

THE DIRECTOR'S REPORT

THE ARNOLD ARBORETUM DURING THE FISCAL YEAR ENDED
JUNE 30, 1962

IN RECORDING the activities of the staff of the Arnold Arboretum during the past year, the event that stands out most vividly is the completion of the Charles Stratton Dana Greenhouses and the associated "open house" days for the Friends of the Arnold Arboretum and interested public. The planning of this new facility has occupied the staff for several years and the actual construction of it for much of the present one. The contractors finished their work in March, leaving April and early May for the tasks of moving the contents of the old greenhouses and laboratory to the new location and of preparing the surrounding grounds. The complete cooperation and the hard work of the horticultural staff of the Arnold Arboretum, best described as dedicated, made it possible to meet our schedule. For once, the fickle New England climate cooperated with our plans, producing excellent weather for the moving operations and also one of the most extended flowering seasons in the recent history of the Arboretum. The frequent newspaper notices and radio announcements of the progress of the flowering season were also helpful in giving us the largest weekly attendance since before the last war. The general response to the publicity culminated in an historic traffic tie-up on surrounding streets during lilac weekend with an estimated 25,000 visitors on the grounds between two and three P.M. on Sunday, May 20.

Staff:

New appointments to the staff during the year were Dr. Bernice G. Schubert and Dr. Wallace R. Ernst. Dr. Schubert, formerly with the U. S. Department of Agriculture, at Beltsville, Maryland, joined the staff on January 1st as Associate Curator. Dr. Ernst, a recent graduate of Stanford University, was appointed jointly with the Gray Herbarium to work with Dr. Wood on the generic flora of the southeastern United States. Two scholars were appointed Mercer Fellows during the year. Mr. Don M. A. Jayaweera, Director of the Royal Botanic Gardens, Peradeniya, Ceylon, held a Rockefeller Foundation Fellowship during the last year and was appointed a Mercer Fellow to complete his work on the genus *Mussaenda*. Dr. Lalit Mohan Srivastava, a graduate of the University of California at Davis, was appointed a Mercer Fellow to work with Dr. I. W. Bailey on further studies of the cambium and secondary phloem of vascular plants.

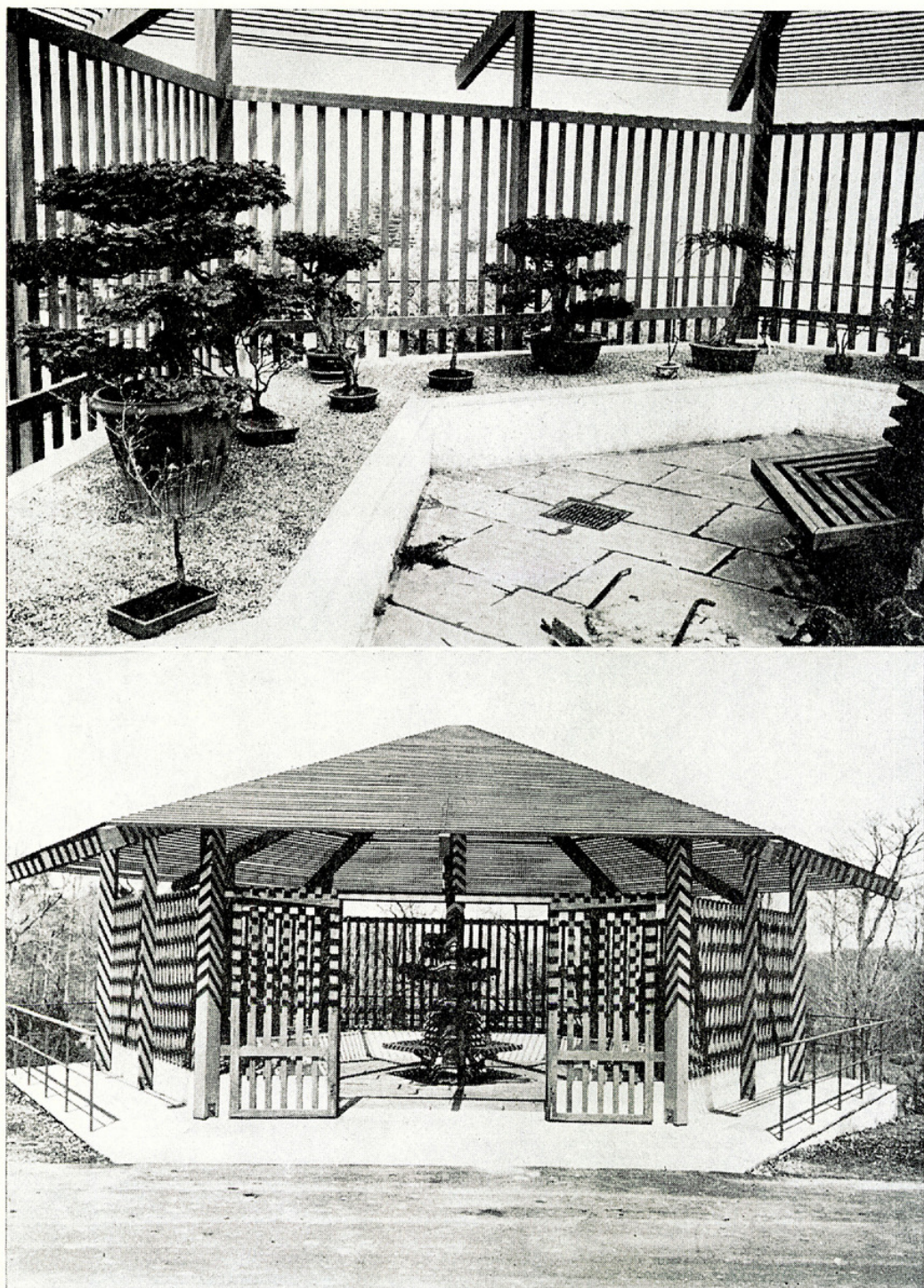
The resignations of Dr. Joab L. Thomas and Dr. Burdette L. Wagenknecht were accepted at the beginning of the year. Dr. Thomas accepted a position at the University of Alabama and Dr. Wagenknecht one at Norwich University.

