



## Annual Report 1981-1982

To the President of the University:

The report for the Arnold Arboretum will this year be briefer than its immediate predecessor. I will identify salient events and summarize activity in research, instruction, and curation. The restructuring of the budget, accomplished the previous year, has allowed financial analysis of our programs. During the year, the University commissioned Cambridge Associates to assess the capacity of the Harvard museums to generate alternative revenue from public programs and services. They reported that potential does exist, but it is limited. Subsequently, Peter Rousmaniere and Associates, specialists in the financial management of nonprofit institutions, were commissioned by the University to analyze the recent financial performance of the Arnold Arboretum in detail and to provide a five-year projection to assist in defining future policy. Their report will be completed in fall 1982.

The reason for this concern for our financial future is made manifest by the fact that, this year, the Arnold Arboretum was in deficit for the second year in succession, on account of poor performance from our single major endowment, the Dana Mercer Trust. In the years ahead, a balance will be achieved only through substantial new income or through retrenchments. Moderately offsetting this ominous prediction, the public program experienced greater support than had been anticipated, further aided by a timely grant from the Institute of Museum Services. Our institution is therefore experiencing a substantial strengthening of public support, on which it will need to rely if a capital fund drive were to prove necessary.

Research and curatorial staff published fifty papers during the year. Outstanding progress was achieved by Professor Carroll Wood in his *Generic Flora of the Southeastern United States*, and manuscripts treating eleven families, by various authors, were sent for publication. In recognition of his outstanding contribution to instruction, Professor Peter Stevens was this year awarded a Phi Beta Kappa prize.

The long-awaited move of the combined herbaria of the Arnold Arboretum and Gray Herbarium, which involved transporting 3 million specimens to new space in compactors *in* an enlarged building, was accomplished in a surprisingly short four months under Collections Manager Michael Canoso's meticulous supervision. Closer integration of the curation of the living collections and of the herbaria was achieved through the reestablishment of a wood-sampling program (whereby specimens for wood samples for anatomical and other dendrological research are obtained from the living collections and deposited in the Bailey-Wetmore wood collection at Cambridge) and the revitalization of the herbarium voucher program for the verification of the living collections. Good progress was made towards the

standardization and computer storage of the records of the living collections with support from a grant from the National Science Foundation. Major reorganization of the living collections, notably the shrub collection, and restoration of the path system continued.

The return of violence to the Arboretum, albeit outside the main visiting hours, after several years of relative peace was eventually turned to some advantage: It has led to strengthened ties with our neighborhood and the initiation of a campaign, under the auspices of the Department of Parks and Recreation of the City of Boston, to raise support for the deployment of mounted "[Olmsted park rangers](#)" on the grounds.

The Hunnewell Building at the Arboretum, which has been renovated to provide a visitor center with exhibition space, lecture and meeting rooms, a shop, office space, and new quarters for part of the horticultural library and herbarium, was formally reopened on November 1, 1981.

## RESEARCH AND INSTRUCTION

Research at the Arnold Arboretum continues to be concerned with the systematic botany and ecology of the Eastern United States, the Caribbean area and Mexico, and temperate and tropical East Asia; regions noted for the exceptional diversity of their woody flora, yet, particularly in the latter case, experiencing unprecedented change under the onslaught of population expansion.

The Arnold Arboretum is actively involved in research that addresses one of the great issues of our time: the impending extinction of thousands of organisms, particularly of the tropics, and certainly including many yet unknown to science. In collaboration with the New York Botanical Garden, where Dr. Ghilleen T. Prance is Principal Investigator, and the Missouri Botanical Garden, a proposal to draw up a strategy for an international systematic botanical inventory of the world's tropical forests was successfully submitted to the United States branch of the World Wildlife Fund. The grant will enable a researcher, over eighteen months, to list priority regions for survey; to appraise current survey methodology, to identify potential areas where standardization of technique will be advantageous, and to investigate the establishment of a computerized data base; and to review the facilities currently available for botanical survey and systematic research in countries possessing tropical forest. Potential areas for collaboration will be identified as a preliminary to a planned expansion of botanical survey, as an essential adjunct to resource evaluation, while the opportunity remains.

As part of the effort, Professor Peter Ashton, with the assistance of Mark Plotkin of the Botanical Museum completed a chapter, entitled "Technologies to Sustain Tropical Forest Resources," for a report on future United States policy towards tropical forest development and conservation; this was sponsored by the Office of Technology Assessment of Congress. Ashton also served on the plants panel at a Strategy Conference on Biological Diversity organized by the Department of State. This conference was convened to assist formulation of national policy in relation to grave concerns of biologists not only regarding accelerated extinctions, but also the effect of the widespread attrition of biological diversity on the future stability of our crop systems.

Our faculty have this year played an active part in the programs of instruction of the Department of Organismic and Evolutionary Biology. Faculty members have advised thirteen graduate students, have taught courses in systematic botany, comparative morphology and anatomy, and biogeography, and have contributed to an introductory course for freshmen.

### The Americas

I have alluded to the progress achieved this year with Professor Carroll Wood's Generic Flora of the Southeastern United States. Confirmation has been received from the National Science Foundation for the funding of the second phase of this long-term project, between August 1981 and December 1984. Dr. Norton G. Miller was appointed Senior Research Botanist, and Dr. George K. Rogers Postdoctoral Fellow on the grant. Eleven new family treatments were completed, edited, and submitted to the [\*Journal of the Arnold Arboretum\*](#) for publication. This brings the total of family treatments to ninety-six, and a comprehensive index to these will also be published shortly in the *Journal*.

Dr. Richard E. Weaver, Jr., has collaborated with Professor Wood in the completion of a treatment of the Gentianaceae for the Generic Flora, now accepted for publication in the *Journal*. He is currently preparing a review of the neotropical wood genus *Macrocarpaea*, *Gentianaceae*. A collaboration between Dr. Weaver, Dr. Spongberg, and Professor Cheng Chung in a treatment of *Staphylea* is discussed below.

Dr. Ihsan A. Al-Shehbaz, a former graduate student under Professor Reed Rollins, Director Emeritus of the Gray Herbarium, served as a Mercer Fellow with Dr. Wood's team from September to November 1981. A specialist in Cruciferae, he assembled an annotated bibliography of the phytochemistry of the family, and treatments of the genera *Warea*, *Streptanthes*, *Iodanthus*, and *Sysimbrium*.

