



# The Arnold Arboretum

DIRECTOR'S REPORT 1996-1997



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*Robert E. Cook, Director*

The Arnold Arboretum of Harvard University  
125 Arborway, Jamaica Plain, Massachusetts 02130



Thirty-six hemlocks (*Tsuga*) were destroyed and another one-hundred seventeen damaged in the April Fool's Day storm of 1997. John Olmsted and John Del Rosso stand beside the remains of one that predated the founding of the Arboretum in 1872.

**W**e will remember 1997 as the year of the April Fools' Day storm. On that day, when spring seemed just around the corner, a mass of moisture-laden air from the south collided with freezing air from the north to coat our collections with a heavy layer of ice. A blizzard of wet, sticky snow followed, accumulating to twenty-five inches within twelve hours. Gusts of gale-force wind twisted the ice-laden crowns of trees, causing an immense amount of canopy damage, snapping trunks in two and breaking off large, snow-caked branches with their newly emerging buds. It was the most destructive storm to hit the Arboretum since the hurricane of 1938 blew down 1,500 trees in four hours.

The next day our curatorial staff began the sad job of assessing the damage. Over 1,700 trees were seriously affected; of these, nearly 400 were completely removed during the subsequent cleanup, and the remainder underwent pruning that ranged from minor limb amputation to entire crown loss. At the end of 1997, there were still pockets of trees in our natural woodlots that awaited attention from our arborists.

Our special appeal for help met with a generous response: 532 individuals contributed \$79,101, allowing us to hire an additional arborist and purchase a new wood chipper. This vote of confidence was a great boost to the morale of our entire staff.

Nineteen ninety-seven was also a year of celebration, marking a century and a quarter in the life of the country's oldest arboretum. Despite the losses to our living collections, there was much to be thankful for: the work of the Arboretum was recognized by several public awards; a year-end surplus demonstrated the institution's financial strength; and we received our largest gift ever, an endowment to support research and scholarship on the living collections. These achievements are testimony to the institutional resilience that enables us to weather the natural challenges that sometimes complicate our mission to grow "all the woody plants hardy in the Boston area."

## **LIVING COLLECTIONS**

Between July 1, 1996, and June 30, 1997, 267 accessions totaling 605 woody plants were added to the permanent collections; of these, 73 were taxa new to the Arboretum. At the end of June, the collections included 15,634 plants belonging to 4,283 taxa: 1,628 species, 584 infraspecific

taxa, 1,781 cultivars, and 290 hybrids. We anticipate significant changes in these numbers next year when losses resulting from the April storm and the severe summer drought are recorded in the database.

Predictably, the April storm caused the most damage among conifers, although our oak, beech, hornbeam, and maple collections also suffered substantial crown loss. Among small flowering trees, numerous magnolias, crabapples, hawthorns, witch hazels, and cherries were affected. By and large the rare specimens survived the storm; most trees that required removal were duplicated elsewhere in the collections. However, one lost specimen, *Styrax japonica*, had originated from seed acquired in Japan by Charles Sprague Sargent in 1892; and a unique hybrid of the pecan (*Carya illinoensis*) and the butternut (*C. cordiformis*) was completely uprooted.

The year of weather disasters did not end with the April storm. In May a drought began that continued through September. Average rainfall was less than half of normal levels, with long periods of no rain at all. May rainfall was 2.69 inches; June, 0.68; July, 0.54; August, 2.83; and September 1.40—normal monthly rainfall during this period is nearly four inches. The drought was confined to isolated parts of the Boston region: other areas experienced the usual amount of rain. The impact of such a drought on the collections, while much less obvious and immediate than the April storm, may over several years prove to be even more destructive as weakened and root-damaged plants gradually die off.

