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## The Director's Report

### THE ARNOLD ARBORETUM DURING THE FISCAL YEAR ENDED JUNE 30, 1973

The calendar year 1972 was designated as the Centennial Year of the Arnold Arboretum, and the special program held the last week in May was described in the previous report of the Director. The second half of the year was no less a busy one for the staff, since the publicity continued to draw additional visitors to the grounds for scheduled meetings and casual visits. Features of the publicity proved to be our own film which was made available to colleges, schools, and private groups; an educational TV film by Thalassa Cruso, entitled "Changing Seasons", a tribute to the Arnold Arboretum, shown locally and on the NET; a feature section in the *Boston Globe*; and an article entitled "Harvard's Unique 'Bush Country'" which appeared in the *Ford Times*, a small magazine of very large distribution. One unusual side effect of the Centennial is worthy of note: Visiting botanists participating in the Centennial program were offered a tour which stopped at a bog in the town of Acton, Massachusetts. This focus of international attention on a small piece of vegetation led the Acton Conservation Commission to purchase the land and declare the Acton bog a nature preserve.

When the Olmsted Sesquicentennial was celebrated nationally in the month of October 1972, the Arnold Arboretum — being in part the handiwork of Frederick Law Olmsted — also was involved. Dr. and Mrs. Howard attended the opening of the national exhibit at the Mellon Gallery of Art in Washington. The Boston observance consisted of a small display and a reception in City Hall, with the announced theme a plan to revitalize Boston's parks. Later Brookline staged a more formal program, and offered the public visits to areas exhibiting Olmsted's influence; included were bus tours of the Arnold Arboretum guided by members of our staff.

Throughout the fiscal year the assistance of Volunteers, a group established for the Centennial program, was most effective. The training program which produced the first Volunteers





*Jeep-drawn surrey transports springtime visitors around Arboretum grounds. Photo: P. Bruns*

was repeated in 1972-73, and the graduates of the two programs are helping the staff in nearly every aspect of the work of the Arboretum. We are deeply indebted to these men and women for their contributions of time and talents.

An innovation tried experimentally for three weekends during the spring was the use of a rented, jeep-drawn, two-unit, open-seated vehicle for transporting visitors around the grounds. The "surrey" route had to be limited to areas of the Arboretum where the vehicle could be turned around, resulting in a convenient 50-minute ride through most of the conspicuous flowering tree and shrub collections. An amplifying system permitted the guides, who were either staff or volunteers, to comment to groups of 50 people. The fee charged produced a small profit over actual rental costs, and the surrey rides elicited a most favorable reaction.

### *Staff*

Two resignations from the staff must be recorded for the past year. Dr. Lorin I. Nevling, Jr., resigned his position as Curator



of the Arnold Arboretum and Coordinator of Botanical Systematic Collections to accept a position as Chairman of the Department of Botany of the Field Museum of Natural History in Chicago. Ms. Ellen Bernstein resigned as Editorial Assistant for the *Journal of the Arnold Arboretum*. We value the services each has rendered to the Arnold Arboretum and seek their replacements.

We were saddened on January 2, 1973 by news of the death of the retired Librarian of the Arnold Arboretum, Mrs. Lazella Schwarten. Mrs. Schwarten served as librarian under three directors and during the most demanding period, when portions of the library were moved and both sections were reorganized. Her energy and effort were tremendous; in fact, perhaps she gave more of herself than she should have done. No librarian could have been more helpful to members of the staff, or more concerned for the properties under her direction.

Dr. Bernice Schubert and Dr. Richard Howard were named honorary vice-presidents of the First Latin-American and Fifth Mexican Botanical Congresses. A handsome certificate accompanied this honor and was accepted for both by Dr. Schubert, who attended the meetings. Dr. Howard also was elected president of the American Association of Botanical Gardens and Arboreta at the annual meeting held in Arcadia, California. The term of office is two years. Dr. Carroll Wood was elected vice-president of the Southern Appalachian Botanical Club.

Mr. Alfred Fordham, Propagator for the Arboretum, was honored by the International Lilac Society with an Award of Merit.

#### *Community Service*

The role of the Arnold Arboretum and its staff in community affairs has grown in scope and significance in recent years. Known as a "park" to many people, the grounds are open to driving weekdays and to walking from sunrise to sunset daily throughout the year. However, many of the visitors expect to have staff members present, facilities available to them, and someone to answer their questions in person or by telephone. From mid-April to mid-June in the last few years, the administration building has been staffed on weekends. Although the Volunteers have helped, the need still arises for staff members to be present, with the concomitant administrative problems of overtime, adjusted work weeks, or special employees. Friday night accumulations of litter require two men working all day on Saturday to pick up debris. Saturday night accumulations



of litter are not cleared up until Monday, with the result that there is often distasteful debris visible on a spring day of high visitor count. This weekend duty is expensive to the organization, and unwelcome in a society accustomed to Monday-through-Friday work schedules.

The professional competence of the staff and the resources of the organization also are subject to many requests for service. These include requests for plant identification and sources of plant material, information on culture or plant disease, aid in landscape design, conduct of classes or tours, and presentation of lectures and donations of plants for worthy environmental improvement programs. It is apparent now the requests exceed the abilities of a limited staff. Many requests, if fulfilled, exact the sacrifice of professional staff time more profitably devoted to research and publication. Some critical decisions must be made in the near future regarding this role of the Arnold Arboretum.

The Arnold Arboretum staff handles all questions regarding toxic plant materials, excluding only mushrooms, for the Boston Poison Center. These calls are most frequent in the spring and the fall, and are received at the administration building during working hours, but referred to the home telephones of several staff members after hours. During one month telephone calls on ingested plant materials averaged 30 a week; and over a year involved 74 different plants. About half of the evening calls are from doctors or emergency staff of hospitals. While most calls are from eastern Massachusetts, every New England state has been represented, as well as New York, Ohio, and Illinois in the last year. Realizing the need for public information on this subject of potentially poisonous plants, the Arboretum staff made poisonous plants the theme of its exhibit at the New England Spring Flower Show; plans an issue of *Arnoldia* on the subject; and has been engaged in the development of an educational film on the topic. Requests are on hand for the loan and purchase of this film which is still in production.

