



Annual Report 1960-1961

TO THE PROVOST OF THE UNIVERSITY:

SIR,

It is a pleasure to submit to you a report on the activities of the staff of the Arnold Arboretum and the condition of the collections during the academic year 1960-1961.

THE STAFF

It is with regret that I report the death of Joseph Horace Faull, Professor of Forest Pathology, Emeritus, on June 30, 1961, at the age of ninety-one. Professor Faull had joined the staff of the Arnold Arboretum on July 1, 1928. A special laboratory was built for his area of research, which was then new to American arboreta.

A massed collection of related species as is found in an Arboretum proved an excellent place for the study of plant diseases, as the published work of Professor Faull clearly shows. To him, his students, and his associates must go credit for the early work in the identification and control of diseases of ornamental plants, both as research and as a service to the public. From Professor Faull's laboratory came the early identification of a disease first found in this country in the state of Ohio and now known as the Dutch elm disease. He warned prophetically of the danger of this fungus.

In succeeding years, he was to study the fungal diseases of many genera of ornamental plants, including *Gleditsia*, *Cornus*, *Abies*, *Pinus*, *Picea*, and *Fagus*. Professor Faull retired in 1940, but remained active in his laboratory for several additional years. Regrettably his position, vacated during the shortage of skilled personnel concurrent with World War II, could not be immediately filled, and after the war was not continued. Dr. Faull's extensive herbarium of fungus diseases of cultivated plants was transferred to the Farlow Herbarium in Cambridge.

On January 1, 1961, Mr. Peter S. Green joined the staff as a horticultural taxonomist. Formerly a scientific officer at the Royal Botanic Garden, Edinburgh, Scotland, Mr. Green has been studying various genera of the *Oleaceae*, an important family of woody plants represented at the Arnold Arboretum by the large collection of lilacs and other related genera.

Mr. Don M. A. Jayaweera, Director of the Royal Botanic Garden, Peradeniya, Ceylon, and holder of a Rockefeller Foundation Fellowship, was appointed a Research Fellow at the

Arboretum for the year. Mr. Jayaweera planned to use the extensive herbarium and library facilities of the Arnold Arboretum to continue his studies of the native and cultivated plants of Ceylon and related areas.

Mr. Peter Tigerstedt, co-Director of the Mustilla Arboretum, Mustilla, Finland, was appointed as the first Mercer Fellow of the Arnold Arboretum for the spring semester. Mr. Tigerstedt is the grandson of the founder of the Mustilla Arboretum who, in the early years of the Arnold Arboretum, was a correspondent of [Charles Sargent](#). The Mustilla Arboretum is the northernmost arboretum in Europe, and Mr. Tigerstedt was particularly interested in the methods and procedures of the staff in propagation and care of plants in the Boston area.

It is also a pleasure to record the honors awarded to several staff members during the year. Dr. Irving W. Bailey, Professor of Plant Anatomy, Emeritus, was honored with the degree of Doctor of Science, Honoris Causa, at the fiftieth anniversary celebration of the College of Forestry at Syracuse University. The many contributions to the fields of cytology and genetics were noted in a citation awarded [Dr. Karl Sax](#), Professor of Botany, Emeritus, by the American Horticultural Council. Finally, [Dr. Donald Wyman](#), Horticulturist at the Arnold Arboretum, was elected President of the American Horticultural Society.

HORTICULTURE

Throughout the history of the Arnold Arboretum, various directors have pointed out that in its location in the vicinity of Boston, its plants are subjected to one of the most arduous and variable environments of any of the world's arboreta. Few areas of the world can show the vagaries of climatic conditions which our plants have experienced during the past year.

A summer of subnormal heat and rainfall was followed by the effects of hurricane "Donna" which hit the collections of the Arboretum on September 12, 1960. In comparison with past storms, the actual loss of specimens was slight, but each storm takes its toll in twisted stems, damaged root systems, and broken branches. It is ironic that from its founding in 1872 until the fall of 1938, the Arnold Arboretum was free of damage due to hurricanes. Since then, six major storms have caused damage to the plants in our collections, so that few old trees remain free of scars.

