



UNIVERSITY of CALIFORNIA  
**BOTANICAL**  
**GARDEN**  
NEWSLETTER

Volume 14, Number 3

Published by the FRIENDS of the BOTANICAL GARDEN • Berkeley, California

Summer 1989

## New Home for the Garden

As of July 1, 1989, the Botanical Garden will officially transfer affiliation from the Department of Botany in the College of Letters and Sciences to the College of Natural Resources. The change is prompted by the reorganization of the traditional departments of Botany and Zoology into Molecular and Cell Biology, Plant Biology, and Integrative Biology. Actually this administrative shift is a return to an old home of sorts, for the first U.C. garden originally developed in the College of Agriculture, forerunner to the College of Natural Resources (CNR).

These historical roots can be traced back to the original land grant establishing the University of California in 1868. Because of the land grant responsibilities, a College of Agriculture was among the first colleges on the U.C. Berkeley campus. Professor Eugene Hilgard (for whom Hilgard Hall is named) made it one of his missions to develop a "garden of economically important plants, both for experiment and for the instruction of classes by actual demonstration and exhibition of the growing plants." The Regents designated a site, and the first garden was soon in place.

In 1890, the University added a College of Natural Sciences with a Department of Botany. A second garden was established to grow and exhibit a collection of California native plants. Meanwhile at the College of Agriculture, foundations were laid for a new greenhouse, to cost some \$13,500 and be modeled on the famous London Crystal Palace. (A similar replica is still in existence in San Francisco's Golden Gate Park).

Over the course of time, these two gardens developed in different ways — the garden of economically useful plants was converted to agricultural experimental plots on the Oxford and Gill Tracts, and the garden of California natives was expanded and transferred up the hill to Strawberry Canyon. In 1974, the College of Agriculture and the College of Forestry and Conservation merged to form the College of Natural Resources, which includes large tracts of land for research and study pur-

poses. It was only "natural" that the Botanical Garden would find its way back to the college that founded the original campus garden.

### College of Natural Resources Today

Intellectual perspectives and training opportunities are quite diverse in the Garden's new administrative unit. Departments in the College of Natural Resources include Entomology, Plant and Soil Biology, Agriculture and Resource Economics, Nutrition, and Genetics as well as Conservation and Resource Studies, Forestry and Resource Management, and Plant Pathology. Over 150 faculty in nine academic departments instruct 350 graduate students and 700 undergraduates in the technical and theoretical challenges of working with natural resources. Last year, the Garden's docent training class was part of the Conservation Education course in the Conservation and Resource Studies Program.

The Botanical Garden brings a platform of visibility and public education to CNR. Not only does it provide an opportunity to bring conservation information and messages to the general public and schoolchildren, but it offers an important connection with the Friends'