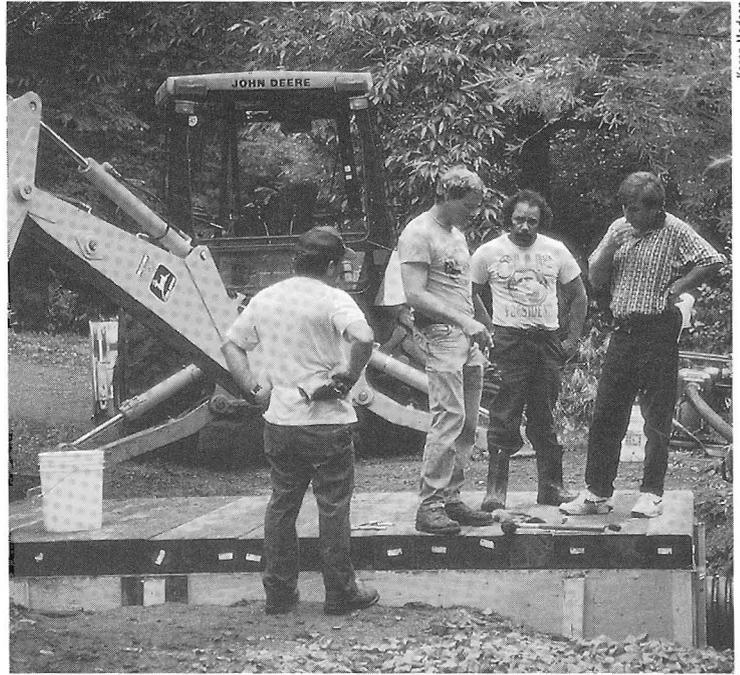
On the positive side, the dry summer weather allowed us to complete a number of landscape projects. We reconstructed two small vehicular bridges over Goldsmith and Bussey Brooks. In the Bradley Garden of Rosaceous Plants, we completed cobblestone edging around several beds and removed the adjacent service road. We rebuilt the banks of one of our small ponds to prevent future erosion.

A larger scale project, the restoration of Peters Hill, was also completed last year. We removed the existing road surface, extensively regraded the hilltop, and partially buried rustic stone blocks in the hillside to create seating that overlooks the Arboretum and the Boston skyline. Because of the very dry soil conditions, new plantings were delayed until the spring of 1998, when a variety of oaks (*Quercus alba*, *Q. bicolor*, *Q. coccinea*, *Q. rubra*, *Q. prinus*) and native understory shrubs will extend the existing natural woodland to the top of the hill. In

addition, a grove of *Cladrastis kentukea* (yellowwood), *Gymnocladus dioica* (Kentucky coffee tree), and *Styphnolobium japonicum* (formerly *Sophora japonica*, the Japanese pagoda tree) will be added to the existing group of leguminous savannah trees.

The installation of orientation signage throughout the Arboretum comprised an even more extensive project. For years first-time visitors, as well as many veterans, have gotten lost on the grounds. The curvilinear roads laid out by Frederick Law Olmsted combined with the large size of the grounds (265 acres) and the lack of signage created many opportunities for confusion. Even the visitor with a map in hand had little inkling of distances between destinations or of his own location within the landscape.

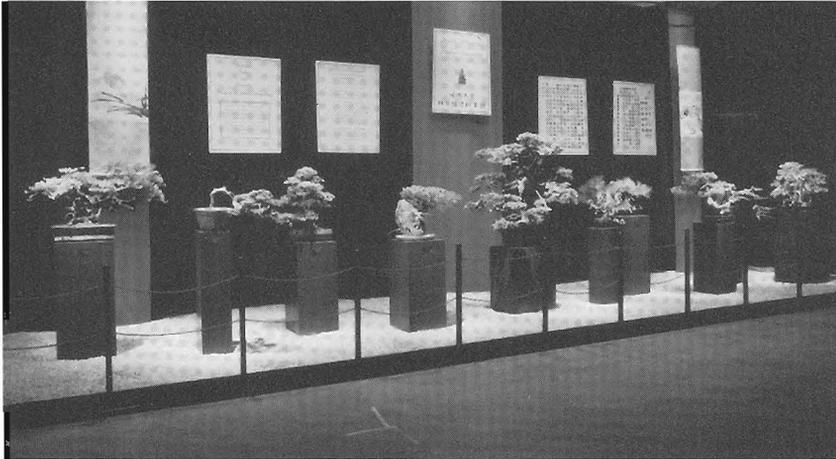
To remedy this situation, we installed an orientation system that begins in the Hunnewell Building. There, a large model of the Arboretum gives visitors a preliminary sense of the entire landscape. Outside the building begins a series of orientation markers placed at one-eighth mile intervals along the main backbone road and continuing to the far southwestern end of the grounds, where it circles around Peters Hill. To minimize the intrusion of upright signage in the landscape, the markers have been placed flush with the ground. Each marker shows the direction and distance to the Hunnewell Building at one end of the grounds and the top of Peters Hill at the other. Along the way, additional markers at road branches indicate the particular gate or other landmark to which the branch leads. These markers provide a clear path from one end of the Arboretum to the other while remaining invisible until the visitor needs them. In addition, informative diagrams about the system have been installed at each of the entrance gates, and simplified maps with "You are here" designations are embedded in granite blocks at three locations along the main road.