It is a pleasure to record the horticultural award of the Colman Medal to Dr. Sax by the American Association of Nurserymen in recognition of the work which he accomplished at the Arnold Arboretum. Dr. Ernst was awarded the George R. Cooley Prize for the best paper presented at the annual meeting of the American Association of Plant Taxonomists. This paper, entitled "The Familial Status of the Fumariaceae," summarized his morphological comparisons of this family with its relatives, the Papaveraceae. Dr. Wyman completed his term as President of the American Horticultural Society and was elected to the Board of Directors of the Society at its annual meeting.

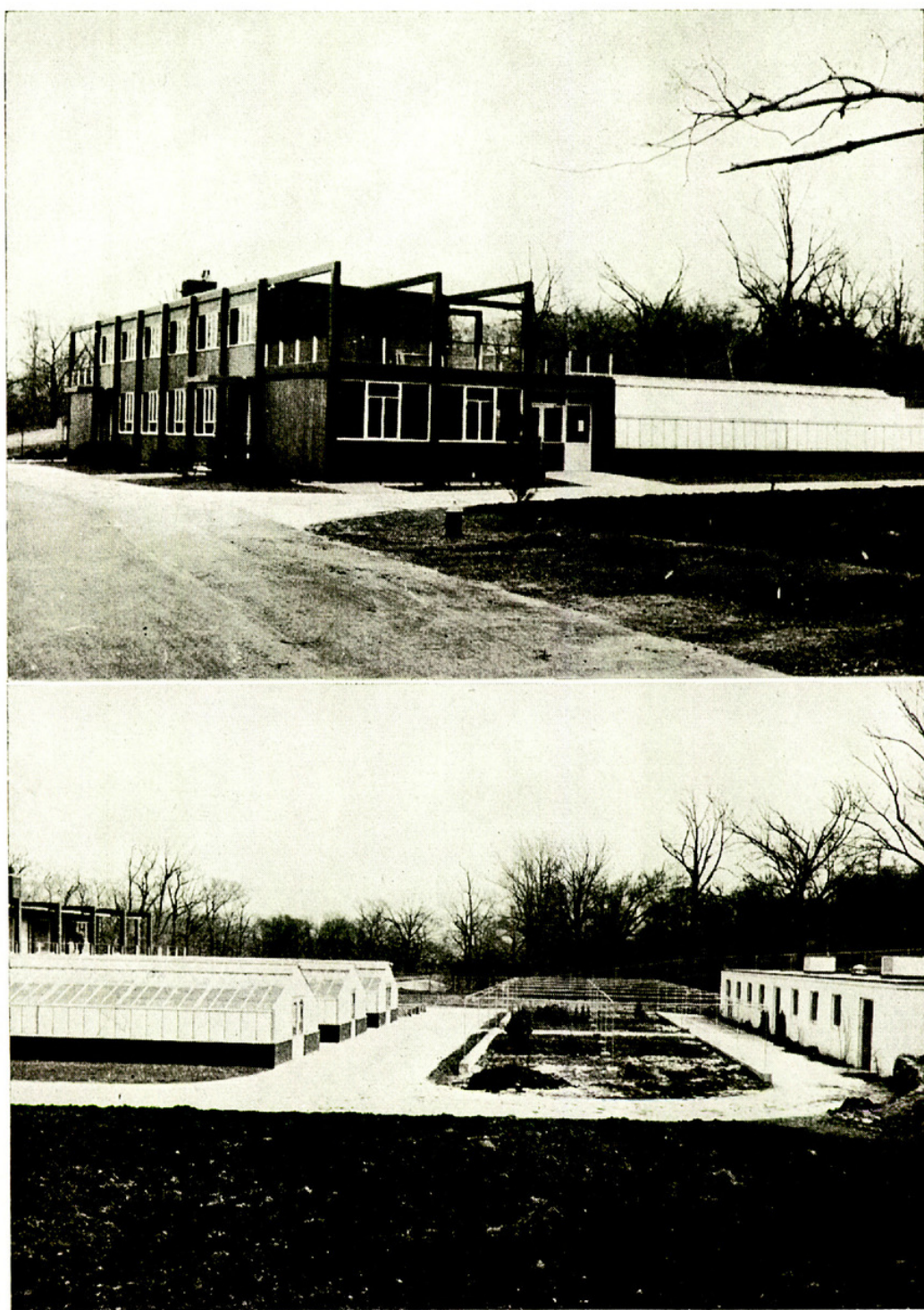
Horticulture:

The completion of the Charles Stratton Dana Greenhouses and the transfer of the propagation work to these new quarters summarize in large measure the activities of the staff in horticulture during the past year. Previous reports have indicated the nature of the physical plant proposed, and a full description of these greenhouses was published in *Arnoldia*, volume 22, combined issues 5 and 6. The new greenhouses are built on land owned by Harvard University for the Arnold Arboretum and adjacent to the city-owned land occupied by the main collections. The development consists of four units of construction, a main building with three attached greenhouses, a cold storage house built into an earthen bank, a free-standing slat house of modern design to house the Larz Anderson *bonsai* collection, and a pipe-frame construction to be covered with saran cloth to function as a shade house for nursery stock. In the surrounding area, over an acre of ground is devoted to nursery stock; additional space is for planned future expansion, appropriate landscaping for the buildings, bank plantings of suitable materials, as well as a demonstration area for many varieties of such plants, a collection of genetically dwarf plants near the *bonsai* collection, and a new location for the Arboretum hedge collection. The entire location is fenced and can be locked, thus affording for the first time excellent protection to the greenhouse and nursery areas.

The Dana Greenhouses have a main building, the headhouse, 36 × 111 feet with full basement and first floor and a smaller second floor with an apartment 22 × 68 feet for a resident guard. Included in the main building, in addition to ample areas for the work of the propagation staff, are a small conference-lecture room, a laboratory for anatomical or cytological work, two walk-in cold rooms for controlled temperature experiments in ranges of plus 40° to minus 20° F., and abundant storage space. Three greenhouses, each 17 × 51 feet, are attached, and there is space for a fourth. Expansion of each is possible on standard modules. The heating



Two views of the new lath house for the Japanese *bonsai* of the Larz Anderson Collection of the Arnold Arboretum. The lath house is opposite the main building of the Charles Stratton Dana Greenhouses and overlooks the hedge collection.



The Charles Stratton Dana Greenhouses of the Arnold Arboretum.

ABOVE: Main building and greenhouses.

BELOW: Greenhouses, shade houses, and cold storage house.

plant is designed to handle twice the present glass area. An auxiliary generator was installed to provide automatic take-over when the line voltage drops below 70 per cent of normal. This generator will operate both the heating and refrigeration units for an extended emergency. Ease of maintenance and operation were the primary considerations in the design of the building and are exemplified by the uniform floor levels throughout the building, the ample aisles for trucks, an electric elevator for transport of supplies to the basement storage, glazed tile walls for cleanliness, chutes to an incinerator or bins for debris, washable floors which can be hosed and then dried with "squeegees," and soil bins which are filled from the outside and are unloaded from the inside.

The cold storage house is another feature of the experimental opportunities made possible through the new construction. This building, 15 × 100 feet, is of concrete block construction and is insulated with slabs of "styrofoam." The house has heating as well as refrigeration units. One section will house the *bonsai* collection during the winter months, and a separate section can be used to produce an early cold season or extend a winter season for plants larger in size than are usually cared for in a greenhouse. Nursery stock normally subjected in New England to unseasonable early warm periods followed by a late freeze now can be maintained in a dormant condition until all frost danger is over.

The erection of the new greenhouses, named for Charles Stratton Dana, was made possible through a generous bequest by his daughter, Martha Dana Mercer. This development has met a long-standing need of the Arboretum for modern greenhouses with experimental facilities. Their completion and occupancy make possible continued contributions by the staff to the study of the ornamental plants hardy in New England.

To move from the old greenhouse area as quickly and as completely as possible required long planning and hard work on the part of the staff. During the fall, plants to be moved were planted in cans or were root pruned. Accumulations of many years were sorted and discarded or packed for the move. Soil was conditioned to receive the transplants. New equipment and supplies had to be anticipated and ordered. Finally, in March when construction was completed the move took place. During May and again during commencement week the greenhouse area was on display. New lawns were planted, newly transplanted materials had to be watered, mulches were spread, much pruning was required, and, finally, the ever-present weeds of newly developed areas required attention. At the time of this report operations are about back to normal, and much of the work which remains to be done can be fitted into a regular schedule. A special word of appreciation is due Dr. Wyman, horticulturist, who worked with the architects and contractors throughout the planning and the completion of this construction; Mr. Williams, superintendent, for his own efforts combined with those of the grounds crew; and Mr. Fordham, propagator, and his staff. The good job expected was done.

The weather of the past year was extremely favorable to the living collections. The season was marred only by the passage of hurricane

"Esther" on September 21st. Moderate damage to branches resulted from gale-force winds, which also destroyed our only specimen of *Juglans mandshurica* in a localized gust. A replacement specimen has since been obtained from Finland, but the loss emphasizes the value of the efforts of the greenhouse staff to propagate plants now represented in our collections by single individuals which have proven extremely difficult to reproduce by the usual propagating techniques. The heavy snow coverage of February gave adequate protection to the plants during the month of most violent weather, and little or no killing of flower buds or branches was experienced. The beneficial result of natural winter protection was revealed in a most floriferous spring season of moderate temperatures which saw the major collections remain in flower for longer periods than usual.