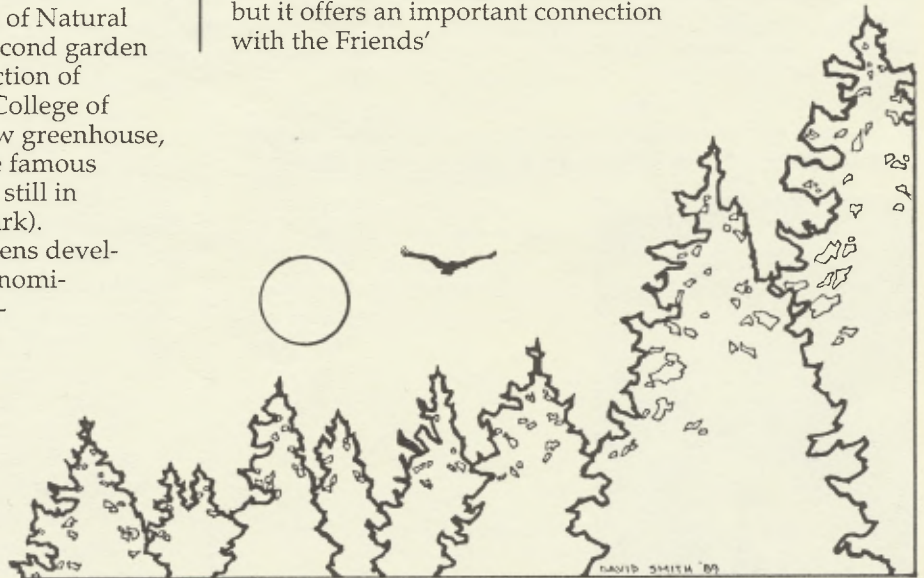


Illustration by David Smith

College of Natural Resources in Hilgard, Wellman, Giannini Halls.  
(Illustration by David Smith)



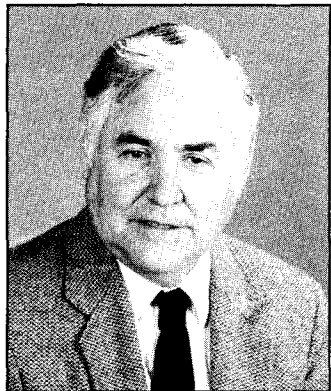
community support organization. The Garden will continue to be used as an educational site and as a source for plant material for CNR classes as well as for those elsewhere on campus. Our international connection with the Wilson Garden in Costa Rica may be helpful to others in CNR as may our work with the Center for Plant Conservation.

We asked the Dean of our new college, Wilford R. Gardner, for his vision of the Garden's future with the College of Natural Resources. He offered these thoughts:

**UCBG:** *How can CNR students use the Garden to their advantage?*

**Dean Gardner:** CNR has only a small garden plot used by students which is transient and constantly changing in character. The Botanical Garden offers an opportunity for exposure to a place where plants are grown and cared for by professionals. Here they can learn about propagation methods, data management, and plant conservation programs. Because of increasing pressures for space on campus, students will find it easier to conduct garden research studies up in Strawberry Canyon.

Students who go through Berkeley should know something more about the environment than zoning laws and backpacking. Most people understand what a lawyer does or a businessperson, but what does someone do who trains in the field of natural resources? Bright students out of high school need exposure to programs and career opportunities in natural resources and conservation. These roles in society are extremely important



*"There is no question that botanical gardens are a good thing."*

—Dean Wilford Gardner

with today's challenges and threats to a healthy environment. All students, no matter what their eventual careers, will likely find themselves in a decision-making role that affects the environment. It is essential that they have some basic understanding of how living things grow and function in ecological systems. The Garden offers an opportunity for hands-on experience in this important arena.

**UCBG:** *How can the Garden serve to enrich the intellectual tradition of the College of Natural Resources?*

**Dean Gardner:** In our society we have a tendency to describe environmental problems in black and white terms. How you think about the environment affects what you do. It is very important to understand a culture's attitude toward the environment to understand the culture.

Often both sides of an issue bring quite closed minds to the bargaining table. The press exaggerates these positions and polarizes the points of view rather than illuminating the complexity of the issues. Here at the College of Natural Resources we have a very diverse set of opinions. At the University you can debate these differences in the open, stimulating student and faculty dialogue. This is a very important function of education. Public agencies cannot be so open in debate for they must develop policies and stick by them in order to work effectively as institutions.

The Garden offers a wonderful setting for such intellectual exchange and debate. It is a reminder of the natural world in a very direct and obvious way. Just being at the Garden may inspire more rational dialogue and an appropriate and relevant context for solving environmental problems.

**UCBG:** *Do you have a particular interest in gardens yourself?*

**Dean Gardner:** My parents were both avid gardeners and I put in my time with the spade. My father was a soil chemist and he gardened scientifically. My mother had a tremendous green thumb. Between the two of them, they spent a lot of time growing plants. My father was a third generation lumberman in a time when everyone had a farmer somewhere in the family. Now it is much easier to find a professor in the family; people just don't know any farmers any more. This distance creates a kind of antagonism towards farmers and the art of farming and caring for the land. My father loved trees and passed that love onto me. From my office window I am delighted to see a number of wonderful trees, including the lovely ginkgo.