At year's end, Dr. Wood was working on *Burmanniaceae* and *Menyanthaceae*, Dr. Miller on *Meliaceae*, and Dr. Rogers on *Alismataceae*. Dr. Miller also found time to complete papers on his earlier paleobryological research. One, with Dr. S.T. Jackson of Indiana University, presents evidence derived from the study of plant fossils, for calcareous wetlands and spruce-fir-tamarack forest in Early Illinoian time near the southernmost limit of Pleistocene glaciation in North America. In a lengthy paper with R. Anderson and R. B. Davis, University of Maine, and R. Stuckenrath, Jr., Smithsonian Institution, documenting vegetational change over the last 12,500 years Dr. Miller contributed an analysis of the evidence provided by fossil mosses. He concluded that there has been an overall shift in dominance from calcareous and mineral-rich to acidophilous forms. In another communication, Miller reported on the occurrence in Pleistocene sediments of fossilized moss fragments that had started to grow leafy shoots. The paper draws attention to the biogeographical importance of this form of reproduction in mosses. Lastly, Miller has contributed an extensive review, including results of several unpublished studies of his own, on Tertiary and Quaternary paleobryology. Dr. Miller this year received a grant from the University of Michigan Biological Station to pursue a project on the role of Sphagnum moss in hydrosere. He undertook field and laboratory studies in Michigan during June. Miller lectured at New York State Museum and twice at the University of Maine.

Professor Wood, jointly with Professors Siebens and Welschmeyer, taught Biology 18, Diversity in the Plant Kingdom, in the fall semester.

Michael J. Donoghue, a former student of Professor Wood, submitted his thesis, entitled "Systematic Studies in the Genus *Viburnum* (Caprifoliaceae)," and it was sustained. Donoghue has been appointed Assistant Professor of Botany at the University of California, San Diego. His interest in *Viburnum* continues: The endocarps of different species are intricately sculpted, providing important taxonomic characters that can only be interpreted phylogenetically when their developmental morphogenesis is understood. This requires study of a diversity of species at all developmental stages, which would be impractical to gather from the wild on account of the worldwide range of the genus. The study is only possible on account of the comprehensive living collection assembled at the Arnold Arboretum. Dr. Donoghue, with Steven Orzack, has also been experimenting with the effects of the distinctive marginal flowers surrounding the inflorescences of some species on pollinator visits and fruit set. Donoghue presented an invited paper at the second annual meeting of the Hennig Society.

Another of Wood's students, Elizabeth A. K. Coombs, was this spring one of only eight graduate students awarded a Graduate School of Arts and Sciences Merit Fellowship, in recognition of the exceptional caliber of her research. She hopes to complete her systematic research on the *Poa secunda* complex of grasses in 1983. This is a difficult group, with widespread apomixis (production of seed without fertilization), as well as hybridization among species.

Brent D. Mishler, formerly advised by Dr. Miller and currently by Professors Wood and Stevens, was awarded a grant for doctoral dissertation research by the National Science Foundation. This year he pursued field work, in the Southwest and later in Mexico, towards his thesis topic, "Systematic Studies in the moss genus *Tortula* (*Pottiaceae*)."

Peter Alpert, formerly advised by Drs. Miller and Robert Cook, completed his doctoral dissertation, which is entitled "Poikilohydry and Desiccation Tolerance in Some Xerophytic Mosses." He is now a postdoctoral fellow in plant physiology at Stanford University.

At the living collections, Assistant Plant Propagator Peter Del Tredici has this year completed historical and propagation research on the varieties of Eastern Hemlock, *Tsuga canadensis*, for a chapter in a book on this subject. He has also completed work on seed dormancy mechanisms of the Atlantic Leatherwood, *Dircopal ustris*.

The current phase of Mr. Geoffrey Nolin's work on the collection and propagation of the nonleguminous nitrogen-fixing woody plant genera *Alnus* and *Ceanothus*, on which Professor John Torrey of Harvard Forest collaborated, was completed in January 1982. Nolin received a grant from the Percy Selden Fund.

Farther south, Professor Richard A. Howard continued his work towards the fourth volume of his *Flora of the Lesser Antilles*, in which the treatment of Dicotyledons begins. Proceeding too is an interpretation of the unpublished eighteenth century Hortus of Alexander Anderson, second director of the botanical garden on the island of St. Vincent that is celebrated for the introduction of the breadfruit into the New World through the efforts of Captain Bligh. Dr. Howard is also assembling lists of modern nomenclature for the illustrations in Aublet's *Histoire des Plantes de la Guyane Franiaise* (1775), and for Catesby's plates in *Plants of the Carolinas and Bahamas* (1731-43). Dr. Howard is preparing revisions of *Polygonaceae* for the

Flora of Venezuela and Flora Mesoamericana and, with French collaborators, a *Dendrologie des Petites Antilles*.

Professor Howard offered a new undergraduate course, Biology 271, Topics in Plant Morphology, in the 1981 fall semester. This course made extensive use of the living collections of the Arboretum for laboratory classes. Howard assisted Professor P. B. Tomlinson with Biology S-105, Tropical Botany, which is based at the Fairchild Tropical Botanical Garden, Miami, and gave a guest lecture in Professor Richard Schultes' course, Biology 104, Plants and Human Affairs. Dr. Howard advises two graduate students.

During October and November 1981, Dr. Bernice Schubert was in Mexico. She attended the eighth Mexican Botanical Congress at Michoacan, where she was conferred honorary membership to the Sociedad Botanica de Mexico in recognition of her work on its flora. Dr. Schubert also spent some time at the Instituto de Investigaciones Sobre Recursos Bioticos at Xalapa, Veracruz. There she collaborated with Victoria Sosa on *Dioscoreaceae*, and Rocio Jimenez on *Begoniaceae* for the Flora of Veracruz. She also worked with Oswaldo Tellez, Universidad Nacional de Mexico, on *Dioscoreaceae* for Flora Mesoamericana. She made further progress in the curation of the Temple Clayton collection of *Dioscoreaceae*, a gift to the Arnold Arboretum reported in the annual report for 1979-80; and towards treatments of *Desmodium* for the Leguminosae of Oaxaca, and of *Begoniaceae* and *Dioscoreaceae* for the Generic Flora of the Southeastern United States.

### East Asia

Dr. Peter Ashton completed a monograph of Far Eastern *Dipterocarpaceae*, which is to be published in Flora Malesiana this year. With A. Savage, he submitted for publication a paper on the population structure of four endemic palms of the Seychelle Islands. With Dr. C. V. S. Gunatilleke of the University of Peradeniya, Sri Lanka, he is nearing completion of two papers on the historical and ecological biogeography of the endemic flora of Sri Lanka. Ashton attended the ninth general meeting and conference of the International Association of Botanic Gardens, held at Canberra, and the thirteenth International Botanical Congress in Sydney in August 1981. At the latter, he convened a symposium on the breeding systems of tropical trees and presented a paper. In April 1982, Ashton attended a symposium on tropical ecology at the University of Leeds, England, at which he contributed a paper with Dr. I. C. Baillie of North London Polytechnic. He lectured this year at Suffolk University, and at the Ecosystems Center, of the Marine Biological Laboratory at Woods Hole. He also contributed to a course in tropical forest ecology at the Yale School of Forestry and Environmental Studies. In March 1982, Dr. Ashton was elected President of the New England Botanical Club.