Karen Madsen

Dry summer weather facilitated the reconstruction of the bridge over Goldsmith Brook. From left are Jim Papargiris, Patrick Willoughby, Luis Colon, and Peter Del Tredici.

During the past year we also began planning a collections program for a major new botanical garden to be located on a four-acre site northeast of the Dana greenhouse. This Sun-loving Shrub and Vine Collection will display up to 450 shrub species and cultivars that prefer direct light, as well as a diverse collection of woody vines arrayed along a series of trellises. Work began with a curatorial review of plant material in our existing collections in order to identify candidates for



The Arboretum exhibited Chinese penjing, Japanese bonsai, and American bonsai at the 1997 New England Flower Show.

removal to the new garden and to define a list of desiderata for future acquisition. This effort was funded by a \$25,000 conservation grant from the Institute for Museum and Library Services. The garden is being designed by two local landscape architects: Douglas Reed, who recently received the President's Award of Excellence from the American Society of Landscape Architects; and Gary Hilderbrand, a professor of landscape architecture at the Graduate School of Design at Harvard University. While funds have yet to be raised to build this new garden, we hope to begin construction in 1998. It will be the last great landscape collection to be developed at the Arboretum.

Finally, one other event related to the living collections marked the past year. At the New England Spring Flower Show, sponsored by the Massachusetts Horticultural Society, the Arboretum displayed a selection of plants from its bonsai and penjing collection. By the end of the show, our display was given the People's Choice Award, designating it the exhibit most appreciated by the many thousands of visitors.

## RESEARCH FACILITIES AND ACTIVITIES

### *The Library*

The library of the Arnold Arboretum, like its herbarium collections, is maintained in two locations. In Cambridge, the collections are integrated with Harvard's other botanical holdings in a single facility, the

Harvard University Herbaria; they largely support botanical and international research, especially on tropical Asian floras.

In Jamaica Plain, the library housed in the Hunnewell Building (known informally as the JP library) collects journals and books that pertain to the living collections and to the practice and science of horticulture. All of these holdings are catalogued in HOLLIS (the Harvard On-Line Library Information System); computer terminals in the JP library as well as in individual staff offices have access to HOLLIS through the Internet.

A uniquely valuable component of the Jamaica Plain library is the Archives, which contain collections of photographs, letters, and other documents of important individuals associated with the Arboretum. In the past year, for example, we received a large collection of books, papers, photographs, and other artifacts that belonged to Ernest Henry Wilson, the plant explorer who conducted numerous expeditions to China and other parts of temperate Asia soon after the turn of the century. Together with the material already in the Arboretum's possession, the Wilson Archive now fills 36 boxes and includes over 5,000 photographic images documenting the people and plants he encountered on his expeditions. A "finding aid" has been constructed to give researchers easy access to the full range of these materials.

The Archives hold similar collections associated with former staff members (Charles Sprague Sargent, Alfred Rehder, Donald Wyman), plant collectors (Joseph Rock), and landscape architects (Frederick Law Olmsted, Beatrix Farrand). Through the development of finding aids, searchable databases, annotated bibliographies, and electronic collections of related images, these materials will become increasingly accessible to researchers around the world through our Web site on the Internet.

### *The Herbaria*

The past year was also one of celebration for the Harvard University Herbaria (HUH) in Cambridge. The addition of the five millionth specimen (a *Trollius farreri* from Qinghai Province, China) to the collection was marked by a ceremony that I attended along with Michael Donoghue, director of the Herbaria, Jeremy Knowles, dean of the Faculty of Arts and Sciences, and officials from the National Science Foundation, which has supported the Herbaria's work for many years.

