



Annual Report 1969-1970

TO THE PROVOST OF THE UNIVERSITY:

SIR,

The Arnold Arboretum is many things: to some people it is a park, an oasis of relative peace and quiet amid the beauty of the living flowering plants; to others a place of diverse scientific achievement and contribution and an educational institution. In the past year of student and public unrest the Arnold Arboretum has not been immune nor isolated from the turmoil. The staff has spent long hours in special faculty meetings in Cambridge and in discussions with students, while in Jamaica Plain the vandalism directed against plantings, buildings and artifacts increased and required unusual measures for their protection. Yet in spite of the turmoil it has been a year of change with progress and contribution.

The end of the academic year marked the retirement and resignation of two staff members whose collective service to the Arnold Arboretum totaled 76 years. [Dr. Donald Wyman](#), Horticulturist of the Arnold Arboretum since 1935, reached retirement age. His contributions to the development of the living collections, his editorship of *Arnoldia*, his books and many articles, his classes and lectures have helped define and establish the recent role of this organization in the field of horticulture. The Corporation approved the title Horticulturist Emeritus for Dr. Wyman. Mr. Heman Howard, Assistant Horticulturist, has since 1929 been responsible for the records of the living collections, mapping, labelling and photography. Mr. Howard elected early retirement.

Both staff members were honored for their contributions and services by the Committee to Visit the Arnold Arboretum and by the staff in special events at the beginning of the summer. Dr. Gordon DeWolf, Jr. has been appointed Horticulturist moving from his role as Horticultural Taxonomist. His training and associations at the University of Massachusetts, the University of Malaya in Singapore, the Bailey Hortorium, the University of Cambridge, England, and the Royal Botanic Garden, Kew, give him the background a horticulturist can use.

Mr. Charles Robert Long was appointed Librarian, a joint appointment with the Gray Herbarium following the resignation of Mr. Victor Marx. [Miss Stephanie Sutton](#), Archivist, who wrote a [biography](#) of [Charles Sprague Sargent](#), resigned in order to devote herself to research on the life of [Dr. Joseph Rock](#); she has been reappointed Honorary Research Fellow to facilitate her studies. Mr. Robert Hebb was appointed Assistant Horticulturist. Several changes also have

been made in junior professional appointments and supporting personnel as staff members move onto other academic positions.

THE LIVING COLLECTIONS

The living collections of the Arnold Arboretum comprise plantings on 265 acres in Jamaica Plain and 110 acres in Weston. Both areas are involved in the care of plant materials from the time of introduction until they are established as part of the permanent plantings. A staff of fourteen grounds personnel maintain these collections with additional men being employed during the summer months.

During the past year a study was completed proposing some major improvements in the organization and maintenance of the living collections in Jamaica Plain. These have been necessitated in part by the adverse weather conditions of recent years – the effects of dry summers and snow and ice damage in winter. Some of this work was beyond the capability of the Arboretum staff or its equipment and was placed on commercial contract. A new drainage system was installed in land near the Administration Building. An area near the meadow was excavated and refilled to encourage better growth of some of the most conspicuous plantings. Extensive replanting has been done around the Administration Building; in the areas of the three ponds; at the Arborway entrance to the grounds, and on Bussey Hill. The newly graded road on the Weld-Walter tract was sealed with oil surface and 1,100 ground cover plants were placed to serve as a demonstration area for bank planting and proper handling of roadside areas. The new road has already proven to be an effective fire barrier reducing the frequent extensive burnings previously experienced on this tract.

In 1969 the Arboretum staff as a matter of policy stopped using DDT and 2-4-5-T. Safer insecticides are now being used along with a greater amount of manual labor.

Increasing vandalism poses a real and expensive problem. When glass is broken in buildings we are attempting to replace it with Lexan, a break-resistant glass substitute. Litter has become more abundant, and the deliberate breaking of bottles on the grounds increased to a point where during May approximately 100 of the working hours were spent in pick-up activities. As a result of this and the aggregation of unruly individuals on the grounds in the late afternoon hours we retained the Burns Detective Agency to provide some protection through the evening. A uniformed guard now patrols the grounds, and we purchased a three-wheeled Cushman vehicle for this patrol.