With Professor Rolla Tryon, Professor Ashton taught Biology 147, Biogeography, again this spring; he gave a guest lecture in Professor Schultes' course, Biology 104. He supervised undergraduate John Cuevas in an advanced reading course (91r) on the subject of development in the tropics, and Melissa Holbrook in a Malay language course.

Graduate student Paul Cox, jointly advised by Professors Solbrig and Ashton, was awarded a doctorate of philosophy in 1981 and accepted a postdoctoral fellowship at the University of California, Berkeley. Steven Rogstad and Paul Rich, in their second year as graduate students, passed their qualifying examinations and began research under Ashton's

supervision. Rogstad, who is studying the biosystematics of a group of Far Eastern forest understory trees in the genus *Polyalthia*, (*Anonaceae*) made a successful preliminary visit to Malaysia and Papua New Guinea in order to test the feasibility of his project. Rich, who is jointly advised by T. J. Givnish, is interested in the measurement of canopy structure. He participated in a graduate course of the Organization for Tropical Studies in Costa Rica. Another graduate student, Gordon Congdon, has joined Ashton's group to pursue research in dipterocarp biogeography. A Harvard graduate, Congdon has recently returned from two years in peninsular Thailand, during which he has been associated with the Prince of Songkhla University.

Professor Peter F. Stevens continues his systematic research in Far Eastern *Clusiaceae*, subfamily *Calophylloideae*. He is currently addressing problems of species definition in the complex and little known, largely understory, tree genus *Mesua*. He has also surveyed three other small genera in the subfamily and begun an analysis of their relationship with the mainly neotropical family *Bonnetiaceae*.

Stevens has developed an interest in the history of systematics. An understanding of conceptual developments during the eighteenth, and early nineteenth, centuries in the broader context of the scientific thought of the period is allowing him to approach in a new way the serious epistemological problems that have hampered systematics for the last century. His manuscript, reviewing philosophical relationships in the nineteenth century between crystallography and botany and, especially, the thinking of the great Swiss botanist Auguste de Candolle, has been accepted for publication. The discovery in our library of a rare and forgotten text of this period by Augustin Augier, in which the relationships between plant taxa were approached in a novel way for the time, has led to another paper. Stevens is also interested in the differences between the botanical and zoological approaches to systematics.

This year, Stevens was invited to present a paper at the second International Rhododendron Conference, held at Edinburgh. While on that assignment, he visited the herbaria of the British Museum and the Royal Botanic Gardens at Kew, and conducted a seminar at the latter. The Systematics and Biogeography Discussion Group, organized by Professor Stevens and Professor W. L. Fink of the Museum of Comparative Zoology, continues to act as a lively forum for discussion among Harvard faculty and students.

Professor Stevens was one of three Harvard faculty to be awarded a Phi Beta Kappa prize for outstanding teaching. He taught Biology 148, Systematic Biology, again this year with Professor Fink. He also supervised a student for an advanced reading course (91r). Stevens advises four graduate students: Jeffrey Hart, jointly with Professor Schultes; Brent Mishler with Professor Wood; and Elizabeth Taylor and Anna Weitzman.

Dr. Stephen Spongberg, in collaboration with Dr. David Boufford of the Gray Herbarium, has had primary responsibility for preparing the extensive collections made in the western Hubei Province of China during the 1980 Sino-American Botanical Expedition, and for producing the joint report that is to be published in the *Journal of the Arnold Arboretum* early in 1983. Five botanists from the People's Republic of China have been spending a year at U.S. institutions, two of them at the Arnold Arboretum, on an exchange visit as part of the same collaboration between the two countries. In spring 1982, Spongberg and Boufford organized an eight week field expedition to the Southeastern United States for the Chinese group, during which specimens were collected for exchange.

With Dr. Bruce Bartholomew at the University of California, Berkeley, Spongberg has prepared a paper on the native occurrence of *Metasequoia glyptostroboides*, the Dawn Redwood, and with Dr. Boufford a bibliographic and historical review of the journal *Acta phytotaxonomica sinica*, to be published in *Taxon*. Ongoing research includes a treatment of *Saxifragaceae* for the Flora of the Southeastern United States and continued work on the Asian species of *Sorbus* and *Hartia*.

Professor Cheng Chong, who is Assistant Director of the Wuhan Institute of Botany, Academia Sinica, and Professor Ying Tsun-shen, of the Institute of Botany, Academia Sinica, Peking, are the two botanists on the collaborative exchange between the United States and the People's Republic of China who are spending a year as Mercer Fellows at the Arnold Arboretum. Both arrived in October 1981. Ying is working in association with Dr. Boufford. Cheng has been undertaking a study of the Asian species of the tree genus *Staphylea* (*Staphyleaceae*), with Drs. Spongberg and Weaver. In addition, he has been examining our herbarium material from central China. Ying has been studying the North American and East Asian species of *Diphyllea*, and has been examining our type materials of other Chinese taxa in the *Berberidaceae*, which he will be treating for the Flora of China.

Two other botanists from China joined the Arnold Arboretum as Mercer Fellows in February 1982. Professor Li Chao-luan, from the Chengdu Institute of Botany, Academia Sinica, is collaborating with Dr. Spongberg in a review of certain critical groups in the rosaceous subfamily *Prunoideae*, with the eventual goal of preparing a phylogenetic analysis of the subfamily and a monograph of *Prunus*. Dr. Stevens has been acquainting Li with current methodologies for phylogenetic analysis. Professor Chu Ko-ling, from Gansu Teachers College, has been working with Mrs. Ashton and Shiu-ying Hu on an analysis of intergeneric relationships in the tribe *Atriplicinae*, family *Chenopodiaceae*. An account of the family he published earlier in *Flora of China*. He has brought to the Arnold Arboretum herbarium material and viable seed of what appears to be an undescribed genus, highly unexpected in this well known weed family, for which he will prepare a formal description.

All four of our Chinese colleagues have been gaining experience in modern techniques of propagation in association with our propagation staff at the Dana Greenhouses.