The collections were started in 1842 by Asa Gray, the first professor of botany at Harvard. His student, Charles Sprague Sargent, began collecting for the Arnold Arboretum shortly after its founding in 1872. In 1954 these collections were combined with those of the Orchid Herbarium, the Economic Botany Herbarium, and the Farlow Herbarium (mosses, lichens, fungi) in a single building in Cambridge. Today these collections constitute the eighth largest such assemblage worldwide; the largest collection of Asian plant material in North America; the second largest collection of orchids in the world; and the home of more than 150,000 type specimens, the original plants from which a new species is described. All of these collections are supported by library holdings of equal strength to form a worldwide center for botanical research.

### *International Research*

While the living collections in Jamaica Plain were suffering from the vagaries of New England weather, future replacements for lost plants were being secured by expeditions to Asia. In August Dr. Peter



Members of the North American–Chinese Plant Exploration Consortium with freshly collected samples of Manchurian maple (*Acer mandshuricum*); from left, Paul Meyer, Morris Arboretum; Wang Xianli, Shenyang Institute of Applied Ecology; Kris Bachtell, Morton Arboretum; Peter Del Tredici, Arnold Arboretum; Sheng Ning, Nanjing Botanical Garden; Charles Tubesing, Holden Arboretum; Jeff Lynch, Longwood Gardens.

Del Tredici joined a consortium of collectors from other botanical gardens to explore the Yalu River valley of northeastern China, on the border with North Korea. He returned with seeds of many rare plants that we hope will prove hardy in our collections: *Chosenia arbutifolia*, *Acer pseudosieboldianum*, *Thuja koraiensis*, *Carpinus fangii*, and *Pterostyrax psilophylla*. In September, Dr. Stephen Spongberg, our horticultural taxonomist, traveled in more southerly regions of China with former Putnam Fel-

lows Richard Schulhof and Dr. Kim Tripp. Their collections from Yunnan include *Camellia*, *Keteleeria*, unusual herbaceous plants and Pteridophytes; from western Sichuan they brought a wealth of interesting conifers, Rosaceae, and the elusive *Carpinus fangiana*.

A third expedition also traveled to western Sichuan to inventory one of the richest botanical floras in the northern hemisphere. Dr. David Boufford and Dr. Michael Donoghue, accompanied by Chinese botanists, collected over 3,600 herbarium specimens along with DNA samples that will be used to investigate the evolutionary history of this ancient flora. This was the first of several trips funded by a grant from the National Science Foundation.

Far to the south, 1997 saw the final year of fieldwork for the botanical inventory of West Kalimantan (Indonesian Borneo). Attention has now turned to completing an information management system that will make the data from this project electronically available around the world over the Internet. Work also continued on the Biodiversity Collections Project in Indonesia, funded by the World Bank. A complete account of both projects will be included in next year's annual report.

In addition to working on the Indonesian inventory, Arboretum research staff housed at HUH are involved in numerous other botanical projects around the world. These include revisions to the floras of North America, China, Japan, and Nepal. They also include the research of two former directors of the Arnold Arboretum. Dr. Richard Howard, who led the institution from 1954 to 1978, continues to work on the flora of the West Indies and on historical studies that draw on his many years of experience with botanists internationally.

The Arboretum's director from 1978 to 1987, Peter Ashton, who remains active on the Faculty of Arts and Sciences, enjoyed a sabbatical last year. In the fall of 1996 he taught tropical forest ecology to undergraduates at the University of Peradeniya in Sri Lanka and supervised research being conducted in the wet lowland evergreen forest at Sinharaja. There followed an extended visit to the Herbarium of the Royal Botanic Garden, Kew, for study of tropical forests. Spring and summer were spent at the University of Kyoto and at Osaka City University teaching tropical ecology and collaborating with Japanese colleagues on long-term ecological research in Malaysia. At the end of the year, Professor Ashton received the Sultan Qaboos Prize for Research Toward Sustainable Management of Natural Resources given by UNESCO, the environmental arm of the United Nations.