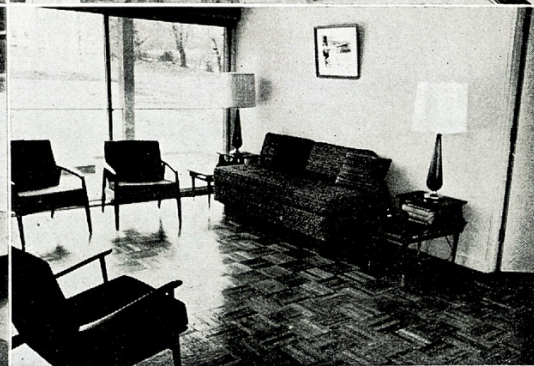
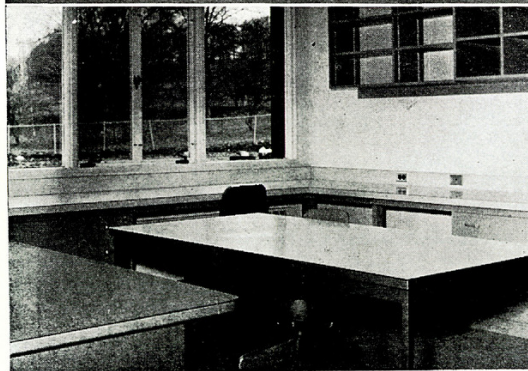
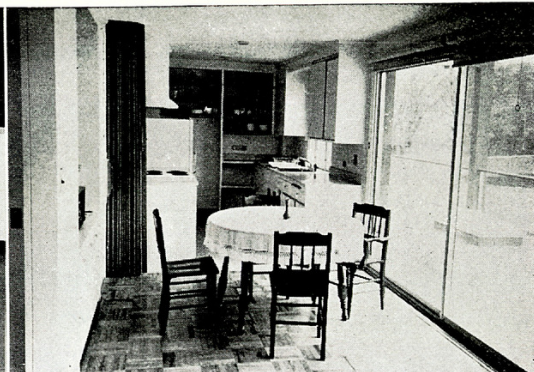
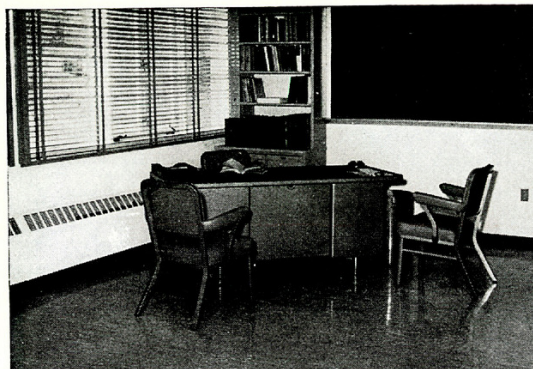
The labor requirements associated with the new greenhouses caused a reduction in the cultural efforts in the main collections during the year. Very little planting was done during the fall or spring season, and the regular distribution of plants to cooperating nurserymen was omitted this year. Materials for both programs are on hand and both will be reactivated during the transplanting season in the fall.

The Department of Parks and Recreation of the City of Boston continued its regular attention to the Arboretum road system. A major road unit from the Forest Hills gate to the pond area and a second unit from the forsythias past the lilac collection to the rockery were resurfaced, the drains relocated, and the sidewalks repaired. This is a major improvement which will facilitate snow plowing during the winter and make many areas more accessible for winter-time work. With the cooperation of the representatives of the Department of Parks and Recreation, the City of Boston scheduled a hearing concerning necessary repairs to a storm sewer which passes through the new greenhouse area. Since this land belongs to Harvard University and not the city of Boston, a division of the costs of repairs has been agreed upon, and it is expected that the needed repair will be completed in the next year.

At the annual meeting of the American Association of Botanical Gardens and Arboretums, the Arboretum staff was asked to serve for another two-year period as registration authority for cultivated woody plants not represented by special societies. Although no additional registration lists of cultivars were published during the year, several lists have been completed, and work is in progress on others. Dr. Wyman completed the registration list for *Fagus* and Mr. Green that for *Ulmus*.

Dr. Howard, with the assistance of Miss Carroll, Miss Herron, and Mrs. Walsh, completed the compilation of a directory of botanical gardens of the world which is to be published by the International Association for Plant Taxonomy as a volume of *Regnum Vegetabile*. A grant from the International Union of Biological Sciences will assist in the publication of this directory which lists the physical characteristics, staff members, and the research and resources of over 500 botanical gardens.

During the past year the staff of the propagation department received



The Charles Stratton Dana Greenhouses of the Arnold Arboretum.
 LEFT, ABOVE: Office and conference room; BELOW: Research laboratory. RIGHT, ABOVE and BELOW: Apartment
 for greenhouse guard.



Two views of the work area for plant propagation in the Charles Stratton Dana Greenhouses of the Arnold Arboretum.

164 shipments of plant materials representing 579 species and varieties from 23 different countries. One hundred and thirty of these lots (representing 458 taxa) came as plants or cuttings, while only 30 shipments (121 taxa) consisted of seeds and fruits. By contrast, 214 shipments comprising