The Arboretum has a few houses on the grounds in Jamaica Plain, and on the Case Estates in Weston. Staff members who occupy these houses are in effect resident guards against fire and vandalism, and are sources of information for visitors to the collections. These duties often span 24 hours a day. No matter what community they live in, the staff members are called upon for professional services. Dr. Nevling served on the City of Boston Conservation Commission. Mr. Hebb is the representative of the Arnold Arboretum on the Board of Directors

*Harry Hill and Arturs Norietis of grounds staff transfer conifers to the west nursery. Photo: P. Bruns*



of the Jamaica Hills Association, and is a member of the Jamaica Plain Community Police Relations Committee. Miss Page is on the Cambridge Conservation Committee, and is chairman of the Cambridge Tree Committee. Dr. DeWolf is an advisor to the Weston Conservation Commission. Dr. Howard has served on special committees associated with school buildings in Weston, and has been on the Green Committee of Harvard College since its inception.

In 1972 Miss Nancy Page was appointed Coordinator for Community Activities, a position created to coordinate the many requests that come to the Arboretum from civic groups. Her activities have involved various groups in Jamaica Plain, Charlestown, Roslindale, Somerville, East Boston, Brighton, the South End, Back Bay, Dorchester, and downtown Boston. She has cooperated with the Boston Council, Boy Scouts of America, in their Explorer program, and has aided in the development of a vocational horticultural curriculum for the sixth grade of the Agassiz School in Jamaica Plain. Other staff members have served on committees or worked with such organizations as the Friends of the Public Garden, the Traphole Brook Protection Association, the Metropolitan District Commission, the Metropolitan Area Planning Council, the Boston Rehabilitation Association, the Massachusetts Bay Transportation Authority, the Boston Zoological Society, the New England Aquarium, the Model Cities Program, and the Suburban Experiment Station; as well as with three Boston TV stations, including WGBH, which was





given another donation of plants for the annual fund-raising auction.

Unlike other large arboreta or botanical gardens, the Arnold Arboretum has not had a specific program for the education of children. It has been felt that this role was filled adequately by the Children's Museum, the Massachusetts Horticultural Society, and the Massachusetts Audubon Society. Our efforts instead have been addressed to reaching school teachers, offering the invitation for classes under their direction to visit the Arboretum, and instructing them ahead of time on what to see and what to tell. Mrs. Harmony Spongberg, a Mercer Fellow, supervised a survey of horticultural and botanical activity in Boston area schools during the past year. A questionnaire sent to 451 teachers was answered by 105 from 78 public, private and parochial schools. Only one school offered courses in horticulture; none had a course in botany, although 19 offered some botany as part of general biology during a pathetically few hours a week. Six schools had greenhouses, four of these being private schools. Few indicated any encouragement of the students to bring plants to school, or to have gardens, or even plant trees on school property. About half of those replying indicated they took students on plant science field trips, and 17 indicated they had visited the Arboretum. In view of the interest expressed, two special tours of the Arboretum and the Case Estates were offered for teachers, and 35 attended. A special class, "Introduction to Plant Biology", was offered especially for instructors by Dr. DeWolf. Two workshops on house plants were conducted by Messrs. Hebb and Link at the Agassiz Community School in Jamaica Plain.

The Arnold Arboretum Achievement Award was given to Neil Gould of Jamaica Plain High School. This award of a choice of books and a specimen tree or shrub has now been presented six times. Schools are asked to submit a recommendation of an outstanding student in botany or horticulture. Recommendations have come largely from Jamaica Plain High School.

The article, "City Trees of Boston", developed by Dr. Weaver and published in *Arnoldia*, was reprinted and made available to local schools. With the aid of Miss Page this survey has been extended to the spontaneous plants and the common weeds. This study permits some professional observations on natural regeneration and the nature of invasion by plants, and provides some specimens for our herbaria. A check list will be submitted for publication in a professional journal, and a guide to the weeds is being prepared for publication in *Arnoldia*.





*Oriental hybrid lily in experimental disease-resistance plot at Case Estates.  
Photo: P. Bruns*

Messrs. DeWolf, Nevling, Weaver and Williams all have served as judges at science fairs in and around Boston, while Mr. Pride has been a judge of 4-H projects in the Dorchester-Roxbury Fair.

Staff cooperation with these various agencies has been both rewarding and frustrating. Considerable time was spent in the development of landscape plans for one rehabilitation program involving two park areas. The loss of federal funds completely terminated state and city interest in the project, in spite of the offer from the Arboretum of the major specimen trees, surplus to our needs, which would have enhanced the area at the nominal cost of moving the plants. By contrast, an appreciative letter was received from the Mayor of Somerville for the work of Nancy Page and others in the development of Riverside Park in that city.

The Metropolitan Area Planning Commission hopes, as part of the Olmsted celebration, to enhance the park system in Boston designed by Olmsted and referred to as the "emerald necklace". To learn what is present in these parks, what is worth saving, and what plants need attention, Dr. Weaver, with the help of the Misses Page and Hay, has mapped the Fens and Muddy River area between the Charles River and Longwood Avenue; the work continues. The Green Committee of Harvard, largely a group



of energetic students concerned with the plantings of the campus area, have requested information on the plants of Harvard and the associated natural history area. The Arboretum staff has helped in the development of a booklet to be available to students. One undergraduate undertook the task of mapping and naming, with the help of Dr. Weaver, all of the plants between the Charles River and the Biological Laboratories; the ultimate goal is to place labels on the most significant plants.

Community service by the staff in many ways has become a major role of the Arnold Arboretum.