**UCBG:** *What would you like to see the Garden emphasize in its upcoming Centennial Year?*

**Dean Gardner:** There is no question that botanical gardens are a good thing. They are somewhat analagous to the art institutions of a strong cultural society — the symphony, the ballet, the art museums. The government may not provide much support for these, but individuals will and with great devotion. Gardens are a place of harmony and beauty, where people bring the same creativity to plants and rocks as composers to musical notes. This creativity speaks to the universal mind in all of us, inspiring us to see the harmony in the natural world.



*Illustration by Jane Gyer*

The Botanical Garden is like the rest of the Berkeley campus: you can never see the whole thing all at once. It is designed and laid out so from any one path or perspective you only see a small part of the picture. This is typical of Japanese Zen gardens: they are designed to reveal rather than overwhelm. And this is the way we see natural systems: we can never fully see or understand the whole thing. The Garden can help point this out, just by the way it exists. I hope that the affiliation with CNR will bring more people to the Garden; we need a corner of the world like this. It evokes important feelings that inspire us to care for the natural world.

— Stephanie Kaza

*Editor's note: Wilford Gardner was appointed as Dean of the College of Natural Resources in spring, 1987. His professional expertise is in soil physics. As part of his campus responsibilities, he serves on the Peripheral Properties Committee which oversees questions of development for Strawberry Canyon. He wishes to thank Errol Mauchlan and Margaret Race for their great assistance in accomplishing the transfer of the Botanical Garden to the College of Natural Resources.*

### College of Natural Resources: A Sampler

The Botanical Garden now has a number of new neighbors and colleagues in CNR. Some of these programs may offer opportunities for cooperative endeavors in the future. By way of introduction, here is a sampling of some of the most relevant aspects of the College of Natural Resources.

#### FACILITIES FOR INSTRUCTION AND RESEARCH

- 1 - Gill Tract - a center for studies on biological control located three miles from the campus in Albany, with laboratories, greenhouses, and 8.5 acres of outdoor agricultural test plots.
- 2 - Oxford Tract - just northwest of the campus with greenhouses, environmental control chambers for experiments on agricultural plants, and one acre of open plot land.
- 3 - Natural Reserve System - CNR administers four of the 26 reserves in the university system: Chickering American River Reserve in Placer County, Hastings Natural History Reservation in Monterey County, Pygmy Forest Reserve in Mendocino County, and Northern California Coast Range Reserve.

#### DEPARTMENTS

- 1 - Conservation and Resource Studies - an interdisciplinary department covering environmental issues involving natural resources, population, energy, technology, social institutions, and cultural values.
- 2 - Entomology - an extensive program for the study of insect ecology, insecticide chemistry, medical entomology, pest management, and systematics, among other specialties.
- 3 - Forestry and Resource Management - professional training in forestry with study of wildlands as sources of wood, water, forage, habitat, and recreation.
- 4 - Plant and Soil Biology - the basic biology of soil-plant interactions including chemistry, physics, plant nutrition, physiology, and biochemistry.

## Voodoo Plant Draws Fame

Those of us on the Garden staff who were here when the *Puya raimondii* flowered in 1986 will never forget the deluge of press, television, and radio coverage, endless phone calls from the curious public, and hordes of visitors who trooped through the Garden to see what was admittedly a once-in-a-lifetime event. Thus when Spring Break began in March 1989, I should have thought twice about letting anyone know about the imminent flowering of my Voodoo Plant, Devil's Tongue, *Amorphophallus rivieri*.

The campus was quiet and I thought it would be a slow week. Wallace Ravven, Public Information representative and one-time biology student, came over to take a look at the plant. By this time it had produced a gigantic inflorescence over four feet tall, capped by a purplish spathe and spadix, which were emitting an impressive, nearly overwhelming stench. I moved the fetid plant from my office to a mercifully unoccupied laboratory next door where Wallace viewed it. The odor permeated the hallway, leading innocent passers-by to think that a large animal had expired in the vicinity and lay forgotten.