## PUBLIC PROGRAMS

Nineteen ninety-seven was also a year of celebration for all friends of the Arboretum. We marked our 125th anniversary with a series of events throughout the year. In the fall of 1996 we opened our permanent exhibit, "Science in the Pleasure Ground"; its centerpiece is a large scale model of the grounds. In the spring of 1997 an open house was held for a behind-the-scenes look at the Harvard University Herbaria. Over four hundred friends were able to step into the research collections and library stacks to learn about the international work of students, scholars, and professors at the University. In May, Lilac Sunday brought large crowds to view the living collections in Jamaica Plain and to obtain the Arboretum's newest introduction, *Syringa x chinensis* 'Lilac Sunday'.

In June, President Neil Rudenstine joined nearly a hundred long-time friends of the Arboretum to announce the kickoff of our first fundraising campaign since 1927. Our goal is \$8,200,000, and these funds raised will be used to establish a critically needed endowment for our programs in children's education and international biodiversity conservation.

The anniversary celebration ended in October with an open house for friends at the Hunnewell Building and a public lecture delivered by renowned plantsman and author Roy Lancaster.

Throughout the year, the Arboretum was featured in many news stories and articles in popular magazines, facilitated by the efforts of Mullen, a public relations and advertising company. The public also learned about the Arboretum, its collections, and its history through tours of the grounds. Over the past year staff and volunteers led 68 bus tours for more than 1,600 visitors, and free monthly walking tours for an additional 400.

Our adult education offerings continue to be very popular. Although the lectures and workshops cover a variety of topics, the major focus is on areas of staff expertise and on our rich collections. During the past year nearly 1,000 individuals participated in 118 courses: half of these participants were members of the Arboretum; half took two or more offerings. Most came from towns surrounding Boston, but others traveled from as far away as Connecticut and New York.

An equally important part of our education program is directed toward children from local schools and their teachers. The goal of the children's education program is to increase the capacity of individuals

to understand science and appreciate the natural world. Our largest program, Field Studies Experiences, brings schoolchildren to the Arboretum; last year over 3,000 students in grades three through five visited the grounds to experience direct contact with trees in a natural setting.

During the past year we introduced two new activities that broadened our approach beyond traditional natural history. The first is called Native Plants, Native Peoples, and it involves the relationships of native Americans to the food plants and forests that sustained them. The second program was developed in collaboration with the National Park Service; it focuses attention on landscape and the characteristics of land that lead one to value it. Called Landscape Explorers, it asks children to assume the roles of artist, historian, and naturalist to explore and understand a particular place in the Arboretum. Through a set of activities they begin to shape their curiosity into the form of questions about a natural setting and the plants and animals found there. They also come to appreciate the multiple ways in which different individuals look at landscape and express their appreciation for it.

In all these programs our education staff is assisted by a corps of trained volunteers who lead groups of children through their outdoor explorations.

In April of 1997, the Arboretum's CD-ROM curriculum, "Rainforest Researchers," received a prestigious Codie Award as the best piece of software for middle-school students produced in the United States in 1996. This curriculum, described in last year's annual report, was based on our research in Indonesia and created in collaboration with Tom Snyder Productions.

## **ELECTRONIC PROGRAMS**

Over the past ten years, the work of the Arboretum has come to depend more and more on computer technology. Our living collections are managed using a large electronic (digital) database linked to a mapping capability. New library holdings are incorporated into the large electronic catalogue managed by Harvard University. In the early years of



Amy L. C. Wilson

Children's program staff and volunteers offer plant-related activities that involve both parent and child.

this decade, the proliferating personal computers of staff members were connected by wire to each other and linked to the outside world through the Internet, adding electronic mail communications capacity (E-mail) and allowing digital visitors to examine our databases. And more and more, our on-site work with schoolteachers and their students is supported electronically.

Development of the World Wide Web in the past five years added not only image-transmission capacity, but the possibility of electronically linking text or images to other parts of one's document, or to other documents within the Internet. Through these links, the "reader" can look for information throughout the Web. As more and more Web sites have become connected, the amount of available information has expanded at a remarkable rate, creating one very large, electronically accessible library.

The Arboretum became a member of the World Wide Web in 1995 when a staff committee organized a set of images, tables, and text for a digital publication—our "home page"—that introduces electronic visitors to all aspects of the Arboretum's work; our site address is [www.arboretum.harvard.edu](http://www.arboretum.harvard.edu). Within each section of the home page are multiple links to other sites, allowing access to very large, searchable databases that include tabular, textual, and image data. Information about our living collections and our international plant expeditions are or will soon be available through the Web; visitors to our Web site can therefore learn an immense amount about the Arboretum prior to a visit to Jamaica Plain.