### *Horticulture*

Man and nature combined to make the care of the grounds more difficult than usual during the past year. Throughout the Centennial year the appearance of the grounds received more than the ordinary attention. We are obviously understaffed to have perfect maintenance of 265 acres in Jamaica Plain with twelve regular men, or of 110 acres at Weston with four men. The Arboretum does not need to be mowed to lawn level as long as the plants are cared for properly, labels are in place, and debris is kept to a minimum. Each of these objectives, however, has presented special problems. It is generally true that the quality of machinery has decreased; most aggravating is the unavailability of replacement parts for otherwise satisfactory equipment.

Vandalism remains a problem, along with the growing carelessness of some of the visitors. The administration building was broken into three times during the year, and typewriters, cameras, projectors, dictating machines, and miscellaneous materials were stolen. An alarm system now has been installed in the basement and first two floors of the building, so that any window or door broken for entry signals the Harvard University Police Department in Cambridge. They in turn call a member of the staff and the Boston Police, who must investigate. Within the building, fire doors or other doors between rooms and sections are locked, often with chains or padlocks. Not only is the installation expensive, but the increased inconvenience nearly eliminates the possibility of voluntary staff work evenings or weekends.

It has been a normal procedure for the records staff to check about one-fifth of the living collection annually. Since all of the grounds are mapped, new additions to the collection must be added to the maps. The inspection reveals the conditions of the existing plants, the presence of weed trees or the growth





*Accumulation of weekend litter mars conifer collection. Photo: A. Fordham*

of understock, and the presence of the display labels. During the winter nearly one-half of the labels in one large part of the collection was stolen, and a large number was switched. An examination of other parts of the collection indicates a similar situation. Our records are such that the important data is not lost, and labels can be replaced, but our ability to present a labeled collection is sorely tested.

Additional trash barrels have been placed on the grounds, but even these must be chained to posts or trees. The presence of such receptacles in large numbers is not attractive, and they are not used by many visitors. The weekend of April 14-16, Patriot's Day weekend, was unusually pleasant and warm; as a result, young people congregated and the after-dark assembly is best described as a mob. Tuesday, the 17th, the conifer collection and the hillside near the administration building resembled a windblown dump; the area was literally covered with paper, bottles and cans. It required the work of the full ground crew for the rest of the week to pick up the debris. Unfavorable publicity appeared in the Boston papers, and a petition was received from the neighbors to "Save the Arnold Arboretum." A meeting was arranged with the Park Commissioner, the Boston Police, and representatives of Harvard and the Arboretum. As a result, we have received significantly more police attention.



It should be noted that Captain Quinlan and Deputy Superintendent Blair have been most cooperative. It also has been possible, with the cooperation of the Traffic and Parking Commission, to declare three bays in entrance areas as tow zones after dark. The signs indicating this are effective until they also are stolen. Further consideration must be given to more adequate fencing, restricted hours of admission, and perhaps an admission charge. The City does not contribute to the cost of maintaining a clean arboretum, and the Arnold Arboretum budget cannot supply additional guards or labor without eliminating some other program.

Nature, too, had a role in the exceptionally cool and wet spring of 1973. There may be lasting effects from major infestations of canker worm on plants of *Carya*, *Juglans*, *Quercus*, *Acer* and *Tilia*; of anthracnose on *Carya*, *Quercus*, and *Platanus*; and of blight on species of *Juniper*. Although sprays will control such outbreaks, they must be used judiciously; unfortunately the recurrent rain washed away the material before it was fully effective.

Following the Centennial, the dwarf conifer collection on terraces in the greenhouse area was renovated. Thirty overgrown





specimens were removed from the planting and established elsewhere on the grounds.

A total of 717 plants was added to the collections by transfer from the nursery area to permanent planting. A total of 211 new taxa was included, but this number is offset by the loss of 67 taxa during the year through lack of hardiness or by theft.

The Propagation Department received, from expeditions or from exchange with other botanical gardens, 243 shipments of plant materials representing 1,360 taxa from 26 countries. Of these, 119 shipments, or 754 taxa, were plants or vegetative propagating material, while 124 shipments were seeds of 576 taxa. Many of these are potential additions to our collections, while others are plants for experimental work or for special study by members of the staff. In response to requests, the staff sent 124 shipments of plants or vegetative propagations of 401 taxa, and 29 shipments of seeds of 69 taxa to eight countries. Plants of *Malus* 'Donald Wyman' and *Magnolia* 'Centennial' were offered in quantity to cooperating nurserymen. Both plants are newly-named selections of the Arboretum staff. During the Centennial plants were offered to other gardens, colleges, and communities, and requests for such plants that could not be filled at the time are being completed. One of the most unusual requests came from Nepal for a specimen of sugar maple. Such a plant was sent by diplomatic courier.

The records of plants within the collections of the Arnold Arboretum are in the data bank of the Plant Records Center, American Horticultural Society. Any initial computer program reveals duplication of numbers, factual errors, and errors in naming and spelling. Each error must be checked and corrected. We also are attempting to incorporate into the computer records the original source of all plants now living. An original introduction by Wilson may have died of old age, but seedlings or propagation of the original plant may remain; current records show only that the present plant is a propagation of an earlier number. The many bits of detective work involved, historical in nature, will increase the value of the record when completed. Messrs. Hebb and Link, with the welcome help of some volunteers, are making progress on these corrections and additions.

A new printing machine has been acquired to permit the staff to make its own blueprints and permanent sepia transparencies. This machine will facilitate our record keeping and allow us to make copies of our maps for the use of visitors seeking specific collections for study.