### Overwhelming Odor

Soon after Wallace's visit, a reporter and photographer showed up from the San Francisco Chronicle. After viewing the plant, the reporter was so overwhelmed by its fumes that she asked to continue the interview elsewhere. The following day the Chronicle ran the article, and at 8am I received my first telephone call on *Ammo*, as I came to call the plant. A man in Mill Valley said he had it growing all over his front yard. After asking a few questions, I concluded that he had another aroid, *Dracunculus vulgaris*, which is smaller than *Ammo* but fairly potent. Later in the morning I was interviewed by KGO, and in mid-morning, Channels 2 and 7 appeared simultaneously for two more interviews, and later on a crew from Channel 20 also arrived.

That afternoon at the Garden, I was met by Visitor Center volunteer Jim Van Sicklen who said he'd received a number of phone calls. I said, "I know, they all have it in their front yard" to which he responded, "Some have it in their back yard." I asked Manager Daniel Campbell to please remove the plant from Life Sciences and bring it to the Garden where it could be savored by weekend visitors.

### Secrets of Flowering

The Garden has *Ammo* growing in the Tropical House, but it does not flower. In its native home in southeastern Asia, the climate is monsoonal, with wet summers and dry winters. The Garden keeps the plant well watered and warm all year since it is planted with species that would not tolerate a dry spell. Apparently



Dr. Ornduff and the famous Voodoo Plant, *Amorphophallus rivieri*.

this combination of continuous moisture and high temperatures inhibits flowering. I cease watering my *Ammo* in October, when I move it to an unheated room.

In late winter, what looks like a very thick deep maroon asparagus stalk emerges from the dry soil. In about two weeks, it elongates and expands to form the bizarre and very fetid inflorescence that looks like a gigantic oddly colored Calla Lily. The potent odor, maroon coloration, and spotted bracts all serve to mimic a large animal lying dead in the tropical forest. They attract carrion flies and beetles who mistake the plant for a lavish banquet. In fact, campus botanist Irene Baker analyzed the exudate produced by the spadix of my plant and found that it contained amino acids and amines, both of which might be produced by decaying flesh. Thus, *Ammo* is not a strict deceiver, but provides a food reward for its insect visitors.

In nature, some of the insects attracted to the inflorescence arrive with pollen from another plant, brushing it off on the stigmas of the female flowers located deep in the spathe. After the insects have been trapped a day or two, the plant ceases odor production and the male flowers shed their pollen. The insect guests are now released to crawl over the male flowers, pick up pollen, and apparently none the worse for their experience, fly or crawl to the next *Ammo* plant in the female odorous phase, and continue with cross-pollination. One wonders how the plant came to acquire such a marvellous arsenal of attractants, when the odor, color, or exudate individually might serve the function alone.

Spring Break 1989 turned out not to be as slow as I thought it might be, but it was my own fault. When *Ammo* comes into flower next year, I'll move it to the Garden immediately, and they can handle the press and the public.

—Robert Ornduff



## Looking Toward the Centennial

**A**nniversaries celebrated at one hundred year intervals should be occasions of joy and satisfaction, especially since those who celebrate recognize that the chance will come only once in a lifetime. The opportunity to put on a grand party marking a hundredth birthday in one's own town is uncommon, but we who love the Botanical Garden are about to experience it.

On December 3, 1990, the Garden will reach its one hundredth year. The Garden is one of the jewels of northern California, yet it is not well-known or even known at all to many in the Bay Area. In this Centennial Year, we propose to improve on that by inviting a broad range of audiences to visit and learn about the Garden and all its facets.