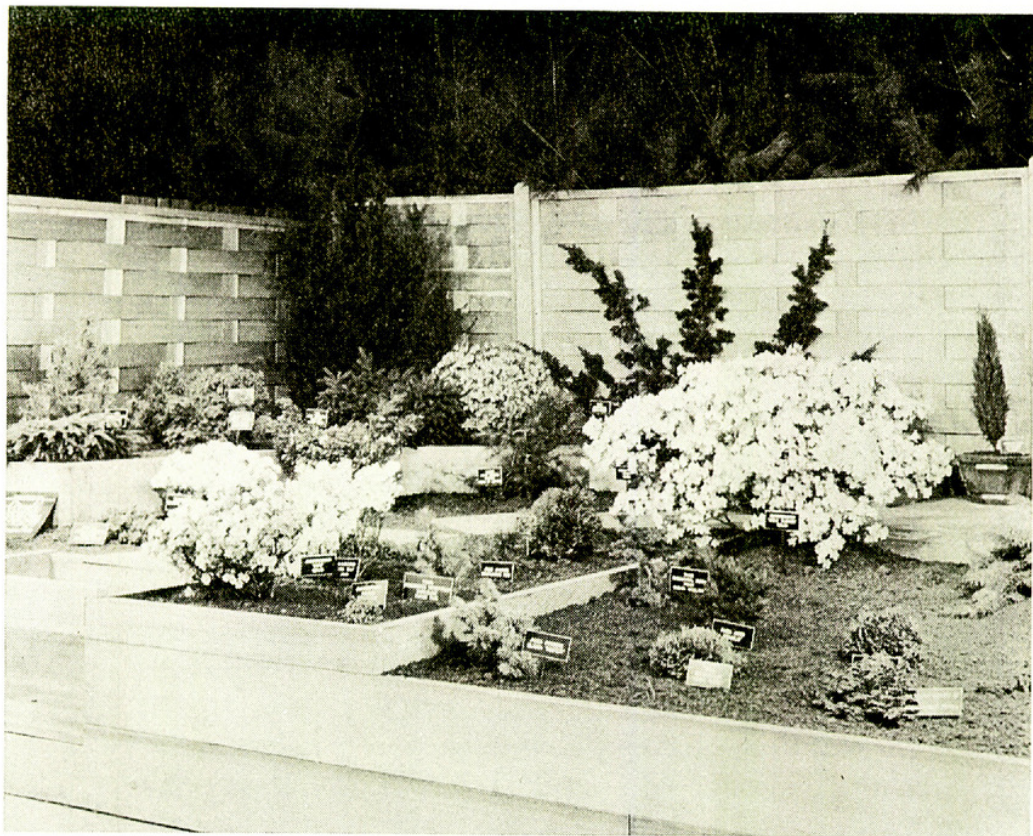
852 taxa were distributed on request to botanists in nine countries. Of these, 157 shipments (645 taxa) were as plants or cuttings and 57 shipments (207 taxa) as fruits or seeds. In addition to these, we were able to fill 52 requests for pollen, leaf samples, soil samples, fruits, or wood specimens obtained from the living collections in support of research requests of scientists in thirteen countries, not including the United States.

The requirements of the projected plantings around the greenhouses and the development of new groups in the Arboretum collection necessitated the propagation of 467 taxa. Outside requests for materials from the Arboretum collections not available elsewhere numbered 62 items which have been propagated for distribution at the proper stage of development. The Arboretum staff requested the propagation of 74 taxa for taxonomic, cytological, or morphological studies. Finally, 84 taxa were handled by the propagation staff to obtain or to check propagation data.

Experimental work in the greenhouses, although interrupted by the move, continued on problems concerned with winter survival of rooted cuttings, methods of rooting species which defy normal procedures, techniques of handling and breaking seed dormancy, methods of obtaining more complete and uniform germination of seeds, and viability studies in the storage of scions. The results of these studies appear as notes or more comprehensive papers in *Arnoldia* and other horticultural journals.

Case Estates:

The Case Estates in Weston continue to serve as a nursery testing, and demonstration area, a quarantine zone, and a place to retain under conditions of easy maintenance plant material not desired in the main collections in Jamaica Plain. Plants propagated in the Arboretum greenhouses are held in Weston until they reach flowering size. During this period their growth habits, hardiness, and flowering characteristics can be determined. The best plants from the cultural or ornamental points of view later are planted in Jamaica Plain. Less desirable plants, the distribution of which may be restricted by law (e.g., *Ribes* or *Berberis*), or plants marginally hardy may be retained in permanent non-display plantings in Weston. Of the demonstration areas, the perennial garden, the ground cover plots, and the small stature trees attract the greatest attention from visitors. Increased interest is seen in the test plantings of *Narcissus* varieties contributed by Dr. Helen Scorgie and other members of the New England Section of the American Daffodil Society. Plants received from abroad, subject to plant quarantine restrictions, are maintained in special sections and screened houses on the Case Estates prior to their clearance for distribution by representatives of the Department of Agriculture. In addition, certain areas of the various plantings on the Case Estates can be used experimentally for trial of new horticultural practices. For example, the search continues for safe, yet effective, chemical weed killers for use in display nurseries. One of the most promising materials tried during the past year was "Simazine" which, when applied in the fall, made hand hoeing unnecessary in nursery rows until mid-June.



The Arnold Arboretum display of dwarf conifers at the Spring Flower Show of the Massachusetts Horticultural Society, Revere, Massachusetts, April 17-25, 1962.

The grounds of the Case Estates are used for teaching activities of the staff. In addition to an "open house," field classes have been held for the general public in the spring and the fall. Special tours are arranged for interested groups which can be shown certain plants, plantings, and practices not demonstrable in Jamaica Plain, and the grounds are used for field work in biology classes of Harvard University and the Weston Public Schools. In addition, staff members of the Bussey Institution, the Department of Biology, the Cabot Foundation, and the Gray Herbarium, of Harvard University, have been allowed to use small plots of land for experimental studies. Currently, three high-school and private-school students have "science fair" projects under way on the grounds.