*Above: Recognition of Service ceremony in Kathmandu, Nepal, honoring the late Ambassador Henry E. Stebbins, a Friend of the Arnold Arboretum. The present ambassador, Carol S. Laise, is seen addressing some of former Ambassador Stebbins' friends.*

*Left: Ambassador Laise and her husband, Ambassador Ellsworth Bunker, immediate predecessor to Ambassador Stebbins, plant small American sugar maple supplied by the Arnold Arboretum for memorial observance in Nepal, May 30, 1973.*



The registration of cultivars of woody ornamental plants is a service of the Arboretum staff to American and international horticulture. The Arnold Arboretum is the international registration authority for a large number of genera; its records offer service for other groups of plants as well. During the past year 50 registrations were received for new cultivars. Descriptive material on these has been published in *Arnoldia*, but may in the future be placed in the *Bulletin of the American Association of Botanical Gardens and Arboreta*. The number of registrations is higher than in the past, due to the efforts of the staff to locate data on these plants in reference to our collections and to our work on Rehder's *Manual*. Registrations are rarely volunteered; the majority are solicited. We have been able to acquire authentic material for our living collections through our efforts, and therefore can prepare herbarium vouchers as well.

The annual meeting of the International Lilac Society was held at the Arboretum in Jamaica Plain and at Weston on May 25-26, 1973. The group honored the Arboretum with a special plaque.

#### *Case Estates*

The Case Estates' 110 acres are located in the town of Weston, 13 miles from the plantings in Jamaica Plain. The land is used primarily as a nursery for young plants propagated in the greenhouses at Jamaica Plain, and for the permanent holding of taxa for which there is neither room nor desire in the Jamaica Plain plantings. Some special display collections are maintained at the Case Estates, and one building is available for lectures, classes and meetings. The area is attractive and parking has not become a problem, so the number of visitors to the Case Estates is increasing. A publicized "open house" on a Sunday in May drew over 1,000 visitors as represented by 600 cars counted during the day.

Classes and lectures were held this year in the fall and the spring, and were well attended by persons who will not venture into the city. Special groups included members of The Massachusetts Federation of Garden Clubs and the Garden Club of America districts, as well as meetings of the International Lilac Society, the American Begonia Society, and societies concerned with rock gardens, rhododendrons, hemerocallis and iris.

The Case Estates' grounds are maintained by a staff of four men, supplemented during the summer by student help. We were fortunate to have more highly qualified student help than in previous years, and some much-needed work was accom-



plished. The permanent and growing nurseries were pruned; the narcissus bulbs were lifted from overgrown display beds, the soil fumigated, and the bulbs replanted. Many trees were removed where collections of *Ilex* and *Rhododendron* had become overshadowed.

Surplus plants from the nursery are offered first to Harvard University, and many were accepted for use in Cambridge and at the Business School. Several colleges in New England also accepted larger plants of botanical or horticultural interest. Smaller surplus plants were offered to the Friends of the Arnold Arboretum on an annual "give-away" Saturday, and a few more than two hundred people arrived for the first-come-first-choice distribution.

Discussions continue with the Sidewalk Committee of the Town of Weston regarding the development of a bike path and sidewalk along the hazardous Wellesley Street frontage. Involved are some unique historic stone walls, partly dry walls, with a long line of large single stones. These will be expensive and difficult to move if the walk cannot be placed behind them. One row of *Malus* 'Henrietta Crosby' planted about 25 years ago has matured to give a spectacular display every spring. These trees are too large to move, and their preservation has become a public issue. The alternative is to place the sidewalk well into the Arboretum property, sacrificing other collections, giving up valuable nursery space, and destroying the front yards of two Arboretum houses.

### *The Herbarium*

The Director's Report last year noted the award of a grant, renewable annually for five years, from the National Science Foundation to the Harvard Botanical Institutions for support of curatorial activities in the herbarium and the library. The grant (GB 33856X1) is shared by the Arnold Arboretum, the Botanical Museum, the Farlow Herbarium and Library, and the Gray Herbarium. During the first year of operation, the new funds permitted additional mounting of herbarium specimens to make available the backlog of unmounted and often unstudied collections. Additional personnel were hired for the insertion of the increased number of specimens mounted, and one person was assigned the task of checking our holdings against recently published monographs. Some aid was allotted to the purchase of supplies and materials; in a future year, when space is acquired for them, additional herbarium cases will be purchased. Allocations to the library will be discussed later.







During the year, 29,319 specimens were mounted and inserted, bringing the total for the herbarium of the Arnold Arboretum to 1,000,559 mounted specimens, of which 151,609 are cultivated plants and are housed in Jamaica Plain. The Arboretum received 6,182 specimens in exchange, and 5,953 under a subsidy program. The purchase of the 5,000-sheet herbarium of the Hesse Baumschule in Germany is especially valuable, since this herbarium was built up as a study collection of plants cultivated in Germany. The collection is on oversized sheets, with data handwritten on them. Several of the Volunteers have undertaken the task of remounting the specimens and preparing typed, long-lasting labels. The Hesse Herbarium will be added to the collections of cultivated plants in Jamaica Plain, and can be accommodated in available cases and space. The housing of specimens in Cambridge, however, is increasingly difficult. At present, over 2,053 cardboard boxes, representing approximately 114 steel cases, are used on top of existing cases. These boxes of specimens can be reached only by ladders, and so are difficult to use, and constitute a barrier interfering with the circulation of air in the building. A report on the space problem, with recommendations for readjustments and new space as an addition to the building, has been submitted to the administration of Harvard University. For some immediate relief of the crowded conditions for the housing of staff and collections, the Botanical Museum made some space available to the Museum of Comparative Zoology in exchange for space in the Agassiz Museum contiguous to the third floor of the Harvard University Herbaria building. Renovations should be completed in the next year and offer some relief — primarily as office-laboratory space.

Requests for the loan of herbarium specimens, noted as greatly increased last year, continued at the increased rate. Such requests are filled with specimens from both the Arnold Arboretum and Gray Herbarium collections, and with cultivated specimens from Jamaica Plain when appropriate. From the several collections, 23,237 specimens were sent as 190 loans to 59 institutions in the United States, and to 33 institutions in 20 foreign countries. The outgoing loans averaged 122 specimens. For staff and student research, 7,007 species were borrowed as 96 loans from 36 institutions, and averaged 73 specimens. Student use accounted for 36% of the loans and 45% of the specimens.