The extensive living collections of the Arnold Arboretum serve as a teaching aid and a reserve of material to be used for scientific research. Harvard classes in the departments of Biology and Landscape Design are encouraged to use the collections, but by far the greatest use is from other universities and colleges in the New England area. Classes from fourteen different universities or colleges of all the New England States arranged tours or demonstrations last year. No record is kept of high school and elementary school visits. We encourage the teachers of these schools to attend our regularly scheduled classes on the grounds and then to be

completely responsible for their student groups during later visits. The largest single group visitation to the collections this spring occurred during the annual meeting of the Garden Clubs of America in the Boston area. With the cooperation of the Chestnut Hill Garden Club serving as the host organization we sponsored the visit of over 1,100 delegates.

The staff receives many requests for plant materials for display on special occasions by a variety of organizations. If the occasion offers a real educational opportunity we will cooperate. The Arboretum participated by exhibiting in the Spring and Fall Flower Shows of the Massachusetts Horticultural Society and those of the Worcester County Horticultural Society where visitors would number over 100,000.

Plants surplus to our needs have been offered to the University through the Department of Buildings and Grounds. The Medical School accepted material this year and the remainder was given to the town of Weston, Wellesley College, the State College at Bridgewater, Franklin Pierce College and to the members of the Friends of the Arnold Arboretum.

Again this year a bill was filed in the legislature of the Commonwealth to acquire portions of the Arnold Arboretum or to build within the Arboretum formal play areas, including a swimming pool. We are indebted to State Senator Oliver Ames and to State Representative Mary Newman for their aid in opposing these bills. The staff is unanimous in its wish that the Corporation oppose the taking of land from the Arnold Arboretum as proposed by study committees of the City of Boston for the construction of an Occupational Resources Center or a new campus style High School. The land in question is a part of the Arboretum, houses a few of its living collections and can be converted to areas for expansion of the collections when the new Washington Street expressway is completed. It is the only land that the Arboretum can use for development in the future, and today it is one of the most interesting ecological natural areas for wildlife.

THE LIBRARY

Mr. C.R. Long was appointed Librarian of the Arnold Arboretum and Gray Herbarium, the salary shared by the two institutions. Miss Jean Caldwell was given an annual appointment as Assistant Librarian to give special attention to the collection of books housed in Jamaica Plain. With an increase in the amount budgeted for the library it has been possible to increase the purchase of books and to rebind or give special care to many of the older volumes. The forestry collection housed for many years at the Harvard Forest in Petersham has been reclassified and reconditioned. Books on forestry were transferred from Widener library to Jamaica Plain and a reclassification of these is in progress.

A library committee has been appointed by the directors of the Gray Herbarium and the Arnold Arboretum to work with the librarian in reexamining the holdings of the library and its coverage. The survey underway has revealed gaps in our holdings of important floras, monographs and periodicals; steps are being taken to acquire the missing items through acquisitions which are to be financed during a three year period.

The library area in the Harvard University Herbaria building in Cambridge is approaching the stage of congestion. Currently there is less than 13% free space for expansion, a figure significantly less than the 15% recommended as the minimum for an operational library. As a temporary measure new stacks were purchased jointly to be added in spaces now in use as reading areas or study zones. This has reduced the ease of use of the library but appears to be the only measure possible at the present time.

Additions were made to the holdings of the library in all areas as required by special endowments. The library retains its position as the outstanding library for taxonomic and systematic research in the United States, a fact attested to by the number of visiting scholars from other institutions and the number of requests for copies of significant volumes.

THE HERBARIUM

The herbarium of the Arnold Arboretum was divided in 1954 with the specimens of significance to a study of the living collections or of horticultural application housed in Jamaica Plain and the remainder housed in Cambridge. Efforts have been made in the intervening years to build up the coverage and representation of cultivated plants as herbarium specimens for basic research. The results of this effort were particularly noticeable during the past year with the acquisition of large collections of plants cultivated in other areas of the United States and in other countries. These have been acquired by gift, exchange of material, and by subsidy. A better balance of woody and herbaceous plants is developing. Space in the administration building in Jamaica Plain is adequate for many years of growth of this collection fundamental to work in horticulture.