Herbarium:

During the year, 16,467 specimens were mounted and added to the herbarium, bringing the total collection to 742,811 specimens on June 30, 1962. During the same period, 10,920 specimens were received as accessions. Of these 9292 were in exchange, 1277 through subsidy, and the remainder as gifts or for identification. In conformity with the joint policy of having the Gray Herbarium maintain all exchanges with coun-

tries and institutions of the New World and the Arnold Arboretum those of the Old, the above accessions represent plants of the Eastern Hemisphere. All collections of cultivated plants are credited to the Arnold Arboretum and, whatever their source, are added to the horticultural herbarium in Jamaica Plain. Only 438 specimens were sent out as exchange during the year, although many collections are being prepared for exchange in the near future.

The staff filled 117 requests for loans of herbarium material, amounting to 12,056 specimens sent to 69 institutions — 48 in the United States and 21 to other countries. For their study, the staff requested 94 loans comprising 7278 specimens from 20 American herbaria and 22 foreign institutions. Outgoing loans averaged 103 specimens per loan and included materials from the Arnold Arboretum and the Gray Herbarium. Incoming loans averaged 80 specimens per loan, again emphasizing the wealth of material in our herbaria. It is of interest to note that of the outgoing loans, 29 per cent, representing 38 per cent of the specimens sent, were for the use of advanced students, the remainder for professional taxonomists.

Forty-three steel herbarium cases were purchased from the Art Metal Company for installation in the Administration Building in Jamaica Plain. Two additional cases were purchased for staff use in Cambridge. After the installation of the new cases, the entire horticultural herbarium was shifted to allow room for expansion throughout the collection and to provide case space for individual staff members and for the use of the mounters. It is gratifying that there is a gradual increase in the number of specimens of cultivated plants being sent for identification and in exchange. These have been received from many individuals in the United States and offer more exact evidence of the distribution of plants under cultivation. Our colleagues in foreign countries are also cooperating in response to our request for specimens from cultivation in addition to those from the wild.

Although the publications cited in the bibliography speak for the scientific achievements of the taxonomists, it is also desirable to record work in progress: Mr. Green, studies in the Oleaceae, particularly *Notelaea* in New Caledonia, Australia, and New Zealand; Dr. Howard, studies on the anatomy of the petiole of the dicotyledons and floristic studies of the West Indies, particularly in the Guttiferae and Leguminosae; Dr. Hu, studies of the Compositae of China, as well as the Commelinaceae and Juncaceae of the same region; Mr. Jayaweera, studies on Asiatic *Mussaendae* and the orchids of Ceylon; Dr. Kobuski, the Theaceae of Asia, particularly the genus *Ternstroemia*; Dr. Nevling, studies of the Thymelaeaceae; Dr. Perry, with the assistance of Mrs. Metzger, studies of the medicinal plants of Southeast Asia; Dr. Schubert, the genus *Desmodium* in tropical East Africa and in Panama, as well as studies toward a monograph of the American species of *Dioscorea*; and Drs. Wood, Brizicky, and Ernst, studies of families and genera of seed plants in the southeastern United States. During the year Mrs. Metzger visited libraries in England and Germany, while Dr. Perry consulted libraries in New York and Washington to lend completeness to many of the medical references being re-

viewed by them. Mr. Jayaweera completed revisions of the rubiaceaceous genus *Mussaenda* in India and Ceylon and in the Philippine Islands.

In addition to many visitors who studied in the herbarium during short visits, we have had two scholars working for longer periods of time. Dr. Shun Ching Lee, Professor of Botany, National University of Taiwan, is a Fulbright Fellow working on a revision of his book on the forests of China. Lieutenant Robert Bird, U. S. Army, undertook special studies of the vegetation of several countries of southeastern Asia, using the library and herbarium.



Members of the botanical field trip after the 10th Pacific Science Congress at the summit of Haleakala, Maui, Hawaii.

Library:

The librarians continued their regular services during the year, since the shifting of books described in previous reports has been completed. Three hundred forty-seven volumes obtained by purchase, gift, and binding were added to the library, making the total number of volumes 51,453 on June 30, 1962. A total of 624 pamphlets was also catalogued and added to the collection, making a total of 18,926. The work of cross-indexing the main catalogue continues, with 2088 such cards being added, including the new acquisitions. Four issues, totalling 3000 cards, were added to the Gray Herbarium Card Index of American Plants. The Torrey Index to American Botanical Literature was enriched with the addition of 2600

cards, and issue number 15 was added to the Index Nominum Genericorum.

In response to requests, sixty-six volumes were sent on interlibrary loan. This represents about one half the number of volumes lent in previous years. The staff is filling a larger number of requests by the use of "con-tura," "xerox," or microfilm reproduction methods to avoid lending old volumes. It was necessary to request only eight volumes from outside sources to meet the research needs of the staff, so extensive are the libraries of the Arboretum and the Gray Herbarium and of the neighboring departments of Harvard University.

The librarian, Mrs. Schwarten, along with Dr. Howard, attended the dedication of the Rachel McMasters Miller Hunt Botanical Library at the Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

Comparative Morphology:

Irving W. Bailey, Professor of Plant Anatomy, *Emeritus*, has continued to serve as curator of the wood collection. During the year, Professor Bailey continued his research on the leaf-bearing cacti of the genera *Pereskia*, *Peresklopsis*, and *Quiabentia*. Additional preserved specimens were received from tropical America and prepared for anatomical studies of xylem and phloem. As a Mercer Fellow, Dr. Lalit M. Srivastava has worked with Professor Bailey in studying the cambium and phloem of these genera. Dr. Srivastava completed his doctoral dissertation on the secondary phloem in the Abietineae, and the manuscript has been submitted to the University of California Press for publication. At present, he is continuing his studies involving ontogenetic and histochemical investigations of the vascular cambium and its derivatives on other genera within the collections of the Arboretum.