The additional help made possible by the grant also was applied to the wood and fruit collections. These are being upgraded by the removal of undocumented materials, while the collections



remaining are now placed in sealable plastic bags to reduce the danger of spillage and infestation, and to maintain cleanliness.

The history of the wood collections has been compiled by Dr. Ralph Wetmore. While the Arboretum many years ago assumed responsibility for the collection through the work of Professor I.W. Bailey, it appears, on a legal basis, that the material was accumulated and maintained in the early years with funds from the Department of Biology and the Bussey Institution; and only later, the Arnold Arboretum. Resolution of the proper responsibility for the wood specimens has not been made. The space currently occupied by the collection in the Harvard University Herbaria building is more urgently needed, and the collection will be moved to new basement quarters in the Botanical Museum. The NSF grant will permit the acquisition of new slide holders to replace the old-style wooden boxes now in use, resulting in considerable compaction.

The normal research activities of the staff were disrupted by the special demands of the Centennial year program. This is clearly reflected in the reduced bibliography of published papers. Schedules are returning to normal, and the following types of research activities are in progress: Floristic studies are the work of Dr. Howard on the Lesser Antilles; Dr. Hu on the Flora of Hong Kong and the New Territories; Dr. Nevling on the Flora of Veracruz, Mexico; and Dr. Wood and associates on a Generic Flora of the Southeastern United States. Monographs and other systematic studies were undertaken by Dr. Howard, who completed a treatment of the Piperaceae in the Lesser Antilles, and a study of Jacquin's *Enumeratio*; Dr. Robertson, who is completing a treatment of the Rosaceae for the Generic Flora project; and Dr. Schubert, who continues her studies of *Dioscorea* and *Desmodium*. Dr. Spongberg is working toward a revision of Rehder's *Manual*, with current emphasis on the Theaceae. Dr. Weaver is studying tropical Gentianaceae. Drs. Hartley and Perry have completed an enumeration and key to the species of *Syzygium* in Papua, New Guinea. The staff is supervising the studies of two students investigating *Lonchocarpus* and *Portlandia*.

### *Library*

The curatorial grant from the National Science Foundation has permitted improvement in the facilities and care of the library collections. For Jamaica Plain used library stacks were purchased and painted by the grounds staff during the winter. The addition of nearly 3,000 running feet of shelving has al-



leviated crowded conditions and will permit expansion. In Cambridge the old steel card cabinets holding the general catalogue have been replaced with modern wood and plastic files, greatly increasing the convenience of use through smaller drawers. File cabinets were added to the Torrey Card Index. The reading room has been reorganized in a more pleasing and practical manner. A new compact table-top microfiche reader was obtained. The grant has also permitted an increase in the retrospective binding of old publications and periodicals.

The holdings of the library of the Arnold Arboretum were increased by 1,296 items to a total of 81,909 catalogued volumes. Currently 637 periodicals are received by the Gray Herbarium and Arnold Arboretum, forming a truly excellent library for botanical and horticultural research. Additional microfiches of herbaria and books are purchased jointly, with the current holding comprising 9,222 microfiche cards.

Books charged within the library totaled 4,579 during the year, with 1,338 volumes charged outside of the library. A survey of the use of the library in Cambridge over a period of several months revealed a ratio of 8-3-1 in use by staff, students, and visitors.

Stephanne Sutton, Honorary Research Fellow, has completed a biography of Joseph Rock, plant collector for the Arnold Arboretum for many years. A publisher is being sought for this manuscript.

### *Education*

The educational program of the Arnold Arboretum involves formal teaching at Harvard; participation in the guidance of graduate and undergraduate students; noncredit informal courses at the Arboretum in Jamaica Plain and Weston which are attended by adults and students alike; many public lectures, radio and TV appearances; a publication program which includes our regular journals as well as newspaper and magazine articles not cited in staff bibliography; and many displays and exhibits.

During the spring semester, Dr. Carroll Wood offered Biology 103, an elementary course in the taxonomy of vascular plants. Twenty-two regular students plus auditors made this the largest class in this subject in nearly two decades. He offered research courses Biology 96 and 91r to special students, and cooperated with Professor Tomlinson in teaching a summer school course in tropical botany which met for three weeks in Miami, and a following week in Cambridge. Dr. Howard pre-





*Arboretum staff members, Jack Link, Robert Hebb, and Gordon DeWolf, instruct class in practical horticulture. Photo: P. Bruns*

sented Biology 209, an advanced class in phylogeny and evolution of flowering plant families. Dr. Schubert and Dr. Wood were undergraduate student advisors for the Biology Department, and combined to conduct the botanical seminars held in Cambridge at the Herbaria building.

Among the noncredit courses offered in Jamaica Plain and Weston, Dr. DeWolf offered plant biology for instructors, and two field courses in ornamental plants; Dr. Weaver taught courses in natural history and in plant identification; Mr. Hebb presented a course in basic gardening; and Drs. Wood and Howard repeated a course in economic botany called "Botany in Boston's Restaurants".

Mrs. Derderian conducted workshops on bonsai; and numerous demonstrations of plant propagation were offered by Mr. Fordham to visiting classes and groups at the greenhouses. Among the special programs open to the public were open houses in Jamaica Plain and Weston with staff members on the grounds to answer questions; a special all-day symposium on "Botanical and Horticultural Resources of Massachusetts", with twelve organizations participating; instructors' tours of the collections in Jamaica Plain and Weston, particularly for elementary and high school teachers; and a vegetable gardening class limited to teachers and leaders of local community garden projects.