The situation in Cambridge, however, continues to worsen in the crowding of collections. With no space to add additional cases for the proper housing of specimens of the Gray Herbarium and the Arnold Arboretum, the absolutely undesirable expedient has been adopted of housing specimens in cardboard boxes on top of the steel cases. The cardboard boxes so used now number 766 or the equivalent of 42 steel cases. These are not only inconvenient to use but unsatisfactory as safe deposit containers from the curatorial point of view. Additional space for the housing and use of these specimens as research objects is essential. It cannot be obtained without a major effort supported by the University to raise funds to build the space required.

During the year 26,974 specimens were mounted and added to the herbarium. The total collection of the Arnold Arboretum now numbers 935,839 sheets of which x 43,365 sheets are housed in Jamaica Plain. The use of this herbarium by the staff and by visitors is continuous and reflects the need and the value of the collections. We prefer that our specimens be used in place yet we recognize the need for individuals to borrow specimens for detailed study. During the past year the herbarium staff sent on loan 14,764 specimens in response to 161 legitimate requests. These were loaned to 43 United States organizations and 31 in foreign countries. For the research of the staff or for student thesis studies we borrowed 9,129 specimens in 178

loans. An analysis showed that 34% were for student use which accounted for 58% of the total loans. This revealed also the broad and long term use of specimens by students and the more specialized and short term use of borrowed specimens by the professional staff.

Herbarium specimens are subject to attack by insects, and curatorial procedures require constant vigil against such infestations. We found it necessary during the year to fumigate the entire herbarium in Cambridge. With the cooperation of the Department of Buildings and Grounds a commercial firm completed the fumigation over a five-day period.

RESEARCH

The interests of the Arboretum staff are varied as to plant materials, techniques used, and geographical areas involved. The contributions to knowledge can be indicated by the 72 papers published by staff members during the year in twelve different journals, including our own, as books, monographs, special reports or studies. Book reviews, abstracts and similar reports are numerous and might be counted in addition to the total given.

Four floristic studies by staff members are underway involving the Southeastern United States, the state of Vera Cruz in Mexico, the Lesser Antilles of the West Indies and the Territory of Hong Kong. Dr. Carroll Wood and his associates, with a grant from the National Science Foundation, continued their studies towards a Generic Flora of the Southeastern United States. This project depends largely on the extensive herbarium and excellent library resources available. Portions of this work are published in the Journal of the Arnold Arboretum and thus are known to other workers. The literature cited in these papers and the new illustrations being prepared for the study are of scientific value beyond the area being covered. Requests for reprints from Burma, Ceylon, and South Africa, to cite but a few, clearly indicate that modern monographic treatments have no geographic boundaries. A request was received from the Secretariat of the Flora North America project with headquarters in the Smithsonian Institution to incorporate the bibliographic files of the Southeastern Flora project in the data processing procedure they plan to use.

Dr. Lorin Nevling, a joint appointee of the Arnold Arboretum and Gray Herbarium and supervisor of the two herbaria, was awarded a grant by the National Science Foundation for work towards a flora of Vera Cruz, Mexico. This budget will be administered by the Gray Herbarium. Dr. Nevling will cooperate with botanists of the National University of Mexico, particularly the co-investigator Dr. Arturo Gomez-Pompa, formerly a Mercer Fellow at the Arnold Arboretum. The project involves considerable field work making collections and observations and will utilize the herbarium and libraries in Cambridge and Jamaica Plain. Studies are planned in the areas of ecology, ethnology and agriculture as well as plant systematics. Several innovative techniques employing computer aids are being employed in this program for the preparation of distribution maps, labels, literature citations and descriptions.

Dr. Shu Ying Hu spent most of the past year as a visitor to the Department of Botany, Chung Chi College in Hong Kong. With the cooperation of members of that College and several

government departments in agriculture and forestry, exploration of Hong Kong and the New Territories was begun. Drawings of living plants are made in the field and the specimens collected are returned to Cambridge for accurate identification. Duplicates of such material will be distributed to other institutions. The goal of this project is to prepare a new Flora of Hong Kong and it is significant that an herbarium and a library in Cambridge, Massachusetts, is the most logical place to do the writing.