Since the wood collection of the Arnold Arboretum is one of the best in existence, frequent requests, which are filled as materials are available, are received for study samples. During the past year, wood samples were sent to 26 investigators in 14 countries. Where specimens have not been sectioned previously for our own slide collection duplicate slides are requested in return, adding to the available slides for local study. The wood samples supplied on request are acknowledged in published papers, for in many cases supporting herbarium vouchers are preserved in the Arboretum herbarium.

Education:

No formal classes were offered by members of the staff during the past year. Informal classes on horticultural topics were represented by the field classes held in the fall and the spring at Weston and Jamaica Plain. The staff members also took part in two seminar series held weekly and bi-weekly in Cambridge and open to all students. The weekly series dealt with botanical problems in Latin America, while the biweekly one comprised a discussion of the research projects of staff members and students of the Arboretum and Gray Herbarium. A series of lectures open to the

public was given evenings during the fall at the administration building in Jamaica Plain. Attendance varied at these meetings depending on the topic and the weather. It seems unlikely that evening programs in Jamaica Plain will ever be completely successful due to the remote location and difficulty of public transportation.

We again experienced an increase in the number of groups visiting the Arboretum and the Case Estates and requesting guided tours. There was an unexpected increase in the number of requests by mail for information on the Arboretum and in individual requests for information on or the location of specific plants in the Arboretum. These can be explained only in terms of the recent increased publicity given the Arboretum in newspapers, national magazines, and on local radio programs. The Arboretum's exhibit at the Massachusetts Horticultural Society's Spring Flower Show was mentioned and complimented in the March 30th issue of *Time*, which drew attention to the dwarf plants. *Life* of May 4th listed the Arnold Arboretum first in a column on American arboreta and referred to our introduction of *Metasequoia*. The *Harvard Alumni Bulletin* of February 17th had a cover illustration of the Arboretum, drawing attention to the conifer collection. The *New York Times* of April 22nd published an article by Dr. Walter Hodge on botanic gardens which contained an illustration of our lilac collection and comment that "Harvard University's Arnold Arboretum, America's best known arboretum, has been rated since Ernest Wilson's day as 'America's greatest garden'." Dr. Wyman's timely articles in the *Boston Herald* feature the plants in flower at the Arnold Arboretum and the flowering calendar in the Sunday edition of the *New York Times* lists the plants in bloom at the Arnold Arboretum each week during the spring season. Such publicity is welcome for the interest it focuses on the contributions of the staff and the educational values of the living collections.

The increase in requests for Arboretum staff members as speakers for individual garden club meetings now poses a real problem. Whenever possible requests are filled, but largely at the discretion of the staff member invited as speaker. Joint meetings of garden clubs are one way of utilizing speakers more efficiently. In order to compensate in some measure for the loss of working or research time, it is necessary to charge a standard fee for speaking engagements of staff members. Such receipts are used to further the work of horticultural education.

Dr. Howard appeared on the science lecture series of the Royal Canadian Institute in Toronto and that of the American Association for the Advancement of Science at Franklin and Marshall College. He gave the evening address on Hawaiian botany at the 16th Congress of the American Horticultural Society and at the annual meeting of the Massachusetts Dietetic Association spoke on the economic uses of plants. Following the Pacific Science Congress, Dr. Howard was invited to address an open meeting of the Garden Club of Honolulu. Dr. Wyman addressed meetings of nurserymen in Iowa and Michigan. He took part in short courses in horticulture sponsored by the Oregon State University and the University of Massachusetts. Dr. Wyman also appeared on the lecture program of Longwood

Gardens. Mr. Green described the work of the Arboretum at Pine Manor Junior College and reported on methods of vegetation mapping for the New England Botanical Club. He also talked about the plant introduction and distribution program at the annual meeting of the American Association of Botanical Gardens and Arboretums. Mr. Fordham discussed dwarf



Strollers in the Arnold Arboretum on lilac weekend, May 20, 21, 1962.

and abnormal conifers at the nurserymen's short course at the Waltham Field Station and spoke on methods of accelerating seed germination at a meeting of the New England Nurserymen's Association. Mr. Heman Howard is aiding the development of Bartlett Park in Chelmsford as a local arboretum and spoke about the selection of plants to its supporters. Dr. Wyman and Mr. Williams conducted a day-long demonstration lecture on pruning methods for the New England Electric Public Utility Services which was attended by over forty line superintendents involved in maintenance of electric lines.

Radio programs often involving telephone interviews and audience questions have included several members of the staff. Dr. Wyman and Mr. Williams have also appeared on local television stations. The majority of these programs take place in the spring, when interest in gardening practices is highest.