For the N. E. Spring Flower Show of the Massachusetts Horticultural Society, the Arnold Arboretum, in cooperation with





*Above: Arboretum's poisonous plants display at N. E. Spring Flower Show draws inquisitive viewers. Photo: P. Bruns*

*Below: Mrs. Sheila Geary, Arboretum assistant librarian, explains procedures to class of Volunteers. Photo: P. Bruns*





the Botany Department of Wellesley College, offered an exhibit of potentially toxic or dangerous plants. Miss Bruns prepared large, colorful backdrops to illustrate many of the plants, and these have been used repeatedly in other exhibits. Material had to be forced for this display, and movies of many of the plants were made to be used in an educational film under preparation on the subject of poisonous plants.

An exhibit of photographs of the work and collections of E. H. Wilson, prepared for the Centennial program, was requested for display elsewhere in smaller units, but the full exhibit was sent to Callaway Gardens, Pine Mountain, Georgia, for display in their educational rotunda. Miss Page organized two exhibits for Earth Day activities in Boston and Brookline — a pruning display and a composting display, respectively; also, an exhibit of seeds and fruits of woody plants for the Boston Cityfair. During the Boston Fenway Garden Day, she assisted in an exhibit of propagation methods for cuttings of woody plants. Mr. Hebb supervised a display of woody ornamental plants for a Christmas Show sponsored by the Massachusetts Horticultural Society.

Mrs. Geary prepared exhibits on the work of the Arnold Arboretum for display in the Lexington, Wellesley, and Milton public libraries; and an exhibit on roses, using books, specimens and embedded flowers of roses, for the Rose Society Show held at the Natick Mall. An exhibition of the painting and drawings of the late Joseph B. Martinson was held in the administration building, with an introductory lecture by Dr. Howard on the staff projects in Puerto Rico. An exhibit of color photographs by John F. Carter also attracted attention in the administration building during the spring.

The Arboretum Centennial film was shown many times by staff and Volunteers to groups requesting it in the Boston area. During the spring it was shown on a regular schedule preceding the surrey rides around the grounds and it has been borrowed by many colleges, universities, botanical and horticultural clubs. Its most distant showing was in Colombia, South America, where the director of the botanical garden at Medellin prepared a tape in Spanish to accompany it when it was shown to local audiences. The film was entered in competition at the film festival of the American Horticultural Society at its annual conference, and was given the Society's Award of Merit.

Requests for staff members as speakers at various horticultural meetings, and at colleges and universities, exceed our ability to accept every invitation. Nevertheless, seven staff







members spoke in 17 states and presented three lectures in Canada during the year. Various staff members attended the meetings of the American Institute of Biological Sciences in Minnesota and Massachusetts; the American Horticultural Society in Seattle, Washington; the American Association of Botanical Gardens and Arboreta — annual meetings in Seattle, Washington, and Arcadia, California, and a regional meeting at the Brooklyn Botanic Garden; the United States Department of Agriculture open house in Beltsville, Maryland; a Systematic Symposium at the Missouri Botanic Garden; the International Propagators' meeting in Hartford, Connecticut; the American Rhododendron Society meeting in Pittsburgh, Pennsylvania; and the Linnaean Symposium at the Hunt Institute for Botanical Documentation in Pittsburgh. The First Latin American and Fifth Mexican Botanical Congresses were held simultaneously in Mexico City, and were attended by Dr. Schubert and Dr. Nevling. Dr. Nevling represented the Arboretum in discussions of national systematic resources in Washington, D.C., and Claremont, California. He also attended a special Tropical Ecology workshop in Turriabla, Costa Rica.

#### *Travel and Exploration*

The travels of the Arboretum staff may be for field work, meetings, or lectures, but each trip is an opportunity to make botanical observations, collect special materials for staff research, or obtain photographs useful in teaching. Dr. Hu spent eight months of the past year in Hong Kong. She offered courses in taxonomy and local flora at Chung Chi College, and involved the students in obtaining material for her work toward a flora of the area. Dr. Wood took two classes to Florida and preserved a considerable number of plant parts from which an artist can prepare illustrations supporting his work on the Generic Flora of the Southeastern United States.

Dr. Schubert attended a meeting in Mexico City, and visited adjacent areas as well as the state of Veracruz to find material of *Dioscorea*. Dr. Nevling continued his work on a flora of Veracruz which is supported by a grant from the National Science Foundation.

Dr. Gillis, a Research Fellow, visited several islands in the Bahamas, as well as the Turks and Caicos, seeking new collections and illustrative material for his research. A grant from the Atkins Fund was awarded to Dr. Weaver, enabling him to visit Venezuela and Colombia to collect tropical members of the gentian family. Mr. Pride had a vacation safari to Kenya



and Tanzania, acquiring useful pictures for his lecture programs, and some plant material.

Dr. and Mrs. Spongberg traveled to South Carolina in the spring, and worked their way north, visiting botanical gardens, and making collections related to his work on a revision of Rehder's *Manual*.

To increase the collection of lilac cultivars in the Arnold Arboretum, Mr. Hebb visited the Royal Botanical Gardens in Hamilton, Ontario, Canada, where the newer European varieties are grown which we have been unable to obtain directly from Europe.

### *Research Fellows*

A small portion of the income from the Mercer Fund of the Arnold Arboretum has been designated each year to permit the support of qualified persons to visit the Arnold Arboretum for study and experience. A graduate student from Mexico, Mario Sousa-Sanchez, has been supported in his studies of the genus *Lonchocarpus*, using both the herbarium and the greenhouses. Harmony Clement Spongberg received a renewal fellowship to investigate the nature of botanical and horticultural teaching in the Boston area and determine the role the Arnold Arboretum should or could play. James Wolpert, a graduate of Purdue University, received a fellowship to learn more about arboretum activities and management problems. Martha Dahlen, an undergraduate at Purdue, received summer assistance to learn herbarium techniques.

A gift to the Arnold Arboretum from an anonymous donor carried the wish that the fund be used for the study of the flora of the Bahama Islands. Dr. William Gillis was awarded a research fellowship to enable him to pursue his studies in that area, using the extensive collections in the Arboretum herbarium.