Dr. Howard and Miss Dulcie Powell have continued their work on a Flora of the Lesser Antilles, receiving cooperation from many local people and governments in the process of field studies. An official request has been received from the Bahama government for aid in the preparation of publications on Bahama plants of use to local schools and officials in forestry and conservation departments. A cooperative program for this work is being organized with the Fairchild Tropical Garden and several other colleges with field stations in the Bahamas. The library and herbarium of the Arnold Arboretum will serve as the foundation for this work.

The ecological studies of high mountain floristic zones have been extended from Puerto Rico and St. Kitts to Montserrat. Studies are underway of the regrowth of vegetation following catastrophic destruction of forest areas by fire following plane crashes. Seven impact sites of plane crashes all at comparable altitudes on four islands and within a period of ten years offer an unusual opportunity for related studies.

Monographic studies of genera or detailed studies of species are the work of each staff member. Dr. Schubert contributed a treatment of the genus *Desmodium* for the recently published *Flora of Texas* and has completed manuscripts of the genus as it occurs in Africa for several floras being prepared by botanists in British Institutions. Dr. Hartley and Miss Perry are working on the plants of New Guinea and other areas of Southeastern Asia, with special studies in the Rutaceae and Myrtaceae. Dr. DeWolf has a research program involving the genera *Ficus* and *Dorstenia* as these plants occur in Africa and tropical America. The interests of the staff are truly world-wide.

EDUCATION

The professional members of the staff of the Arnold Arboretum, as members of the Faculty of Arts and Sciences and the Department of Biology, are available to advise undergraduate and graduate students in special research courses or to teach regularly scheduled classes. Dr. Carroll Wood offered an introductory course in plant systematics as Biology 103. Dr. Schubert supervises the graduate work of one student. Drs. Howard, Nevling, Schubert and Wood all had graduate students in "300" research courses.

A regularly scheduled seminar in plant systematics is held in Cambridge and is open to anyone interested. Dr. Nevling and Dr. Schubert with the aid of a graduate student arranged the program during the past year. Dr. Schubert and Dr. Wood prepared a special seminar for graduate students on the preparation of scientific papers for publication. Dr. Nevling,

supervisor of the herbaria, conducts a series of introductory talks for the graduate students on the use of the herbaria.

The XI International Botanical Congress was held in September 1969 on the campus of the University of Washington. Five members of the staff of the Arnold Arboretum attended and three presented papers or took part in symposia. Dr. Schubert and Dr. Sorenson attended the Fourth Mexican Botanical Congress held in Monterey and Saltillo where Dr. Schubert served as chairman for one session and presented a paper on her work with Mexican species of *Dioscorea*.

Members of the staff receive many invitations to speak at other colleges, to science clubs as well as garden clubs. Dr. Wood, for example, spoke at Cornell on the relationships of the flora of eastern North America. He took part in a symposium at Virginia Polytechnic Institute in Virginia on the distributional history of the Biota of the Southern Appalachians. The Association of Tropical Biology sponsored a symposium on Adaptive Aspects of Insular Evolution on the campus of the University of Puerto Rico. Dr. Howard discussed his work on the alpine plants of the Antilles and then led a field trip to the Maricao Forest in western Puerto Rico followed by one the next day in the Luquillo Mountains in eastern Puerto Rico. Dr. Howard also participated in the Cornell University-University of New Hampshire Summer Program in Marine Science and later taught the systematics section of a Tropical Botany Seminar in cooperation with the University of Miami and the Fairchild Tropical Garden in Miami. Under the sponsorship of the American Institute of Biological Sciences Dr. Howard was the speaker at six colleges in New England in programs associated with Earth Day.