Exhibits and Displays:

The living collections of the Arnold Arboretum are planted on 400 acres in Jamaica Plain and Weston. Only the professional horticulturists or the most determined visitors take time to see all of the plants of a given group. In some areas the many representatives of a group may be quite loosely associated, but more often the individual plants are widely distributed and located where they will show the best growth. A flower show, by contrast, offers an opportunity for displaying small plants or branches or portions of plants in a small area, conveniently displayed and studied. Such displays may be seen by more people in a few hours than may visit the living collections in a full week. As a part of its effort in horticultural education, the staff of the Arboretum will prepare educational displays of plant materials. Regrettably, we cannot fill all requests or accept all invitations which, during the past year, were received from seven states, including Hawaii, from Canada, and from Europe. A display of ornamental fruiting shrubs and trees was shown at the Fall Show of the Massachusetts Horticultural Society attended by about 5000 people and at the comparable show of the Worcester County Horticultural Society which had about 9000 visitors. The staff cooperated with members of the Massachusetts Horticultural Society in preparing a Christmas Show which drew 3000 visitors to Horticultural Hall in Boston. The Arboretum received a silver medal for its display of cones and evergreens. A separate exhibit area featured a display of fruiting branches of selected hollies native to New England.

During the spring season our largest exhibit was at the Massachusetts Horticultural Society's Spring Flower Show at Revere, Massachusetts. This display, awarded a first prize and a gold medal, featured a collection of dwarf evergreen plants which will eventually be located near the Dana Greenhouses. Eighty-six thousand people attended this exhibition. At the request of the New York Horticultural Society the Larz Anderson collection of *bonsai* was taken to New York for the New York International Flower Show. A final exhibit, again by request, was a demonstration of methods

of pruning trees and shrubs at the Jordan Marsh Spring Show sponsored by the Garden Club Federation of Massachusetts and seen by an estimated 50,000 people. The various exhibits were designed and executed by Dr. Wyman, Mr. Williams, and Mr. H. Howard. Considerable time was spent this year in the preparation of permanent labels engraved in colored plastic for these displays, in an attempt to have a type of exhibit more easily assembled in the future.



Japanese *bonsai* of the Larz Anderson Collection of the Arnold Arboretum on exhibition at the International Flower Show, New York City, March 10-18, 1962.

Travel and Exploration:

The Arboretum was represented by staff members at various professional meetings including those of the American Association of Botanical Gardens and Arboretums, the American Institute of Biological Sciences, the American Horticultural Society, the Plant Propagators Society, the Pacific Science Congress, the National Shade Tree Conference, the American Nurseryman's Association, and the American Society of Horticultural Sciences.

Dr. Howard collected some special plant materials for his research while in Hawaii for the Pacific Science Congress. The expedition to Burma of Mr. James Keenan, of the Royal Botanic Garden, Edinburgh, Scotland, sponsored in part by the Arnold Arboretum, was completed during the year,

and the arrangement of materials collected is under way. Mrs. Claude Weber made a special trip to gardens and nurseries in Ohio and Illinois to study cultivars of *Chaenomeles* in flower. The trip was rewarding in the discovery of several old cultivars previously not known to be still in cultivation. Mrs. Weber also participated in a class in tropical botany which spent a month in Costa Rica. This trip, financed by a grant from the Fernald Fund, allowed her to make general and special collections of plant materials for the herbarium and special collections for several staff members with research problems involving plants in that area. Dr. Wyman travelled extensively in the United States during the year, visiting many gardens and arboreta during peak seasons to continue his studies of ornamental plants and to obtain new plants for trial at the Arnold Arboretum. Dr. Ernst left in late June for field work in Texas with Dr. Henry J. Thompson, of the University of California at Los Angeles, related to their joint research interests.

Gifts and Grants:

The Friends of the Arnold Arboretum who contribute regularly to the work of the Arboretum responded generously to an appeal during the spring. To these contributors we again express our continuing appreciation.

Through the initiative of Mr. Seth Kelsey, of East Boxford, a member of the Committee to Visit the Arnold Arboretum, eight Massachusetts nurseries contributed over 1300 plants of various types and sizes to be used in establishing the basic landscape plantings around the Dana Greenhouses. Through their generosity, the greenhouses lost immediately a portion of the bleak appearance so characteristic of new buildings and freshly moved soils.

One group of plantings proposed for the fenced-in area of the Dana Greenhouses was a collection of native hollies with most attractive fruits. A selection was offered the Arboretum in the fall of 1961 by Mr. Wilfrid Wheeler, of Hatchville, Massachusetts. Although Mr. Wheeler died on Christmas Day, 1961, his wishes were carried out by his sons, Wilfrid, Jr., Richard, and Charles. We regret that Wilfrid Wheeler could not see his collection of outstanding cultivars in their new location, and we are grateful to his family for this gift of plants which so well represent his long interest in and his contribution to horticulture in New England.

Portions of the research of six staff members involving the services of six assistants continue to be supported by grants from the National Science Foundation, the National Institutes of Health, and the gifts of Mr. George R. Cooley.

Publications:

Four quarterly issues of the *Journal of the Arnold Arboretum* including most of the scientific publications of the staff were distributed during the year, as were the twelve numbers of *Arnoldia* which appear at irregular

intervals. These comprise the regular publications of the Arnold Arboretum. An issue of *Arnoldia* titled, "The Walter Street 'Berrying' Ground" was prepared by Mrs. Mary Lehmer, formerly of the Arboretum staff. This reviewed the history of the Walter Street Church and its adjacent cemetery now included within the boundaries of the Arboretum. Although remains are visible of the church, a memorial plaque, along with thirteen old headstones and a crypt, mark the Revolutionary War dead and are decorated each Memorial Day by the historic commission of Boston. This article, which drew attention to a remote section of the Arboretum, is one of a projected series of articles on the history of the land we occupy. Another number of *Arnoldia* issued at the dedication of the Dana Greenhouses has been requested frequently by other botanical gardens and by architectural students.

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1961-1962

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