The "party" will not be a one-day occurrence but will continue throughout 1990. It will be made up of many events, the first to be held in January, 1990. The actual beginning of the Garden was in December of 1890, but we believe the early start is justified, if for no other reason than that the tradition at Berkeley has been to get out in front of everyone else! In any case, the year for us and for all who love plants will provide great satisfaction in the Garden and determination to make it even better

*Strawberry Canyon garden site in the early days. Small dots are reforestation plantings; arrow points to Strawberry Creek.*



than it is already. What we have, of course, is a witness to the glory of the natural environment. It is the precious inheritance of the vision of Edward Lee Greene and Willis Linn Jepson, both of the University's Botany Department, and the early regents, alumni, faculty, and students.

For many years, the Garden has served as a teaching and research facility. From its beginnings the Garden has received the care of a devoted staff. Its purpose was broadened under Dr. Watson M. Laetsch when the Garden began to provide programs for the public. The addition of docents to the staff was essential to the success of these activities, and many other volunteers contributed other important work to the Garden as well. Under the current director, Dr. Robert Ornduff, these programs have expanded, and the Friends of the Botanical Garden have become well established along with a lovely Visitors' Center. Dr. Ornduff has been an eloquent advocate for additional external funding. The development of plant sales has provided a means of bringing the richness of the Garden to the public's attention while generating additional operating funds for the Garden.

### The Next 100 Years

But in this Centennial Year we do not intend to confine our attention solely to the Garden's history; its future concerns us even more. The program for 1990 will focus on the conservation of nature and the environment, with the realization that what we do now will serve the future. The schedule for the year will include lectures, symposia, tours, a reception or two, birdwalks, and a picnic, among other events. We expect distinguished visitors during the year, both to take part in the program and to observe it. We will honor staff and volunteers who have long contributed much to the public's enjoyment of the Garden.

This next year also offers another opportunity: to make substantial improvements in the physical facilities of the Garden. In 1990, we will begin a major campaign to raise money for important new developments at the Garden. At the top of the list is a new entrance and new administrative and educational buildings — with spaces for offices, program and volunteer staff, meeting rooms and class/conference rooms, a library, information center, and public restrooms. The plans for these buildings call for structures that are visible but not intrusive. The entrance is to be aesthetically pleasing while revealing the many facets of the Garden.

So, we will be seeking funds and dedicated volunteers to be fundraisers. We need your ideas and encouragement. The Garden is a splendid cultural and horticultural institution. This next year we promise to do all that we can to celebrate its birthday and to give it a good start on its second century.

— Robert Middlekauff, Chair  
Friends Centennial Committee

## Botanic Gardens and Tropical Conservation — An International Congress

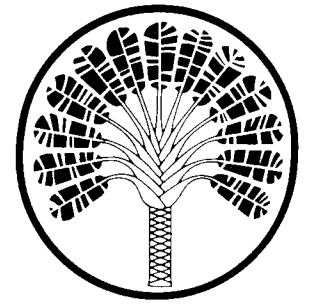
In April, 1989, I traveled to a small island in the Indian Ocean to attend the Second International Botanic Gardens Conservation Congress. The Congress was held at Isle de la Reunion (Reunion Island), 420 miles east of Madagascar, and was attended by more than 140 delegates from 26 countries, including ten from the United States. In spite of its remote location, tropical Reunion Island was an appropriate site for the meeting since tropical conservation was a major theme of the conference.

The formal sessions of the Congress lasted five days and covered botanic gardens in the tropics, regional networking of botanic gardens, germplasm banks, conventions concerning international trade in endangered species, and conservation and propagation techniques of orchids. I presented a paper on our sister garden activities with the Wilson Botanical Garden in Costa Rica. In spite of widespread agreement that "twinning" between temperate and tropical gardens is desirable, very few institutions have actually developed such relationships. There was considerable interest and support for our sister garden program as a model.