In the future, the Arboretum plans to take advantage of many other opportunities that the Web offers for enhancing research and educational programs. For example, group discussions can be organized around a topic of one's choosing, or an on-line seminar of experts can be opened to public participation. Currently we are exploring ways to organize high-quality information in formats appropriate for audiences with special interests, such as conservation or historic preservation. Clearly, the Web will be an important tool for our work in the future.

## **ADMINISTRATION AND DEVELOPMENT**

Financially, fiscal year 1996–1997 was the best of the last four years for the Arboretum (see table). Thanks to a strong national economy, endowment income increased significantly, and income from grants for international work also increased modestly. Since these revenues

were accompanied by more modest growth in expenses, the Arboretum finished the year with a large operating excess; even after our debt payment, we saw a doubling of our fund balance. This balance, a kind of bank account maintained by the University, includes a building reserve of about \$150,000 and an equipment reserve of \$50,000. Together these reserves provide for major unexpected repairs to our facilities or the purchase of a costly piece of equipment.

<i>Summary of Operations</i>			
	FY 1995	FY 1996	FY 1997
<b>Income</b>			
Endowments	3,433,102	3,587,450	4,089,011
Transfer from Reserves	217,630	0	0
Membership/Gifts	282,360	401,906	659,603
Enterprise	237,167	225,387	191,247
Grants	1,272,503	1,315,466	1,423,240
Education/Publications	106,351	81,732	72,704
<b>Total Income</b>	<b>5,549,113</b>	<b>5,611,941</b>	<b>6,435,805</b>
<b>Expenses</b>			
Salaries	2,962,629	3,172,682	3,005,791
Supplies/Equipment	539,027	409,127	578,639
Facilities/Operations	473,291	313,567	467,639
Services	1,129,778	1,110,375	1,399,506
Travel	207,913	180,386	128,256
<b>Total Expenses</b>	<b>5,312,638</b>	<b>5,186,137</b>	<b>5,579,830</b>
<b>Excesses (Losses)</b>			
Unrestricted Excess (Loss)	312,351	312,482	312,416
Restricted Excess (Loss)	(75,877)	113,320	543,559
Operating Excess (Loss)	236,474	425,802	855,975
Debt Payment	312,416	312,416	312,416
<b>Total Excess (Loss)</b>	<b>(75,942)</b>	<b>113,386</b>	<b>543,559</b>
<b>Total Fund Balances</b>	<b>408,670</b>	<b>519,789</b>	<b>1,067,825</b>

The efforts of our development department are evident not only in the increase in gifts, as seen in the 133 percent increase over the previous two years, but also in the increase in our donor base. Particularly gratifying was the response to our special April Fools' Day storm appeal, when 532 individuals contributed to our cleanup efforts. Steady growth in membership since 1993 has increased the number of our friends from 2,600 to 3,200 at the end of 1997.

In July the Arboretum received the largest single gift in its history when George and Nancy Putnam endowed the Katharine H. Putnam Fellowships in memory of Mr. Putnam's mother, an accomplished



Recovering after a strenuous day of plant collecting on the steep hills of the Yunnan/Sichuan border are, clockwise from left, former Putnam Fellow Richard Schulhof, Descanso Gardens; Clifford Parks, University of North Carolina, Chapel Hill; Eric Hammond, Heronswood Nursery; former Putnam Fellow Kim Tripp, Botanic Garden of Smith College; Maurice Foster, plant collector.

professionals to spend a year or two at the Arboretum. Many have gone on to leadership positions at universities and at botanical gardens and arboreta across the country. This endowment will ensure this opportunity for scholars long into the future.

Gifts to our capital campaign from friends of the Arboretum grew by 64 percent over the previous year. The Arboretum formally kicked off the campaign on June 13, 1997, with a celebratory dinner and an address by President Neil Rudenstine. On this occasion our fundraising goal of \$8,200,000 was described, and the leader of our campaign efforts, Francis O. Hunnewell, reported that \$3,800,000 in gifts and pledges had already been secured.