There is little demand for horticultural information from the students at Harvard, yet the staff has participated in the teaching of horticultural information at other colleges. Messrs. DeWolf, Fordham, Hebb, Howard, Williams and Wyman have all participated in "short courses" sponsored by New England colleges or state Departments of Agriculture. We also cooperate with other colleges in work-study programs, having had students from Antioch, Goddard, Keuka and Smith colleges at the Arnold Arboretum for assignments during the year. Such students desire information in herbarium or library techniques or work on the grounds with plants or in the greenhouses.

PUBLIC SERVICE

Officials of communities in the Boston area have asked the Arnold Arboretum staff for help during the past year as an interest in city planning of parks develops. Mr. Hebb has worked with officials of Brookline, Massachusetts, Conservation Committee in helping the town develop a 35-acre wildlife sanctuary. Mr. Pride is a member of the Garden and Grounds Committee of Old Sturbridge Village and is working with the Roxbury Dorchester beautification programs. Dr. DeWolf is chairman of the Committee on Vandalism established by the Mayor of Boston. He is also a consultant to the Cambridge Model Cities program. A new committee of Boston formed as the Friends of the Public Garden has requested staff aid. During the summer several

members of the staff completed an inventory of the trees in the Garden and on the Common. The Committee visited the Arboretum to observe the trees suggested as replacements in the Department of Parks and Recreation program to replant the Common, the Public Garden and Commonwealth Avenue. Members of the staff offer 24-hour service in cooperation with the Boston Poison Center for information on poisonous plants.

MERCER RESEARCH FELLOWS

A portion of the income from the bequest of Martha Dana Mercer to the Arnold Arboretum is applied each year to support scholars from other areas to use the collections of the Arnold Arboretum or to work on specific projects with members of the staff. One graduate student received fellowship support under this program. Five individuals from Pakistan, Mauritius, the University of New Hampshire, Occidental College and Cornell University received such appointments to do independent work involving the living collections, the library or the herbarium. Three additional appointments were made for individuals who wished guidance from members of the staff.

THE FRIENDS OF THE ARNOLD ARBORETUM

The Friends of the Arnold Arboretum is an informal group of people who by annual gifts or occasional large gifts support the work of the Arboretum. During the past year efforts were made to increase the number of Friends and we are pleased that the contributing membership is now over 1,100 persons, most of whom are from Massachusetts, though there are representatives in 34 other states and from Canada. The gifts of the Friends are used to support work with the living collections in Jamaica Plain and in Weston, that is, horticultural activities, unless otherwise specified.

PUBLICATIONS

The Arnold Arboretum staff regularly publishes two periodicals. [*The Journal of the Arnold Arboretum*](#) was begun in 1920 as a quarterly publication for the scientific studies of the staff and the students. The first issue in 1970 began the 51st volume and in it the cover has been changed in color, the color of printing has been changed, and there is now a drawing of the Golden Larch. Four issues appeared during the year with 33 articles by 46 authors and a total of 605 pages. Dr. Bernice G. Schubert is the editor.

[*Arnoldia*](#), another regular publication, also experienced changes during the year. First issued in several consecutive series as the *Bulletin of Popular Information*, the title was changed in 1940 to *Arnoldia*.

For 29 years Dr. Donald Wyman served as principal editor and each of the twelve issues during the year considered a single topic of horticultural interest. With his retirement imminent, Miss Stephanie Sutton accepted the role of editor and with the aid of Mr. Christopher Reed redesigned the publication and adopted a new format with a table of contents and a photographic cover. *Arnoldia* will be issued regularly six times a year. We extend

our special thanks to Mr. Howard Allgaier of the Botanical Museum who has produced *Arnoldia* from handset type for many years. The new printer is the Harvard University printing office.

A cumulative index to the 29 volumes of *Arnoldia* was prepared by members of the staff and issued during the year. The Index has been dedicated to Dr. Wyman.

Miss Stephanie Sutton completed the manuscript of her biography of Charles Sprague Sargent, the first director of the Arnold Arboretum. The book was to be published by the Harvard University Press with release in the Fall of 1970.

A more detailed report of the important records and activities of the staff of the Arnold Arboretum will be published in the November 1970 issue of *Arnoldia*. A complete bibliography of staff publications is included there.

RICHARD ALDEN HOWARD, Director