Other botanists from the People's Republic of China visited the Arboretum this year. Among them, Professor He Ting-nong, from the Quinghai-Xizong, or Tibetan Plateau, Institute of Biology, spent seven weeks, during which she was able to examine the material of *Gentianaceae* in the Arnold Arboretum and Gray Herbaria. She annotated much of our Asian material, which comprises some two hundred species in twenty genera, and also examined the twelve species of the North American genus *Frasera*, which is closely allied to East Asian taxa. Technical assistance was provided by Curatorial Assistant Emily Wood of the Gray Herbarium, and by Dr. Stevens.

## PUBLICATIONS

A beginning has been made to reorganize our publications program, with the ultimate aim of financial self-sufficiency. Ms. Elizabeth Schmidt, Managing Editor of the *Journal of the Arnold Arboretum*, was appointed Manager of Publications in February 1982. With assistance from Administrative Officer Franklyn Stevens, subscription billing has been computerized.

The Publications Committee, under the chairmanship of Dr. Bernice Schubert, discussed future design and subject content policy for *Arnoldia* prior to a planned expansion of circulation. After a prolonged history of delayed publication, Editor Carl Lobig had brought the magazine back on schedule and was actively developing future policy at the time of his tragic death in February. Among other changes, he had implemented a transfer from six to four issues a year, with a separately published annual report. Ms. Eileen Dunne was appointed Editor in June.

Previous delays in publication of the *Journal*, occasioned by an abnormally large Volume 61, were overcome, and three parts of Volume 62, and two of Volume 63 appeared during the fiscal year. In order to overcome scheduling difficulties, and for financial reasons, it has been decided to change printers for the *Journal* to the Allen Press, of Lawrence, Kansas, who are specialists in the production of biological journals.

## CURATION

### The Herbaria

Following prolonged delays due to faults in the gaskets (sealing devices) and locking mechanisms of the new herbarium storage compactors, the whole collection in the combined herbaria was transferred to new storage space. Thanks to careful planning by Manager Michael Canoso, the move was trouble-free and accomplished between January 25 and June 2, at the rate of thirty thousand specimens a day. Staff from the Farlow, Gray, and both herbaria of the Arnold Arboretum, with graduate students and Arboretum volunteers, gave their assistance. Space equivalent to one-third of the present collection is now available and will be adequate for the foreseeable future.

Collections that have long lain in storage in Cambridge are now being divided for distribution, and staff continue to divide the Chinese collections that have been in storage in Jamaica Plain. Altogether, more duplicates have been distributed than in any year since 1974-75.

Another major task completed has been the interleaving of entries in the current supplement of the quinquennial *Index Kewensis*, the index to the original descriptions of all published phanerogams, with a ten volume alphabetized copy. This three-month operation was implemented by Gray Herbarium Curatorial Assistant Emily Wood, ably and meticulously assisted by Arnold Arboretum volunteers C. J. Patterson and Barbara Emeneau.

The project to identify type specimens in the combined herbaria, which is supported by the National Science Foundation curatorial grant, is the responsibility of Dr. David Boufford who, with Ms. Wood, joined the staff of the Gray Herbarium this year following the resignation of Dr. Philip Cantino. Annotation of our holdings in families that have received recent monographic study has continued and has led to identification of further type material. A computerized management program for the type collection has been developed and is being tested. The records are being standardized with those of the Register of Type Specimens at the Department of Botany at the Smithsonian Institution so that the two can eventually be integrated.

At the herbarium of cultivated plants at Jamaica Plain, the cabinets and storage boxes on the third floor were variously moved to herbarium space on the second and fourth floors or transferred to Cambridge for insertion or distribution. This has allowed expansion space for the horticultural library. The herbarium has also gained, as a consequence of building reorganization, a plant drying room and a specimen preparation room, both of which are now functional. A freezer has been installed in Jamaica Plain for disinfestation.

Closer integration of the living collections with the herbaria continues. One aspect has been the reestablishment of a herbarium voucher program, preparatory to renewed verification of the living collections as part of their restoration. Under the supervision of the Curatorial Assistant responsible for herbaria of cultivated plants, Ms. Ida Hay, volunteers greatly expanded the collecting program. The program this year has in all provided about 6,000 duplicates from 711 accessions, for distribution to other institutions.

Annual Statistics for Arnold Arboretum-Libraries

Accessions

Monographs: purchased	171
acquired through gifts or exchange	234
New continuation volumes (e.g. journals): purchased	8
acquired through gift or exchange	11
Volumes added: Subtotal for Cambridge	208
Subtotal for Jamaica Plain	216
Total volumes and pamphlets added	424
Microfilms added	0
Microfiche added	0

Processing

Titles: catalogued	419
Titles: recatalogued	13
Total, titles catalogued and recatalogued	432
Volumes bound: monographs	67
serials	324
Total volumes bound	391

Inventory, June 30, 1982

Total number of volumes and pamphlets in the Arnold Arboretum libraries at Cambridge and Jamaica Plain	88,588
Total, microfilm reels	221
Total, microfiches	10,867
Number of continuation titles: on order	567
received through gift or exchange	365
Total, continuation titles received	932

Service

Total volumes circulated within Harvard	5,426
Total interlibrary loans out with Harvard library system	3
Photocopies supplied in lieu of interlibrary loans	2,748
Interlibrary loans received from outside Harvard	5
Photocopies received in lieu of loans	500
Number of reference requests serviced	632

Service

Number of sheets sent out:	On loan to specialists		27,075*
	On exchange		3,443
	As gifts		530
Number of specimens received on loan:	For staff	4,200*	
	For students	2,925*	
Total received on loan			7,125*
Number of loaned specimens returned			23,000*
Number of orchid specimens placed on indefinite deposit in the Oakes Ames Orchid Herbarium			16

\*Asterisked figures refer to the combined holdings of the Arnold Arboretum and Gray Herbaria.