The campaign has much to accomplish before its close in the year 2000. Our progress to date is encouraging and is supported at the highest level of the University. As President Rudenstine said in his words to our friends in June, "The cause could not be better, because the Arboretum touches on so many different aspects of our lives: natural beauty and the beauty of design; the process of teaching and learning; the discovery of new knowledge, driven by deep curiosity about the world; and the effort to improve the environment in which we live."

*Bob Cook*

1 April 1998

horticulturist and long-time supporter of the Arboretum. Income from the \$1,000,000 endowment will provide fellowship stipends and related expenses for research in horticulture and botany using the living collections at the Arboretum. Over the past decade, a series of annual gifts from the Putnams have allowed a number of postdoctoral graduates and midcareer

## STAFF OF THE ARNOLD ARBORETUM\*

### ADMINISTRATION

Rose Balan, Staff Assistant, H.U.H  
Donna Barrett, Financial Assistant  
Kenneth Clarke, Custodian  
Sheila Connor, Facilities Manager  
Robert Cook, Director, Arnold Professor  
Matthew Davies, Staff Assistant, Development (hired 3/10/97)  
Kelly Harvey, Membership Assistant  
Lisa Hastings, Director of Development (upgraded 3/1/97)  
Andrew Hubble, Network Systems Manager  
Frances Maguire, Director, Finance and Administration  
Deborah Pasternak, Staff Assistant, Development (left 11/18/96)  
Kara Stepanian, Development Assistant

### HERBARIUM

David Boufford, Assistant Director for Collections, H.U.H.  
Noel Cross, Internet Server/Systems Administrator  
Susan Hardy Brown, Curatorial Assistant  
Carolyn Hesterberg, Secretary  
Maureen Kerwin, Curatorial Assistant (hired 6/23/97)  
Walter Kittredge, Curatorial Assistant  
Kristin McDonnell, Curatorial Assistant (hired 5/22/97)  
Emily Wood, Manager of Systematic Collections

### LIBRARY

Sheila Connor, Horticultural Research Archivist  
Carol David, Library Assistant  
Elzbieta Ekiert, Librarian (left 7/19/96)  
Carol Mita, Library Assistant  
Gretchen Wade, Library Assistant  
Judith Warnement, Librarian  
Winifred Wilkens, Library Assistant (hired 2/16/97)

### LIVING COLLECTIONS

John Alexander, Chief Plant Propagator  
Andrew Bell, Curatorial Associate (appointed 1/6/97)

Todd Burns, Grounds Staff (hired 4/9/97)  
Luis Colon, Grounds Staff  
Julie Coop, Assistant Superintendent of Grounds  
John DelRosso, Arborist  
Peter Del Tredici, Director of Living Collections  
Robert Famiglietti, Grounds Staff  
Todd Forrest, Curatorial Assistant (left 8/15/96)  
Kirsten Ganshaw, Grounds Staff  
Donald Garrick, Grounds Staff  
Dennis Harris, Grounds Staff  
Susan Kelley, Curatorial Associate  
Bruce Munch, Grounds Staff  
James Nickerson, Grounds Staff  
John Olmsted, Head Arborist  
James Papargiris, Grounds Staff  
Kyle Port, Curatorial Assistant (hired 7/8/96)  
Maurice Sheehan, Grounds Staff, Working Foreman  
Stephen Spongberg, Horticultural Taxonomist  
Kirsten Thornton, Landscape Preservation Assistant  
Mark Walkama, Grounds Staff  
Thomas Ward, Greenhouse Manager and Propagator  
Patrick Willoughby, Superintendent of Grounds (left 5/2/97)  
Alistair Yeomans, Grounds Staff (hired 1/21/97)

### PUBLIC PROGRAMS

Phyllis Andersen, Landscape Historian  
Sheila Baskin, Secretary  
Kirstin Behn, Staff Assistant, CSC  
James Gorman, Staff Assistant, Visitor Services  
Candace Julyan, Project Director, CSC  
Gary Koller, Senior Horticulturist  
Karen Madsen, Editor of *Arnoldia*  
Joseph Melanson, Staff Assistant, Visitor Services (hired 11/1/96)  
Lauren Mofford, Field Study Coordinator  
Chris Strand, Outreach Horticulturist

\* 1 July 1996 through 30 June 1997

Diane Syverson, Manager of School Programs  
Pamela Thompson, Adult Education Coordinator