The winter, which began in a mild manner, can only be classified in total as a severe one, for during February and March, the Boston area experienced a record-tying cold spell. In Jamaica Plain, the temperature did not rise above the freezing mark for twenty-six consecutive days. Below freezing and below zero temperatures at night were common both during this period and in the days that followed. The effects became increasingly noticeable as the spring season developed. Many collections of species were completely killed to the ground and others showed branch damage or poor flowering characteristics during the spring and early summer. Although the directive of the Arnold Arboretum is to grow all the plants hardy in the vicinity of West Roxbury, climatic years as the one we have just experienced nearly redefined what is hardy for this area.

During the current year, much time and effort have been expended by the staff in completing the plans for new greenhouses, with their associated activities. The firm of Griswold, Boyden, Wylde, and Ames, of Boston, was selected as the architects and approved by the Corporation. The contracts were circulated for bidding and were awarded during the spring. It is a pleasure to report that the actual construction is now under way.

A main building is designed to facilitate the work in the area of propagation of woody plants with ample work space and modern equipment. It will be equipped with cold chambers for experimentation in the physiological problems of species hardiness, seed dormancy, flower initiation, and general problems of plant growth related to the Arboretum's interest. A small laboratory suitable for morphological, cytological, and genetical investigation will be supplemented by a conference room for staff meetings and discussions. Three greenhouses are to be constructed with additional space allotted for a fourth, when future requirements may demand one.

In so far as possible, the greenhouses will be equipped with automatic controls and will offer at least six areas of growth control through variation in light, temperature, and humidity. A pit house is designed with heating and cooling mechanisms for the storage of plants under extended periods of light and darkness, cold and warmth.

A hexagonal display house for bonsai and a shade house for nursery stock complete the construction plans. The entire area will be surrounded by a chain link fence, which hopefully will afford a security lacking in our present nursery and greenhouse area. The new greenhouses, in location adjacent to the Arboretum along Centre Street, occupy land acquired as three purchases in 1924, 1926, and 1927. A new road will be constructed from the Arboretum proper, and this entrance will reduce the need to enter or depart from the busy Centre Street section.

The new greenhouses will further many aspects of the work of the Arboretum staff. The greenhouses will not contain display collections and will not normally be open for public inspection but will function, in the scope of the indenture which established the Arnold Arboretum, for the growth and study of plants hardy to New England and for the research of the staff. The construction of the greenhouses at this time, without a special financial drive for construction funds, is possible by the use of the income from the bequest of Mrs. William Dana Mercer. With the permission of the Corporation, the construction costs will be met over a period of years by the income from the Mercer bequest.

A ground breaking ceremony was held on May 12, during the spring meeting of the Board of Overseers' Committee to Visit the Arnold Arboretum. Token shovels of soil were lifted by Dr. Bradford Washburn, Chairman of the Committee; Dr. Nathan M. Pusey, President of Harvard University; Dr. George M. Taylor, Director of the Royal Botanic Garden, Kew, who consented to represent not only the Visiting Committee, of which he is a member, but other

arboreta as well; Mr. Martin Walsh, Chairman of the Board of Park Commissioners of the City of Boston; and by Dr. Richard Howard, Director, for the Arboretum staff.

Many factors in the general appearance of the grounds of the Arnold Arboretum are the responsibility of the City of Boston through its [Department of Parks and Recreation](#). During the year, this Department rebuilt or replaced all of the concrete and wood slatted benches within the grounds, painted the major gateways to the grounds, and replaced several of the defective fire hydrants within the grounds. It is hoped in the future years to continue to resurface many of the roads within the Arboretum and to complete the fencing of the property. Regrettably, the Arboretum has never been completely fenced, and theft and vandalism continue.