Annual Statistics for the Arnold Arboretum Herbaria

Accessions

Specimens received during the year:	By exchange	10,019
	As gifts	1,800
	Through subsidy	1,978
	In exchange for identification	1,429
	Through special exchange	800
Total accessions (all to the Cambridge herbarium)		16,026
Provenance of accessions:	America north of Mexico	1,154
	Rest of continental America	513
	West Indies	1,309
Subtotal		2,976
	Temperate Asia	3,597
	India	1,091
	Western Malesia	5,448
	Eastern Malesia	1,532
Subtotal		11,668
	Polynesia	254
	Australia	935
	Africa	95
	Europe	98

Processing

Number of sheets	Through mounting	10,852
	Through direct incorporation	39
Total number of sheets incorporated		10,891
Number of sheets removed		1
Number of sheets repaired		102
Number of specimens annotated by staff		5,677*
Number of specimens sent on loan for identification		21
Number of type specimens pulled from general collection		344*

Inventory, June 30, 1982

Number of sheets in herbaria:	Cambridge	1,123,523
	Jamaica Plain	168,893
Combined total		1,292,416

Another aspect has been the reestablishment of the wood collection program, abandoned since the thirties, from the living collections. Dr. Phillip Rury, an Atkins Fellow, with assistance from volunteer Kevin Tremblay formulated procedural guidelines for the collection of herbarium vouchers and wood specimens for plants that will be deaccessioned in the season following. Collection of trunk segment specimens has begun, and these are being incorporated in the Bailey-Wetmore wood collection and distributed to the United States Department of Agriculture timber research laboratories at Madison, Wisconsin. Specimens collected from the living collections in former years and deposited in the Bailey-Wetmore collection, representing 543 taxa, have been identified and inventoried. Herbarium vouchers are being sought, and so far over nine-tenths have been rediscovered and cross-referenced. In many cases the plants themselves survive, and will be recollected.

The Arnold Arboretum has in storage at the Bailey Wetmore laboratory a complete set of C. S. Sargent's Tenth Census wood collection of North American forest trees. These have never been accessioned into the main collection. With Tremblay's assistance the 1,300 specimens, representing 410 species, were inventoried and arranged in systematic order for labeling.

Ms. Colleen Sliney, Secretary, resigned during the year. Ms. Sandra Lord was appointed in her place.

### Libraries

The Librarian, Ms. Barbara Callahan, in consultation with the Library Committee, redefined the job descriptions of staff to accommodate the loss of one-half position the previous fiscal year. The procedures manual she has devised has been reviewed and approved by the committee. It will continue to be revised as needs require.

The activities of the library staff are summarized in the accompanying table. Altogether, there was a net 1 addition of 746 volumes and pamphlets added by cataloguing and binding.

Twenty-one titles in the Arnold Arboretum library, representing 24 volumes, were bound through support provided by the National Science Foundation Grant for curation of the herbaria.

The reshelving of the monograph collection in new space provided by the building extension is nearing completion. Paging service for 943 items was provided to users without stack privileges, of which 458 were Harvard students. An increase in the minimum charge for photoduplication requests has allowed the library to meet the cost of providing this service.

We have been fortunate this year to receive an endowment, given by and to be known as the Mary M. Wakefield Book Fund, to acquire titles for the living collections library in the Hunnewell Building at Jamaica Plain.

The reorganization of library space at Jamaica Plain was reported last year. New space provided by the transfer of herbarium cabinets from the third floor will be refloored and ready for the erection of library shelving in the coming autumn. In preparation for completion of this reorganization, which entails shifting and expanding the space for the journal collection, Cambridge Library Assistant Martha London has been annotating the holdings of German and French journals that cannot presently be integrated in our collections. During the renovation

of the Hunnewell Building, many items of historical interest were rediscovered and incorporated in the archives, which now have space allotted so that they can be maintained as a unified collection.

We have received yet further assistance in the library at Jamaica Plain from volunteers, who have assumed a pivotal role in the maintenance of the book collection and the curation of the archives. Cora Warren's quite exceptional work with the important and very extensive photograph collection now enables us to fill photograph requests without time-consuming searches. A survey and finding list for the archives is being prepared by Carin Dahlman and Caroline Newman, who are qualified library scientists with previous experience in special collections. Muriel Bergdorf has continued, and now almost completed, a card index of the letterbook correspondence of C. S. Sargent, which contains in excess of 800 entries.

Ms. Callahan has been made a member of the Harvard University Library Preservation Committee. She attended the International Conference on Preservation Microfilming, which was held at Harvard in October 1981, and the fourteenth meeting of the Council on Botanical and Horticultural Libraries, held in June 1982 in Washington, D.C.

Ms. Sheila Geary, Horticultural Research Archivist, lectured at the Harvard Graduate School of Design on F. L. Olmsted's design plan for the Arnold Arboretum. She continued planning research for the guidebook to the Arnold Arboretum, which will be discussed under public courses and information.

### Living Collections

Supervisor Gary Koller, in consultation with Superintendent of Buildings and Grounds, Henry Goodell, and the living collections staff, have drafted an integrated plan for the management of the living collections, which was tested in summer 1982. Next winter, a long-term management plan and procedures manual is to be drafted.

Very satisfactory progress was achieved towards standardization of the records for the permanent collection and their entry into the Onyx computer at the Hunnewell Building, a project supported by a curatorial grant for the living collections from the National Science Foundation. At year's end, 11,906 of the 20,000 records were ready to be placed on file. Following inevitable preliminary problems, the computer is now functioning as required. A structured file system has been created and is operational for storage and retrieval of plant information. Records for over 2,500 plants have been entered.

Particular attention was paid to the restoration of the following collections and areas of the grounds:

A start was made to the evaluation of the shrub collection. The intention is to remove unwanted cultivars, to dig or repropagate desired taxa prior to replanting in the current systematic sequence in the main collection, and ultimately to replace the present shrub collection with an outstanding synoptic collection of the *Rosaceae*. This year the section adjacent to the Forest Hills Gate was thus treated, approximately two thirds of the shrubs being removed and the area temporarily returned to grass. The section of the vine trellis nearest to the gate was also dismantled and removed, the vines having been repropagated. In addition, a number of invasive rosaceous shrubs were planted on the steep hillside overlooking the shrub

collection abutting the State Biological Laboratory lands, where they can be controlled and will stabilize the soil surface.

The declining *Populus* collection was repropagated several years ago. The resulting plants were set out this spring among existing collections, which will remain on Peter's Hill as an anomalous family in the Bentham and Hooker classification. The entrance nearby has been renamed the Poplar Gate.

The *Myricaceae* collection, which had almost ceased to exist, was reestablished at the entrance to Oak Path, an ecologically as well as systematically appropriate location, with plantings of *Myrica rubra*, *M. pennsylvanica*, and *Comptonia peregrina*.

The *Ilex* collection was reestablished near its traditional location with several deciduous and evergreen species. Plantings along Willow Path were strengthened by further *Salix* and *Alnus* species, and the mesophytes *Cephalanthus occidentalis* and *Acer negundo*. Two major interpretive plantings were designed and implemented in relation to the restoration of the paths. One was placed at the beginning of Oak Path. It has been devised to direct visitors to the path entrance. The other, at the entrance to Willow Path, is an interpretive planting of wet woodland taxa. The Willow and Oak Paths are now among the best frequented parts of the Arboretum.

Oriental-American pairs of taxa were planted along the new Arcto-tertiary Path as a memorial planting to the late Mrs. Philip Hofer.