#### RESEARCH

Peter Ashton, Charles Bullard Professor of Forestry  
John Burley, Research Director  
Elena Conti, Mercer Fellow (appointment ended 7/31/96)  
Stuart Davies, Mercer Fellow (appointed 7/1/96–6/30/97)  
Diane Holland, Curatorial Assistant (hired 1/27/97)  
James Jarvie, Research Associate  
Cynthia Jensen, Associate Director for SE Asian Program  
Elizabeth Kolster, Information Systems Project Manager  
James LaFrankie, Research Coordinator (appointment ended 1/31/97)  
Timothy Laman, Research Fellow (appointed 7/1/96)  
Carol Line, Mercer Fellow (appointed 12/16/96)  
Ann Marie Luciano, Staff Assistant  
Jinshuang Ma, Putnam Fellow (appointment ended 8/31/96)  
Mark Madison, Mercer Fellow (appointment ended 5/31/97)  
Keiko Satoh, Putnam Fellow (appointed 5/15/97)  
Tao Sang, Mercer Fellow (appointment ended 8/31/96)  
Peter Stevens, Professor of Biology  
Kim Tripp, Putnam Fellow (appointment ended 7/31/96)

#### RESEARCH AFFILIATES

Kris Bronars, Arnold Arboretum Associate (appointed 6/1/97)  
Philip Cantino, Arnold Arboretum Associate (appointed 7/1/96)  
Lisa Curran, Arnold Arboretum Associate (appointment ended 8/31/96)  
Richard Howard, Professor of Dendrology, emeritus  
Shiu-Ying Hu Hsu, Botanist, emerita  
Timothy Laman, Arnold Arboretum Associate (appointment ended 8/31/96)

J. Andrew McDonald, Arnold Arboretum Associate (appointment ended 8/31/96)  
Sarah Michaels, Arnold Arboretum Associate (appointed 6/1/97)  
Bernice Schubert, Curator, emerita  
Kim Tripp, Arnold Arboretum Associate (appointed 9/1/96)  
Richard Uva, Arnold Arboretum Associate (appointed 4/1/97)  
Carroll Wood, Jr., Professor of Biology, emeritus  
Tsun-shen Ying, Arnold Arboretum Associate (appointment ended 9/30/96)

#### VISITING COMMITTEE

Christopher T. Bayley, *Chairman*  
Gregory J. Anderson  
Robert A. Bartlett, Jr.  
Caroline G. Donnelly  
Thomas S. Elias  
Corliss Knapp Engle  
Donna Ford Hartman  
Francis Oakes Hunnewell  
Joan Morthland Hutchins  
Matthew J. Kiefer  
Ellen West Lovejoy  
Janine Evin Luke  
Edith Noyes Knight Meyer  
Morgan Dix Wheelock, Jr.

#### DIRECTOR'S ADVISORY BOARD

Ellen West Lovejoy, *Co-Chairman*  
David B. Stone, *Co-Chairman*  
Louis J. Appell, Jr.  
Herbert P. Dane  
Caroline G. Donnelly  
Corliss Knapp Engle  
Katherine Ferguson  
Francis O. Hunnewell  
Caleb Loring, Jr.  
Janine Evin Luke  
Betsy Ridge Madsen  
Chris McKown  
Henry H. Meyer, Jr.  
Frederick S. Moseley, III  
George Putnam  
Emily Saltonstall  
Mary Ann Streeter



Peter Doh Tredici

Seeds and herbarium specimens of maple (*Acer*) and lilac (*Syringa*) drying in the sun at the Changbai Shan Research Station, Jilin Province, China.

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**P. ANDERSEN**

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**P. CANTINO**

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#### J. MA

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#### S. A. SPONGBERG

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#### P. F. STEVENS

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Cover photograph by Herb Nolan: This large fir (*Abies concolor*) was uprooted in the 1997 April Fool's Day storm.

Inside front cover: Cones of *Pinus koraiensis*, source of the Chinese pinenut, are grown commercially in managed stands of wild trees in Jilin Province, China. Photograph by Peter Del Tredici.

Inside back cover: A sacred ficus tree stands among ricefields at San-Cha-Lu, the confluence of three valleys near the border of Yunnan and Sichuan. Photograph by Kim E. Tripp.