### A Global Strategy

A primary objective of the Congress was to review the progress of botanic gardens worldwide in implementing the World Conservation Strategy. This comprehensive set of guidelines for global resource conservation and sustainable development was prepared by the International Union for the Conservation of Nature and Natural Resources (IUCN) with the advice and assistance of the United Nations Environment programme (UNEP) and the World Wildlife Fund (WWF). The World Conservation Strategy is a summary of physical and biological changes taking place on earth as a result of human activities and the inevitable consequences if these activities continue at current rates. The projections are not encouraging. However, the document presents a clear set of conservation objectives with specific priorities for national and international action, outlining the roles for governments, individuals and institutions.

*World distribution of plant species and botanic gardens.*

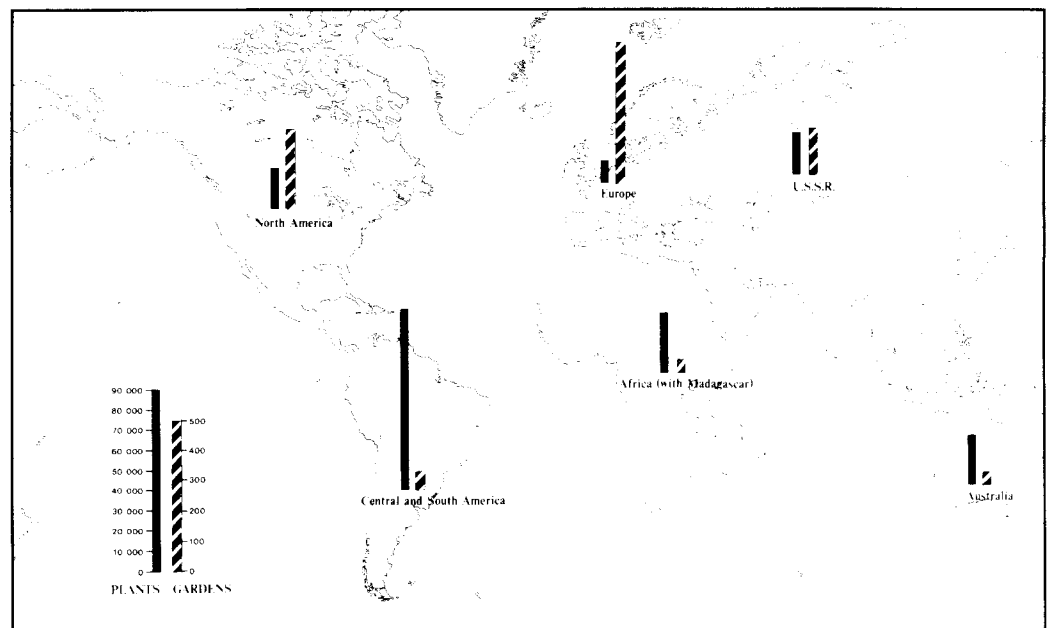


Logo,  
Botanic Gardens Conservation Secretariat

To coordinate worldwide implementation of the Strategy by botanical gardens, the IUCN created the Botanic Gardens Conservation Secretariat four years ago. The Secretariat is supported primarily through membership fees of participants; UCBCG joined the Secretariat in 1987. At the 1989 Congress, the Secretariat presented a final draft of *The Botanic Gardens Conservation Strategy*, with guidelines for seed banks and other off-site preservation techniques, reintroduction of rare species in natural habitats, conservation education, and encouragement for more regional and international cooperation among gardens.

During the conference, we visited the *Conservatoire et Jardin Botanique de Mascarin*, recently established by the French Government to protect the numerous endangered species of Reunion and to propagate typical vegetation types for research and public education. I was impressed by rows of healthy potted plants all representing threatened species of Reunion Island and other islands in the Mascarene Archipelago. The garden had been severely damaged by a cyclone 60 days earlier, and the staff had done an astonishing job of restoring the grounds in time for our visit.

Reunion is a volcanic island that has never been attached to a continental land mass. It is home to many endemic species that have evolved from earlier immi-



grants, primarily from Madagascar. Much of the original vegetation has been destroyed as a result of clearing of land for habitation and agriculture, first coffee then sugar cane plantations.