A number of areas that have been declining, or that were labor intensive, have been structured. These include the old roadside border plantings of *Cornus racemosa*, *Rosa carolina*, and *Chaenomeles speciosa*, and scattered low juniper plantings near Bussey Brook. The Forsythia collection, a major public attraction, had become congested and infested with bramble, and has been redesigned with a traversing path, selectively repropagated, weeded and fertilized. Part of the Chinese Path plantings on Bussey Hill have been evaluated, some plants removed, and a new access path built through them.

Volunteer Julie McGeoch has started a program to bring hardy endangered woody plant species of the world into cultivation at the Arnold Arboretum as a priority. The eventual aim will be to devise means to propagate them, distribute to other collections, and, where desirable, reintroduce into the wild. A modest start has been made, in collaboration with the World Wildlife Fund, the International Union for the Conservation of Nature and Natural Resources, and the U.S. National Park Service.

Under the able supervision of volunteer Dr. Richard A. Warren, a project aimed at reverifying our extensive conifer collection is in process. Documentation of nomenclature has been undertaken, and verification of the identity of our holdings is proceeding. This involves photographic documentation of the many taxa in which habit provides important taxonomic characters, as well as preparation of herbarium voucher specimens. Horticultural trainee John Whitney has undertaken extensive label replacement. Many conifer genera contain taxonomic problems awaiting resolution, and the aim is to record where problems of identification still exist as an aid to future research rather than attempt a definitive and final determination of all individuals. Some 200 plants have been verified to date. The Arboretum still contains many areas in need of restoration. Progress is hampered by financial and staff limitations. In spite of this, visitors have expressed pleasure in what has been accomplished.

The snowstorms in early December resulted in major structural damage to many plantings owing to the wind and weight of snow. The lindens were badly affected, and one *Tilia cordata* "Pyramidalis" split apart. June was exceptionally wet and operations were held up, though the Arboretum looked unusually fresh and green through the summer.

The Dana Greenhouses, and adjacent nursery area, continue to be near saturation on account of the many plants resulting from recent expeditions on the part of the staff of the Arnold Arboretum. This year again, an exceptional number of new taxa were received. Assistant Propagator Robert Nicholson made a collecting expedition to the Great Basin region of the Rocky Mountains, where he obtained 250 collections of seed, and 50 plants, vouchered with herbarium specimens. In addition, a major increase has taken place in repropagation of declining plants in the permanent collections, prior to their replacement as part of the restoration of the collection. The National Science Foundation curatorial grant for the living collections has enabled us to install a computer terminal at the greenhouse headhouse. Our nursery records are now standardized with those of the permanent collection, so that new acquisitions for propagation will be entered into the same file from the outset.

During the year, 102 taxa were procured to acquire propagation data. Assistant Propagator Peter Del Tredici has continued work on the vegetative propagation of *Ginkgo biloba* with the aim of overcoming the topophysis (inability to grow upright) that cuttings of this species often show. Robert Nicholson has been experimenting with the propagation of Douglas Fir, *Pseudotsuga menziesii*, cuttings, and members of the eastern North American and temperate Asian genus *Pieris*.

Head Propagator Jack Alexander has continued hybridization of lilacs resistant to mildew and leaf roll necrosis. Thanks to volunteer Dr. Richard Dwight, his continuing inventory of susceptibility is being entered into file on the Onyx computer.

At the Case Estates there has been a temporary expansion of the nursery area to nearly ten acres to accommodate the large number of new accessions. A further section, additional to that prepared in the previous year, was ploughed. The spring transplanting to the Case Estates introduced approximately 1,000 plants into the new nursery area, and a further 1,000 cuttings, seedlings, and grafts, which were transferred from the greenhouses to the Saran house.

The living collections staff has been active in assisting the restoration of historic plantings in the Boston area. Gary Koller, Supervisor of the living collections, was a consultant in the establishment of a period garden at the Shirley-Eustis House, Dorchester, and in the solution of maintenance problems in the garden at the Adams National Historic Site, Milton.

Mr. Koller advised on curriculum development for a new major field of study, horticulture as a fine art, at Salve Regina, The Newport College, Rhode Island; on grounds maintenance at the State Biological Laboratory; and on landscape alterations at the Walker School, Newton. Two historic American elms, whose roots are weakening the foundation of the Shaw Memorial on Boston Common, were evaluated and repropagated. Assistant Propagator Peter Del Tredici advised the Friends of Boston Public Garden in a successful effort to plant a new ginkgo tree on the Common, replacing an ancient specimen that had been cut down in 1947. Mr. Charles Mackey of our grounds staff prepared trunk labels for 300 trees in the Boston Public Garden.

Grounds staff member Bruce Munch returned from four months training in grounds care at Wakehurst Place, an estate administered by the Royal Botanic Gardens, Kew.

Assistant superintendent J. Patrick Willoughby was awarded an exchange fellowship by the National Federation of Garden Clubs. This enabled him to study at the University of Reading, England, to gain work experience at the Royal Horticultural Society's garden at Wisley and also at Kew, and to visit estates and gardens throughout Britain.

Maurice C. Sheehan, of the grounds staff, served as Acting Assistant Superintendent during Willoughby's absence. Henry S. Goodell, Superintendent, attended Park Management School sponsored by North Carolina State University, and, with Assistant Supervisor James Burrows and Superintendent of the Case Estates Thomas Kinahan, the fall meeting of the American Association of Botanic Gardens and Arboreta.

## Annual Statistics for the Arnold Arboretum Living Collections

### Accessions

New accessions received into the nursery	1,675
Taxa represented in new nursery accessions	940

### Processing

Plants accessioned into the permanent collections	620
Plants in the permanent collections repropagated prior to removal	614
Plants deaccessioned: missing or removed	512
Deaccessioned plants from which wood specimens were collected	25
Accessions representing taxa new to the permanent collections	253
Taxa occurring in nature represented in new accessions	216
Cultivars represented in new accessions	12
Total number of taxa represented in new accessions	228
Accessions readied for verification through collection of herbarium vouchers	711
Label replacements in permanent collections:	
Record Labels	1,500
Display Labels	400
Total:	1,900

### Inventory: June 30, 1982

Total number of woody plant individuals and massed single taxa groups, in the permanent living collections <i>(Total number of accessions unavailable)</i>	14,514
Number of species represented	2,519
Number of infraspecific taxa found in nature	1,046
Number of entities named as cultivars, including spontaneous forms	2,644
Total number of woody taxa in the Arnold Arboretum	6,209

### Service

Taxa propagated for staff research	255
Taxa distributed to other educational and research Institutions	494
Taxa distributed to private and commercial recipients	897
Total number of taxa distributed	1,391
Total number of shipments distributed	155

Professor Richard Howard was this year elected to Honorary Membership of the Horticultural Club of Boston. Gary Koller served as cochairman of the 1981 Annual Meeting of the Garden Writers of America held at Cambridge; he presented a paper at the 1981 New England Museums Conference at Old Sturbridge Village, and, with Education Coordinator Katherine Terzi, attended the 1982 Annual Meeting of the American Association of Botanical Gardens and Arboreta at Vassar College. Koller offered two courses in plant identification for the Radcliffe Seminars in Landscape Design.