The number of applications far exceeds our ability to support or to house the many candidates with excellent recommendations. The fundamental idea behind the fellowship is to permit the recipients to use our collections of books, specimens, and living plants to increase their knowledge of an arboretum and its activities through close association with staff members.

### *Volunteers*

During 1972, the Centennial Year, the Arboretum staff offered an instructional program of 13 weeks' duration to prepare a group of volunteer men and women to help the Arbo-





*Mrs. Lowell Trowbridge, member of Volunteers, at work in Dana Greenhouses. Photo: P. Bruns*

return staff with the Centennial program. Mrs. Paul Wechsler gave a great deal of time and thought to the coordination of the training program, and then to the utilization of these people and their varied talents during the year. A second program was conducted in the fall for a new group. The staff is extremely grateful for the dedicated, efficient, and most helpful role the Volunteers have played in many aspects of the activities of the Arboretum. They have helped staff the building, answer the telephone, lead guided tours, work in the greenhouse, type, collect and dry herbarium specimens. They have assisted in the library, and have helped renovate the special collections on the Case Estates, take inventories, organize photographic files, prepare labels, prepare displays, answer questions at the flower shows, check computer printouts, search records of books for information, and dissect and draw for staff research projects; and have been useful in many unexpected ways. Several Volunteers under staff guidance collected on a regular basis from the living collections a total of 522 numbers and 1,567 specimens which can be used for exchange. One talent worthy of special mention is that of Mrs. Frank Magullion, who has perfected a technique of drying flowers and embedding them in blocks of clear plastic. The results



are beautiful and useful. The blocks are on display at the administration building, and have been used in classes taught by the staff. To all of the Volunteers the staff, collectively, expresses its appreciation for the help it has received.

### *Gifts and Grants*

The income from the endowment of the Arnold Arboretum and from the special Mercer Trust covers only 75% of the expenditures of the organization. Gifts and grants make up the difference, and offer the only means of meeting the inflation of costs in the present economy without reducing the activities and number of the staff. We are most grateful for the repeated annual gifts from the Friends of the Arnold Arboretum. Facing rising costs in all aspects of our work, we will request an increase in the basic contribution of a Friend from ten to fifteen dollars in 1974. A Friend receives six copies of *Arnoldia*, miscellaneous mailings offering classes, lectures, tours and demonstrations, and an annual offering of surplus plants from our nurseries. The cost of these benefits leaves only four dollars, the equivalent of one hour of average labor on the grounds, from a ten-dollar gift. We believe the Friends mean to support the work of the Arnold Arboretum by their membership and gifts. The increase proposed will assist a very great deal.

Memorial gifts have been offered to the Arboretum on many occasions, and are gratefully received. Such gifts are acknowledged and recorded in our files according to the donor's wish. A gift fund for special purposes may be established; a plant on the grounds may be marked with an appropriate small metal embossed label; or a bookplate, indicating the donor and the one memorialized, may be placed in a library volume. Memorial gifts were received in the names of Peter K. Boshco, Joseph Alexander Boyer, Dorothy Paine Brayton, Helen Barnet Gring, Mrs. Lillian Cassat Smith, and Mrs. Florence Dorward Wyman.

Grants in support of travel were received from the Atkins Fund and an anonymous donor. National Science Foundation grants support curatorial activities as well as projects on the flora of Southeastern United States and Veracruz, Mexico. An anonymous gift permits special work toward a revision of Rehder's *Manual of Cultivated Trees and Shrubs*. A grant from the Tozier Fund (Harvard University) was made to Dr. Howard to develop illustrative teaching aids for an advanced taxonomy class. A gift from the Rare Plant Group of the Garden





*Cornus florida.* Photo: P. Bruns

Club of America was presented in recognition of the willingness of the Arboretum staff to share rare plant materials.

Generous gifts of plant materials were received from the Mitch Nurseries, the Monrovia Nurseries, and the Simpson Orchard Company. These often were Arboretum plant orders filled without charge. Many other companies offered generous discounts which also were appreciated.

Individuals have donated books to the Arboretum during the year. These often have been additions to our collections, duplicates needed to reduce the wear of present holdings, or surplus to our needs which can be used in exchange. Gifts of library volumes, gratefully acknowledged, were from Mrs. Konrad Braun, G. Buchheim, Jay Fritz, Augustus Kelley, Merle Myerson, James H. Wilder, and Mrs. John Wind. Many publishing companies have sent books for the library with the request that they be reviewed. Such reviews are published in *Arnoldia* when the staff feels the volume is of interest to the Friends and subscribers to *Arnoldia*. We are grateful for these further marks of generosity to the Arnold Arboretum.



### *Publications*

The regular four issues of the *Journal of the Arnold Arboretum* and six issues of *Arnoldia* were published during the fiscal year. The *Journal of the Arnold Arboretum*, edited by Dr. Bernice Schubert, comprised 638 pages with 27 articles by 33 authors. A new decorative cover, of *Ginkgo biloba*, was prepared for Volume 54 by Karen S. Velmure. Ms. Ellen Bernstein, Editorial Assistant, compiled and prepared an index to authors and titles of articles published in the first fifty volumes. Dr. Schubert prepared a short history of the *Journal of the Arnold Arboretum* as an introduction. Publication is scheduled for the summer of 1973.

*Arnoldia* was edited by Mrs. Jeanne Wadleigh, with artistic and layout help from Miss Pamela Bruns. The six issues comprised 371 pages, including 243 pages devoted to the botanical and horticultural Centennial symposium lectures. These lectures also were bound separately for future distribution.

