being published separately. Grants from the Stanley Smith Horticultural Trust and the Charles E. Merrill Trust have aided the production of illustrations for this work.

Dr. Peter Stevens is nearing the completion of his large monograph of the genus *Calophyllum* (Guttiferae), and continues his general studies of the flora of Papua New Guinea.

Dr. Carroll Wood, in spite of a heavy teaching schedule, edited manuscript for the *Generic Flora of the Southeastern United States*, which is published as available in the [*Journal of the Arnold Arboretum*](#). The success of the publication of plates, initially prepared for the Generic Flora, as *A Student's Atlas of Flowering Plants*, called for an expanded new edition covering more genera and families. He supervised the artistic work of Karen S. Velmure in the preparation of thirty plates of plants heretofore poorly or inadequately illustrated. Three students have been preparing doctoral dissertations under his direction. Mr. Walter Judd completed his thesis, "A Monograph of *Lyonia* (Ericaceae)," and has accepted a position as assistant professor in the Department of Biology at the University of Florida. Mr. Christopher

Campbell has under way a biosystematic study of the *Andropogon virginicus* complex in southeastern United States. A National Science Foundation student thesis grant to Dr. Wood has supported two seasons of field work. Mr. Michael Donoghue is working on the genus *Viburnum* in Central America, where a concentration of species in Chiapas, Mexico, and in Guatemala required field study. Grants from the Atkins and Anderson funds have supported this field work.

LIBRARY

The approved plans for the addition to the Harvard University Herbaria building do include changes in the library, and the staff was involved in discussions with the building committee throughout the year. The reading area of the library will be increased by approximately 312 square feet. A new workroom, measuring about 504 square feet, will be available for supporting staff.

To the rear of the library, and separated by a wire grill, is a section of the herbarium. This area will be added to the stack area of the library and represent a gain of 920 square feet. A passageway from the rear elevator to the new addition will be a wide corridor with 80 linear feet available for lockable files and cabinets to be used for the storage of archival material. The photocopy machine currently on the first floor will be moved to a position outside the library reading room for greater convenience of the principal users.

An item for retrospective cataloguing, included in the National Science Foundation curatorial grant which ended during the fiscal year, was not renewed, and cataloguing activity in the library has been reduced significantly.

A new federal copyright law went into effect January 1, 1978, and requires good records of materials photocopied for research, class use, or interlibrary loan requests. The staff has been instructed on the provisions of this law, and its effects on library practices will be assessed at the end of the year.

The libraries were aided in collection maintenance by the current curatorial grant, and 133 volumes were treated by deacidification of paper, rebinding, and repair of volumes. Two volunteers continued work in Jamaica Plain on refurbishing leather-bound volumes.

With the addition of 471 volumes and pamphlets, The Arnold Arboretum Library contained 86,300 items at the end of the fiscal year. The use of the library in Cambridge, where records are kept of books shelved each day, increased by 5% during the year.

VOLUNTEERS

Some institutions call them aides, helpers, guides, or docents, but with appreciation we recognize as volunteers the willing people who donate their time, effort, and talents to the activities of the Arnold Arboretum. The use of volunteer help has continued to grow in the number of people participating, in the scope of their services, and in the total number of hours

they have contributed. Nearly every activity of the Arnold Arboretum staff receives and benefits from their versatile assistance, and only through their efforts is the Arboretum staff able to conduct the programs scheduled. Some like to be out-of-doors and help with inventories of nurseries, mapping, or labeling of plants-on the grounds, or the collection of seeds. Some like to talk and serve as guides for tours of the grounds, supervise visitors to the greenhouses, or teach special courses for the Friends. Some are artistic and supply educational displays, aid in special classes, or help in the preparation of flower show displays. We value the help received in the herbarium, the library, the greenhouses, on the grounds, on special projects, and on routine duties, in preparing book reviews, or in the contribution of articles based on individual research initiative. The volunteers are indeed an asset to the Arboretum, and have our sincere thanks for their help.

EDUCATION

The educational contributions of the Arboretum staff are both formal and informal. Staff members with academic appointments have offered formal courses in the University in the Department of Biology (Biology 18, 103,148), the Harvard Summer School (Biology S-105), and the Harvard Extension Division (Biology E-146C). Many have students in graduate and undergraduate research courses or supervise advanced degree programs. Some serve on departmental committees as undergraduate advisors, or, at the graduate level, on thesis development or for qualifying examinations.