The Arnold Arboretum was sorry to lose two members of the staff of the Case Estates. Mr. Ralph J. Benotti, member of the grounds staff, retired after fifteen years of service. Benotti came with experience in the nursery business, and had been a skilled and productive member of staff. James A. Burrows, Assistant Supervisor of the Living Collections, resigned to return to California.

During his two years at the Case Estates he revolutionized nursery management and made substantial progress towards a management plan. Mr. Thomas Kinahan, formerly Superintendent at the Case Estates, has been promoted to Assistant Supervisor.

On January 18 there was a fire at 163 Walter Street, a house within the Peter's Hill section of the Arboretum. The building was secured by the grounds staff and has subsequently been repaired.

## PUBLIC PROGRAMS

This year our public programs have achieved a strength comparable to that of public programs in similar institutions in other parts of the country. They are still in active expansion, and more has been accomplished through them than was planned two years ago when our long-range plan was formulated. This is particularly gratifying in view of the unfavorable publicity that the Arnold Arboretum received at the beginning of the spring season following incidents of violence.

Our public programs have been aided this year by a grant towards operating costs, at the maximum level, from the Institute of Museum Services. Ms. Wendy Marks, Manager of Public Services, is Principal Investigator.

### Public Relations

The Arnold Arboretum has always served a devoted constituency of plant and parkland lovers, the Friends, but has sought the recognition and support of the general public, and particularly its neighbors, with mixed success. The incidents of the spring emphasize our close interdependence with our neighbors. These tragic occurrences have led to a consolidation of resolve that a lasting solution must be found. Our plan is to appoint uniformed [park rangers](#), beginning next spring, (see Public Facilities, below).

When a serious stabbing was reported in the Arboretum one morning in early April, and in the following weeks one rape and two attempted assaults, the adverse publicity received was potentially disastrous notwithstanding that all incidents had occurred at night or at other times when there are few visitors. Fortunately, our contacts with the media were already established,

and the management of news, though difficult, did not prove impossible. Some positive coverage did appear, including a sympathetic article in the *Boston Globe* and a discussion on Channel Five's "Chronicle." Thanks to the contacts established by Public Relations Coordinator Kate Nixon with many community organizations within Jamaica Plain, our neighbors were eager and willing to work with Arboretum staff towards a solution. A lasting collaboration has been established.

Boston City Councillor Maura Hennigan, who is Chairman of the Public Safety Committee, called a hearing at Boston City Hall on May 5, and a second, for the neighborhood, at the Hunnewell Building on May 19. Increased police surveillance, which has included motorcycle patrols in the early morning when most of the incidents had taken place, was requested and granted. On May 26 a collaborative group of neighbors and staff, called the [Arboretum Committee](#), was inaugurated. This has established two working groups, one to monitor security and the other to raise funds for the ranger program. Through the committee, the morning jogging and walking fraternity has become coordinated, flyers with information on safety published and circulated, a self-defense course organized, and door-to-door solicitation for funds undertaken on the initiative of our neighbors. Public service announcements on television, and other publicity concerning the park ranger program continue.

Other community activities have included a jointly sponsored Workforce breakfast at the Hunnewell Building, a volunteer cleanup of the Peter's Hill area, a spring event for neighborhood children and, in association with the Franklin Park Coalition, an Arbor Day tree planting ceremony in Franklin Park, attended by the Commission of Parks and Recreation, at which tree seedlings were distributed to elementary school students.

A large crowd attended Lilac Sunday and enjoyed the perfect weather we had this year. We now begin to see how active and consistent public relations affects every aspect of our work. Visitation has recovered and is increasing, as had participation in our programs and thus, as a consequence, the safety of the collections themselves. Through our approaches to the community our links with the University and with government agencies have also been strengthened.

On June 1, Kate Nixon assumed the Chairmanship of the Public Relations and Education Committee.

### Public Facilities

The Arnold Arboretum, which is stationed on City of Boston Parks land, is unique among Harvard's museums in its public visibility. An active public program is crucial to the very survival of our institution, and the installation of facilities that include secure parking, a visitor center, and picnic areas are necessary adjuncts. This year several modest projects were implemented, while awaiting the report of financial consultants and decisions by the University that will influence the future direction that our institution should take.

Work began on the visitor center within the Hunnewell Building in June 1981, and was completed in October though a number of smaller renovations have continued in the rest of the building. The new public and office space, though still cramped, has otherwise proved satisfactory.

A gift shop was opened in the Hunnewell Building in November. Early indications suggest that it will move into balance within two years.

Several projects have been started in collaboration with the City of Boston Department of Parks and Recreation. Ms. Wendy Marks, Manager of Public Services, worked with Deputy Police Superintendent Jack Gifford of West Roxbury Station on a grant proposal to acquire radio equipment and hire rangers. At the same time, approval was sought from the city for a voluntary admission charge, to be levied on behalf of the city, which would provide continuing funding for the rangers and for city maintenance responsibilities. Following the appointment of Mr. Robert McCoy as Commissioner for Parks in February 1981, conceptual approval was given for the proposed park ranger service within the Arnold Arboretum, a manned parking space at the Hunnewell Building, and a voluntary admission charge. Formal approval for the parking space and admission charge was given in May 1981. Secure parking was implemented during the 1982 visitor season. A voluntary admission charge will await initiation of the ranger program.

It is our plan to install uniformed park rangers, provided with radios and on horseback for high visibility, and thoroughly trained to provide information as well as surveillance for visitors. The violence that occurred in the Arboretum late spring led, with Commissioner's McCoy's encouragement, to a close alignment between the proposed Arnold Arboretum project and a project of the Massachusetts Association for Olmsted Parks. The aim of the latter is to install Olmsted Park Rangers on foot in Boston Common and the Public Garden and, eventually, throughout the Boston Parks system. The association had not been successful in raising sufficient funds to inaugurate their program this year. Publicity concerning events at the Arboretum, and the steps taken to improve security, served to put the whole ranger program before a wider public. A campaign has now begun to raise funds for the simultaneous inauguration of Olmsted Park Ranger programs in the Arnold Arboretum and the area around Boston Common in spring 1983. It is still hoped that this will pioneer a service that will eventually expand throughout the Boston Parks system.