In spite of increased protection supplied by the Boston Police Department, twenty-five rare evergreen plants were among a large number of shrubs stolen during the year. Other miscellaneous acts of vandalism, such as fires, broken windows, defaced signs, and malicious littering of garbage are both annoying and expensive on staff time.

Currently the roadway gates to the Arboretum are open from sunrise to sunset, and the pedestrian gates open continuously, although a staff is present only during working hours and even then cannot adequately survey the full 265 acres of grounds. A staff police force or a restriction in the visiting hours may be required during the next few years, but any effort will be futile until a sizeable expenditure has been made for fencing to complete the circumference of the grounds.

During the year, a total of 260 species and cultivars were added to the living collections in Jamaica Plain from the nursery area in Weston. In addition, the collections of lilacs, rhododendrons, and the dwarf plants in the rockery received special care. Some plants were added to each collection and other plants were moved to provide better growing conditions or to enhance the beauty of the collection.

The propagating department received from other sources 227 shipments of living plants and 47 shipments of seeds. These came from the United States and 21 other countries. Staff members of the Arboretum and botanists in the Biology Department made requests for experimental materials of 116 taxa from the living collections.

The Arboretum also distributed 207 shipments of plant materials to other arboreta and to cooperating nurseries. These comprised 1,105 different taxa. A total of 900 were sent as seeds and 915 as cuttings or rooted plants indicating the growing need and desire for reliable propagating material to represent the taxon and the lessening interest in seeds with their possibilities for hybrid contamination.

The experimental work within the propagating department continued to concern the problems of reproducing plants in our collections considered difficult to root. Worthy of particular mention is the close collaboration of the propagator with the staff and students undertaking taxonomic research problems. The activities of the Arboretum staff in horticulture

may also be expressed in our contacts with students and the public. These may be considered as educational functions in teaching, offering tours and information through exhibits and displays.

EDUCATION

Dr. Howard taught a regularly scheduled class in horticultural taxonomy at Harvard College during the spring, and Dr. Thomas offered special work to graduate students in the area of cytotaxonomy. All of the staff participated in a regular series of weekly seminars offered in Cambridge to graduate students and scientists from other departments.

For the general public, the staff offered in Jamaica Plain and in Weston field classes involving tours of the collections and a study of the plants in the spring and in the fall. Four other classes as well as a lecture series were offered without charge or credit to the general public. These meetings, announced in the *Harvard University Gazette*, draw many from the University faculty and often include wives and children, as well.

When requested by horticultural groups which range in interest from nature study classes to graduate students from universities in adjacent states, staff members conduct special tours of the grounds. Thirty-seven such tours were conducted during the month of May, including a tour sponsored by the Massachusetts Horticultural Society which involved nine busloads of people. Although these tours may often interrupt a planned program of a staff member, the value to the recipients is expressed in their appreciation by word and by letter. Such activities are just one of the contributions of the Arboretum and its staff.

The Arboretum staff prepared and staged five exhibits dealing with horticulture and science during the winter and spring. All are educational exhibits and the quality of these exhibits may be judged by the fact that the exhibit at the International Flower Show of the New York Horticultural Society was awarded the T. A. Weston trophy for the most educational exhibit in the show.

LIBRARY

Three hundred and twenty-three volumes were added to the library, increasing the total to 51,106 on June 30, 1961. Nine hundred and seventy-two pamphlets were added to the monographic collection, making a total of 18,302. The various indices related to the work of the Arboretum received regular accessions during the year, totaling over 8,000 entries. The attention of the librarian during the year was directed to a reorganization of the horticultural section of the library housed in the Administration Building in Jamaica Plain.