Staff members have participated in courses offered primarily by other biologists as guest lecturers on topics of their specialty in the Department of Biology and the Graduate School of Design's Department of Landscape Architecture. Seminar series, both formal and informal, are many within the University, and members of the Arboretum staff have organized the series or offered lectures.

Less formal courses, lecture series, individual lectures, and demonstrations have been offered in Jamaica Plain and Weston. Through a cooperative agreement, the staff accepted three students as "interns" for special training in horticulture, with the students receiving academic credit through their own colleges. Two of these students undertook projects which will lead to publications, and required use of the herbarium, library, and living collections. A series of noon-hour lectures were offered biweekly in Jamaica Plain, and an invitation was extended to residents of Jamaica Plain through a listing in the local paper. When Harvard University began a cable TV series within the University, the Arboretum staff was asked to participate on a regular basis, and did so with live and taped segments involving the living collections and the greenhouses. Staff members appeared as guests on TV programs of three stations, and on radio talk shows where questions were answered on the air.

A questionnaire was sent to eastern regional libraries regarding their use of traveling exhibits. The response was more than favorable, and staff, with the aid of volunteers, prepared portable exhibit material to be displayed in cases or used as wall exhibits, which are now being

seen in suburban libraries. Four exhibits were staged in the lecture room of the administration building.

Open house was held in Jamaica Plain and in Weston during the spring season, and many tours were conducted. A special workshop in the cataloguing of Kodachrome slides was held in the administration building, a bonsai workshop in the greenhouses, and a daylily workshop in Weston, to mention only a few of the special events.

An educational film entitled "Plant Propagation: From Seed to Tissue Culture," was completed by Peter Chvany for the Arnold Arboretum. We are indebted to the Massachusetts Society for Promoting Agriculture, and to special Friends of the Arnold Arboretum, for the grant and gifts which supported the production of this film. The film was accepted by Macmillan Films, Inc., for duplication and distribution, for which the Arnold Arboretum will receive royalties. The film has been entered in competitions, and in the first entry won the Golden Eagle Award from the Council on International Nontheatrical Events.

The second film of the three produced by Peter Chvany, "Poisonous Plants," won the bronze Chris Award in the Medical Service Category at the Columbus, Ohio, film festival. The original film on the Arnold Arboretum, produced for the Centennial celebration in 1972, continues to draw approval from audiences as an explanation of the role of an Arboretum. The film was shown twelve times during Dr. Howard's visit to the People's Republic of China, where the audiences were particularly interested in the specimens of native Chinese plants, such as *Cornuskousa*, *Davidia involucreata*, *Kolkwitzia amabilis*, and *Metasequoia glyptostroboides*, shown under cultivation. The herbarium storage and the mounting techniques were new to the Chinese audience, and the use of maps and labels was the subject of comments.

[E.H. Wilson](#), when collecting for the Arnold Arboretum in China, took many photographs of plants, people, and places. In 1978 the Philadelphia Museum of Art was given permission to include several of the photographs in an exhibit entitled "Photography of China from 1850." The exhibit was also written up and photographs reproduced in the *New York Times* Magazine Section. Interest still remains in using the Wilson photographs in a general historical account of his travels or in a book on China. Many of the photographs of individual plants are of lasting interest, since they represent plants from which Wilson collected seed, or the type tree when the plants proved new to science. Copies of these photographs remain of scientific value, and sources of funds for another reproduction and distribution are being investigated.

TRAVEL AND EXPLORATION

Arboretum staff members gain professionally in representing the institution at science and professional society meetings, both in the United States and abroad. Meetings provide an opportunity to visit a different area, to present papers, share experiences and gain information, take photographs for teaching or for use in publications, study collections, or collect specimens for personal research or for the Arnold Arboretum herbaria. Staff members may travel to fill requests for lectures to horticultural groups or university audiences. A period of distant travel

may be part of a regular course, or the course itself may be conducted in a distant location. Special field work may be necessary for the development of research programs or for the benefit of the Arnold Arboretum collections. Travel by the staff is supported to a modest degree, through two special endowment travel funds, from the general unrestricted Arboretum budget, or from special grants for the purpose.

Mr. John Alexander participated in a seminar on the storage of woody plants at the International Plant Propagators' Society meetings in Columbus, Ohio, and attended the annual meeting of the Lilac Society at the Tyler Arboretum in Media, Pennsylvania.