At the Case Estates, a business plan was drafted in collaboration with Assistant Supervisor James Burrows and Mr. August Schumacher, Associate of the Arnold Arboretum and an expert on the economics of small farms at the World Bank. A number of ways in which land and buildings in excess of our nursery requirements can be put to profitable use have been examined. A first experimental year, in which five acres were farmed for fruit and vegetables, proved successful, and a further five were therefore ploughed.

Wendy Marks has represented the Arnold Arboretum at meetings of the Franklin Park Coalition, on whose board she now serves, and at meetings of the Southwest Corridor Subway Project. The latter has experienced major changes in design to accommodate cutbacks though, so far, a proposed pathway between the new Forest Hills Station and the Arboretum has escaped the axe.

### Courses, Information, and Exhibits

The education program this year was designed to encourage broader public support. Programs aimed to meet the needs not only of our neighbors, but inner-city dwellers, young families, and professional nurserymen and arborists. To this end, courses were concentrated in evenings and

weekends; more were held in Jamaica Plain at the renovated Hunnewell Building, and emphasis was given to one- and two-session programs and hands-on workshops. Two series on pruning and on care of trees and shrubs, are to be offered on a continuing basis; participants will be awarded a certificate of attendance.

The table indicates that the year was marked by yet a further substantial expansion in participation.

<u>Course and Information Statistics</u>				
<u>Classes</u>		<u>1980</u>	<u>1981</u>	<u>1982</u>
Number of registrants:	Spring	370	432	600
	Fall	155	496	
<u>Information requests</u>		<u>1980-1981</u>	<u>1981-1982</u>	
Plant identifications		50	30	
Cultural		550	518	
Propagation		40	26	
Library		13	3	
Acquisition Sources		75	39	
Poison Calls		242	225	
Miscellaneous		<u>180</u>	<u>159</u>	
	Total:	1,150	1,000	

This spring two children's programs were offered. Attendance was low but enthusiastic, and the experiment will be expanded. Visitors are now provided a new Reading Center, with basic horticultural and botanical texts, in the Hunnewell Building. As another means of supplying plant information, a traveling Plant Clinic has been assembled and taken to community gatherings.

This year, nineteen summer horticultural trainees were selected from among fifty-nine applicants. The program continued on the same lines as in the previous year.

Owing to building renovations, no exhibitions were mounted in the Hunnewell Building until November. Planning for a guidebook to the Arnold Arboretum began this year, under a grant from the National Endowment for the Humanities, for which Dr. Richard Weaver is Principal Investigator. Project researchers are Horticultural Research Archivist Sheila Geary, Herbarium Curatorial Associate Ida Hay, and B. June Hutchinson, who has joined the staff as Project Researcher under the grant. The guidebook is intended to allow Arboretum visitors to understand the interdependency between human beings and plant life through the study of our living collections. Specifically, it is intended to enhance use of our collections by visitors and to further their understanding of the contributions arboreta make to society. This year, visits were paid to various outdoor museums, and advice was sought from a variety of sources. Professor Joseph Ewan, Ida Richardson Professor of Botany Emeritus at Tulane University, visited as a

consultant. Ida Hay and Sheila Geary have this year also coordinated publication of a new map brochure and the design of new map signs, which are to be placed at meeting points throughout the Arboretum.

Volunteers Corliss Engle and Mary Lou Amrhein prepared an excellent slide show on the Arboretum, narrated by graduate student Gordon Congdon, and it is now available to visitors in the Hunnewell Building. The twelve-minute show, which is portable, provides an introduction to the grounds and to the history and mission of the Arnold Arboretum.

A well-contrived guide, entitled *Trees for Urban and Suburban Landscapes*, has been entirely researched, designed, and written for the Case Estates by volunteers Lee Cooke Childs, Mabel-Maria Herwig, and Susan Cheever.

### Volunteers

Cornelia Hanna McMurtrie, who has been coordinating volunteers since January 1981, assumed a staff position as Volunteer and Tour Coordinator on July 1, 1982.

The volunteer force has grown this year to eighty-nine, forty-eight of whom donated their time on a regular weekly basis. Altogether, volunteers donated 7,000 invaluable hours towards our work. The diversity of their contributions is summarized in the following table.

## Summary of Volunteer Assignments

<u>Assignments</u>	<u>Number of Volunteers</u>
Public Programs:	
Gift Shop and Membership	5
Tours	21
Publications:	
<i>Arnoldia</i>	1
Living Collections:	
Propagation	10
Specimen Collecting	6
Verification	2
Mapping and Labeling	6
Conservation	1
Case Estates Gardening	10
Case Estates Guide	2
Herbaria:	
Cambridge	3
Jamaica Plain	1
Wood Collection	1
Libraries:	
Cataloguing	3
Archives	2
Slide Collection	5
Staff Research	2

Two training sessions were held, with emphasis on interpreting the Arboretum and its collections for visitors. A quarterly newsletter for volunteers was begun in 1981.

Over 2,800 visitors were among 102 groups that toured the grounds at Jamaica Plain and Weston this year. They included members of the American Horticultural Society, the Botanical Society of America, Brooklyn Botanic Garden, University of Washington Arboretum, Cary Arboretum, 125 Harvard alumni directors, and gubernatorial candidates. Though the number of tours increased from the previous year, a dramatic drop occurred in booking following the incidents in the spring.

The newly renovated public space at the Hunnewell Building, and the grounds at the Case Estates, Weston, are becoming popular for private receptions and other events: forty-four groups rented the former, twelve the latter this year.

### The Friends

A major effort to increase membership took place this year. Our aim is to double existing membership for, if members can be increased to 5,000, continuation of the full range of benefits currently offered will be assured in spite of inflation. Membership Coordinator Barbara Epstein welcomed a record 642 new members. However, in the process of transferring our records to computer storage a number of long-standing discrepancies were revealed, and for this and other reasons 302 names were deleted. Membership therefore stood at 2,618 at the end of the year, representing a 10 percent increase.

A new group, the Friends of the Case Estates, has been formed for members who wish to contribute their support towards our plantings in Weston. A mailing to Weston residents was generously sponsored by the Weston Forest and Trail Association and yielded 48 new members.

The administration building was rededicated November 1. Mr. Gordon Abbott, Director of the Trustees of Reservations of Massachusetts, addressed a reception in honor of the original donor, [Horatio Hollis Hunnewell](#), who more than any other individual contributed to the advancement of horticultural science in Boston.

Peter Shaw Ashton, Director