HERBARIUM

During the year, 12,208 specimens were mounted and added to the herbarium, bringing the total collection to 726,344 specimens on June 30, 1961. During the same period, 17,232 specimens were received through exchange, gift, subsidy, or for identification. The largest

number represented a subsidized collection made by [Dr. Hugh M. Raup](#), Director of the Harvard Forest, in the Mackenzie River Basin of Canada in 1938. A total of 3,345 specimens was distributed to other institutions in continuation of exchange. The staff filled 113 requests for herbarium specimens on loan, representing 14,614 specimens from the combined herbaria sent to 65 institutions, 43 of these in the United States. The staff requested 65 loans, totaling 3,399 specimens for study. The incoming loans averaged 52 specimens, while the outgoing loans averaged 129 specimens.

TRAVEL AND EXPLORATION

The Arboretum was represented at various annual science meetings in several parts of the country by staff members who took part in symposia, in the organization of the meetings, or who presented papers on their research. These meetings included those of the American Association of Botanical Gardens and Arboretums, the American Institute of Biological Sciences, the American Horticultural Council and the American Horticultural Society, the Plant Propagators Society, the Society for Economic Botany, the National Shade Tree Conference, the American Society of Horticultural Science, and the American Boxwood Society.

Field work associated with research programs was undertaken by Dr. Howard in the Leeward Islands, by Dr. Wood in Florida, by Dr. Wagenknecht in Virginia and North Carolina, and by Dr. Thomas in Florida and Alabama. In all cases, herbarium specimens and living plant materials were brought back for additional study or for addition to the collections of the Arboretum.

The Arboretum also contributed to the support of expeditions of other botanists or botanical gardens in Japan, Burma, and Turkey to obtain plants of value to the Arboretum for its living collections or its herbarium.

RESEARCH

During the year, eighteen active and emeritus staff members, students, and research associates of the Arboretum staff published a total of 87 papers, based on the herbarium collections, the library, and the living collections of the Arnold Arboretum. These represented many areas of botanical activity including monographs and other taxonomic studies, ecology and floristics, cytology, anatomy and morphology, history and bibliography, economic botany and many phases of horticulture.

In addition, many long term research programs continue with completion dates well in the future. Dr. Howard has under way a survey of the vascular structure of the petiole of flowering plants, which promises to offer new means of recognizing and classifying fragmentary plant specimens and will offer evidence to the development and the phylogenetic and evolutionary relationship of families and genera. He is also working on a flora of the Lesser Antilles in the West Indies. Dr. Wood has undertaken a generic flora of the southeastern states, which will summarize the available information from many areas of science for this long

neglected flora. These projects are supported by grants from the National Science Foundation. Dr. Perry, with the support of a grant from the Institute of Health, is studying the distribution of plants of southeastern Asia, which are used for medicinal purposes by the native peoples. To the present, Dr. Kobuski has published thirty-one papers in a continuing series, representing studies of the important plant family, the Theaceae; while Dr. Nevling, in addition to cooperating on studies of the flora of Panama with botanists from Missouri Botanical Garden, has undertaken a larger study of the family Thymeleaceae. Dr. Wyman continues his studies of individual genera of plants under cultivation in the United States.

Several staff members are contributing to the preparation of registration lists of cultivars in many genera of cultivated plants. This program, conducted under authority designated by the American Association of Botanical Gardens and Arboreta and the Arnold Arboretum, will serve for another two-year period as the National Registration Center for cultivated plants.

PUBLICATIONS

During the year, the Arnold Arboretum issued twenty numbers of its horticultural publication, *Arnoldia*, and four numbers of its technical publication, the [*Journal of the Arnold Arboretum*](#). A total of 611 pages were issued. In addition, an earlier publication of the Arnold Arboretum entitled, the [*Pines of Mexico*](#) was made available in photoprint reproduction after being out of print for many years.

SUMMARY

In summary, I can point to a full year of activity and contribution by the staff in many fields of botanical and horticultural investigations. The research of the staff continues to increase on foundations previously established. The new greenhouse facilities under construction will permit new areas of research to be initiated, and improved techniques to be used in established areas. The living collections both in Jamaica Plain and in Weston, and the herbarium and library in Cambridge and Jamaica Plain are receiving excellent care and profitable use.

RICHARD A. HOWARD, Director