RICHARD A. HOWARD



*Staff of the Arnold Arboretum*

1972-1973

Richard Alden Howard, Ph.D., *Arnold Professor of Botany, Professor of Dendrology and Director*

Karl Sax, S.D., *Professor of Botany, Emeritus* †  
Donald Wyman, Ph.D., *Horticulturist, Emeritus*

Ellen Bernstein, M.A., *Editorial Assistant* \*  
Pamela Anne Bruns, B.A., *Artist and Art Director of Arnoldia*  
Michael Anthony Canoso, M.S., *Manager of the Systematic Collections* †  
Constance Elizabeth Derderian, *Honorary Curator of the Bonsai Collection*  
Gordon Parker DeWolf, Jr., Ph.D., *Horticulturist*  
Alfred James Fordham, *Propagator*  
Sheila Geary, B.F.A., *Assistant Librarian*  
William Ed Grime, B.A., *Curatorial Assistant* †  
Patricia Dick Hall, M.S., *Librarian* †  
Ida Hay, B.A., *Herbarium Assistant*  
Robert Stephen Hebb, B.S., *Assistant Horticulturist*  
Shiu-Ying Hu, Ph.D., *Botanist*  
Thomas Matthew Kinahan, *Superintendent, Case Estates*  
Jack Link, B.S., *Curatorial Assistant*  
Lorin Ives Nevling, Jr., Ph.D., *Curator and Coordinator of Systematic Botanical Collections* \*\*  
Nancy Markham Page, B.A., *Coordinator for Community Activities*  
George Howard Pride, M.A., *Associate Horticulturist*  
Kenneth R. Robertson, Ph.D., *Assistant Curator*  
Bernice Giduz Schubert, Ph.D., *Curator and Editor of the Journal of the Arnold Arboretum*  
Stephen Alan Spongberg, Ph.D., *Assistant Curator*  
Stephanne Barry Sutton, A.B., *Honorary Research Fellow*  
Karen S. Velmure, B.A., *Botanical Illustrator*  
Jeanne S. Wadleigh, B.S., *Editor of Arnoldia*  
Richard E. Weaver, Jr., Ph.D., *Assistant Curator*  
Robert Gerow Williams, B.S., *Superintendent*  
Carroll Emory Wood, Jr., Ph.D., *Curator and Professor of Biology*

\* Resigned July 15, 1973

\*\* Resigned June 30, 1973

† Appointed jointly with the Gray Herbarium

‡ Deceased October 8, 1973



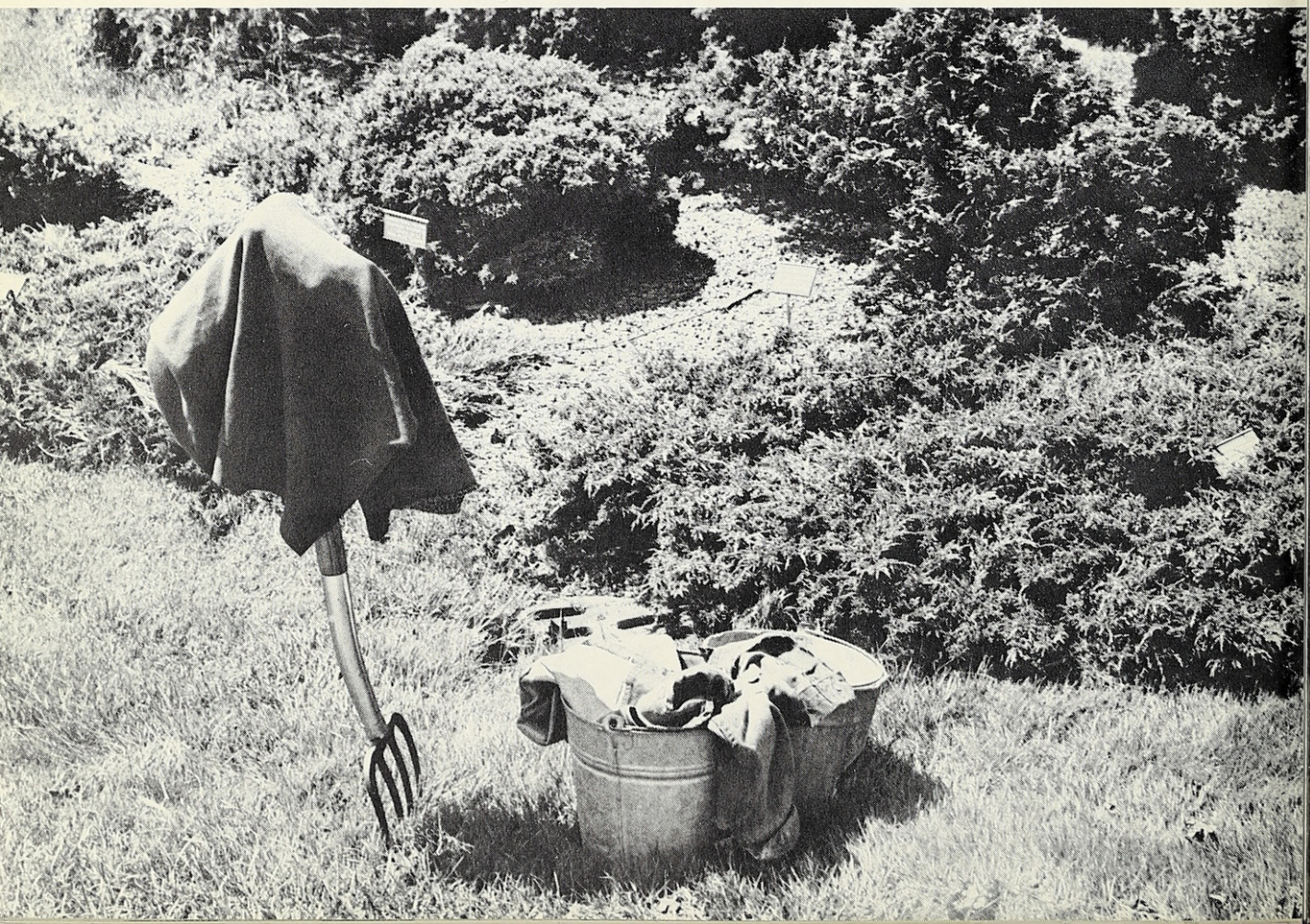
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