### Implementing the Plan

Conservation is frequently a depressing subject, but I left Reunion with several strong impressions and a new sense of optimism. Great progress has been made in formulating a coordinated world conservation strategy that confirms an important role for botanical gardens. Individual gardens with the support of governments and conservation agencies have taken impressive steps in the implementation of that strategy. Many endangered species are being collected, propagated, studied, and reintroduced in the wild. And there is a growing worldwide consensus among staff and supporters of botanical gardens of the importance of conservation and the need to use botanical gardens as a platform for public information and technical training.

The Congress provided an opportunity to compare the programs at UCBG with those of similar institutions operating in diverse cultural, economic, and biological environments. Our existing conservation programs with the Center for Plant Conservation and the Wilson Garden in Costa Rica closely parallel the goals expressed during



Local school children welcomed Congress participants with songs, French flags, and giggles. (photo by Jim Affolter)

the Congress. Our programs in conservation education promote awareness among students and the public concerning the environmental stresses that threaten not only plants and wildlife, but our own futures as well. Given the deteriorating state of the environment worldwide, the need to coordinate efforts is increasingly urgent. It is helpful to see our work in a global context; every effort towards conservation we can offer is important and part of a larger realm of activity.

—Jim Affolter

### Creative International Conservation Efforts

Botanical Gardens in scores of countries are involved in local and international conservation efforts. Here are some of the programs discussed at the Congress:

**COLOMBIA:** The garden in Cartagena has received considerable support from the Missouri Botanical Garden to collect specimens of Colombian plants in regions where forests are rapidly disappearing due to agricultural clearing. Within Colombia, 14 botanic gardens are planning to establish a national network. Dr. Enrique Forero, Director of Reserach at Missouri Botanical Garden, called for formation of an even broader regional network including gardens from all countries in South America.

**UNITED KINGDOM:** Phillip Swindells, Director of Wycliffe Hall Botanic Gardens, stressed the need to offer opportunities for selected Third World workers to gain experience in practical horticultural techniques (e.g. in gathering, cleaning, and packaging of seeds) and to develop foreign language skills for reading professional publications. By standing up in church five Sundays in a row and asking for financial support, he raised enough money for the Catholic Institute for International Relations to fly an Ecuadorian worker to England for training. This appealed to local church leaders who recognized that supporting a project in the developing world would appeal to their parishioners.

**SOUTH AFRICA:** The National Botanic Gardens at Kirstenbosch has established a sophisticated seed bank to store seeds of rare and threatened indigenous species and to make seeds of these species available for research and cultivation. They described a successful program to preserve a species that was once thought to be extinct, *Raspalia trigyna* (Family Bruniaceae), endemic to South Africa. The last known plant died in 1986, following intensive but unsuccessful efforts at propagation. After another plant was discovered in 1988, further experimentation led to the successful rooting of 70 cuttings, now being raised for reintroduction into the wild.

**BRAZIL:** The botanic garden in the densely populated city of Sao Paulo is surrounded by poor urban neighborhoods. Residents have been using the botanic garden as a leisure park for picnics and soccer games, causing considerable damage to the collections. Vera Severo, Director of the Landscape Design Center is working on a project to convert adjacent eucalyptus forest to a public park with playing fields, picnic benches, a bandstand and snackbar. An environmental education center will be placed conspicuously in the center of the park to explain the purpose of the nearby botanical garden and the need to treat its plantings with respect. The botanical garden, which has been closed temporarily, will reopen next year when the new park is ready.



## GARDEN SPOTLIGHT

## Healing Herbs from the East

Chinese traditional medicine is no longer a hidden art, cloaked in mystery on a far distant continent. Acupuncture and complex herbal formulas are not confined to Chinese hospitals and barefoot doctors. Yin and yang have come to the West. Here in California, Chinese and Western practitioners offer their skills and training to traditional cultures as well as to curious Americans. Acupuncture treatments are now covered by several health insurance plans, and there are three accredited acupuncture medical colleges in the San Francisco Bay Area. Traditional Chinese herbs are being used to build immune strength in AIDS patients, and Chinese formulas for colds, intestinal problems, and other common ailments are marketed in health food stores.