Mrs. Ida Burch attended the annual meeting of the American Association of Botanical Gardens and Arboreta in Hamilton, Ontario, Canada.

Mrs. Lenore Dickinson took part in the Denver, Colorado, meeting of the Council of Botanical and Horticultural Libraries.

Dr. Richard Howard completed two field trips collecting plants for his *Flora of the Lesser Antilles*. The islands of Puerto Rico, St. Thomas, St. Croix, St. Martin, Saba, St. Eustatius, St. Kitts, Antigua, Barbuda, Guadeloupe, Les Saintes, La Desirade, and Martinique were visited briefly in a search for specimens of cacti, aroids, agaves, and gingers, poorly represented in herbaria. In May he traveled to Hong Kong en route to a 28-day tour of botanical institutions in eight cities in the People's Republic of China.

Mr. Gary Koller took part in horticultural meetings at the Morris Arboretum and the Swarthmore Horticultural Foundation in Pennsylvania, and attended the annual meeting of the AABGA in Hamilton, Ontario.

Dr. Norton Miller conducted field work in northern Vermont; attended the AIBS meetings in East Lansing, Michigan, and the Botanical Society of America meetings in Blacksburg, Virginia. He contributed a paper at the AAAS meetings, Pacific Division, held in Seattle, Washington, and stopped in San Francisco and St. Louis on the return trip for a study of the use of compactors in herbaria.

Mr. George Pride participated in the annual meetings of the Hemerocallis Society in New Haven, Connecticut, and of the Gesneriad Society in New York.

Dr. Stephen Spongberg, along with Dr. Richard Weaver, collected for the Arnold Arboretum in Japan and Korea in the fall. He later participated in the AABGA meetings in Hamilton, Ontario.

Dr. Peter Stevens taught a course in Tropical Botany at the Fairchild Tropical Garden in Miami in the summer of 1977, and again in 1978.

Dr. Richard Weaver [collected](#) with Dr. Stephen Spongberg in Japan and Korea, and later reported on their trip at the regional meeting of the AABGA at the Brooklyn Botanical Garden.

Dr. Carroll Wood also taught in the summer school tropical botany course in Miami in 1977, and had the opportunity of preserving materials needed for his work on the Generic Flora of the Southeastern United States.

GIFTS AND GRANTS

The Arnold Arboretum derives its operational income primarily from the interest on invested gifts or bequests of past years. We are fortunate also to have the gifts from the Friends of the Arnold Arboretum, which are solicited by annual request for additional support. Memorial gifts are gratefully received and acknowledged. Gifts of materials, plants, books, or specimens are welcomed. Staff members also apply for grants in support of their own research or travel. Gift income is difficult to budget accurately, but amounts in excess of budget provision are held in special accounts to be used in subsequent years.

A grant from The Stanley Smith Horticultural Trust still in effect supplies artistic aid to the research of Dr. Spongberg. A similar grant from the Charles E. Merrill Trust has been used to prepare for publication the manuscript of Dr. Lily Perry, and for work on the manual of cultivated trees and shrubs.

Dr. Howard received a grant from the American Philosophical Society for support of field work completed during the year in the Lesser Antilles. Dr. Norton Miller received a grant from the Milton Fund of Harvard University for investigations of fossil deposits in the upper Connecticut River valley. Dr. Schubert received a grant from the Tozier Fund for the purchase of projectors for the herbaria.

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 Journal of the Arnold Arboretum is edited and managed by Ms. Elizabeth Schmidt under the direction of Dr. Bernice Schubert, who serves with Drs. Spongberg, Stevens and Wood on the editorial committee. These and other staff members assist in the review of manuscripts. The four issues of the *Journal* published during the year comprised 468 pages, with 22 articles by 26 authors. The price of the *Journal* was raised to \$25 per volume without noticeable effect on the regular distribution list of 715 copies. Kraus Reprint Company in New York, which handles orders for back numbers, has indicated that volumes 1-55 (through 1974) are available in original or reprint copies.

The six annual issues of *Arnoldia* are edited by Mrs. Jeanne Wadleigh with assistance from Miss Margo Reynolds. Numbers issued during the year comprised 251 pages, with a total of 23 articles by 25 authors. The book reviews were written by ten members of the staff and volunteers. The special issue of *Arnoldia* on "Poisonous Plants" is nearly depleted. A small interim reprinting is planned pending a review and revision of the contents.

Richard A. Howard, Director