Despite increasing popularity and interest in Chinese medicine, almost all of the prescribed herbs are imported from China. Very few are grown and processed in the United States. The Chinese have developed successful methods of commercial herb agriculture and know where to collect rare wild herbs. But could any of these plants be grown here in local soil and climate?

### Exchange with China

Here at the Botanical Garden we are cultivating a number of species in our unusual Chinese Medicinal Herb Garden. The idea for this garden grew out of an international exchange between China and the United States. In July-August, 1986, Garden Curator Dr. Jim Affolter, Dr. Cathy Pringle, and the provost of the American College of Traditional Chinese Medicine, U Aik Aw, spent six weeks visiting medical institutions in Hong Kong and the People's Republic of China. Then the following year, Professor Xu Hong Hua from the Guangzhou College of Medicine in China, came to Berkeley for six months to design and establish our garden of Chinese herbs. He worked closely with staff gardener Elaine Sedlack to select and arrange the plants according to traditional uses. In the past two years under Elaine's care, the Chinese Garden has acquired a number of new species, and the display continues to attract both academic and public interest.

How is Chinese medicine different from Western medicine and what can we learn from this ancient tradition? Contemporary Chinese medicine represents the cumulative clinical experience and time-tested theories of 5000 years of continuous practice by traditional Chinese physicians. It is one of the world's oldest



and most comprehensive systems of medical care. Chinese medical philosophy is based on the Taoist principle of balance in nature and energy flow. Illness is defined as imbalance in the body, and herbs are used to restore balance and harmony to the body's functioning.

### Chinese Diagnosis

Chinese physicians diagnose health conditions in terms of the quality of **Qi** (or **Chi**)—energy or matter about to become energy. When Qi is in balance, it protects the body from outside pathogens, keeps the body warm, and maintains the body's homeostatic systems. There are three sources of Qi: original or prenatal Qi inherited from one's parents, Qi from food or nourishment, and Qi from breath or air (i.e. oxygen). The quality of a person's Qi reflects his/her sources of Qi and the patterns of use in the body.

Qi can best be observed through the expression of **yin** and **yang**, qualities that describe all aspects of change and relationship in the universe. Nothing is all yin or all yang, but all conditions can be seen as the dynamic interaction between the two and their relationship to the whole. Some qualities of yin and yang are:

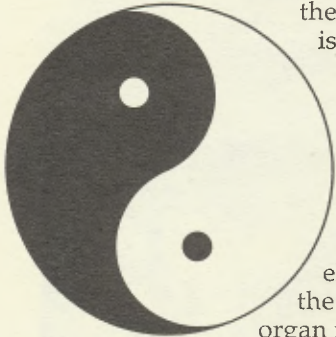
**YANG:** light  
expanding  
external  
activity  
warmth  
ascending  
movement

**YIN:** darkness  
contracting  
internal  
rest  
cold  
descending  
responsiveness



In Chinese medicine, treatment works toward balance of yin and yang in the body and in the specific lines or patterns of energy flow, the **meridians**. Yin symptoms may show as weakness, cold, and exhaustion; yang symptoms may show as fever, digestive problems, and irritability. Points along the meridian pathways can be stimulated by finger pressure, needles, or heat (moxibustion).

Because the body is seen as a whole, a disturbance in one organ or area of the body may manifest itself in another area. This is explained in Chinese philosophy through the Five Element Theory. The five elements are wood, fire, earth, metal, and water. The internal organs and meridians are each associated with one of these elements which influence each other in a cycle of nourishment and control. For example, wood (represented in the liver and gall bladder) nourishes fire (the heart and small intestine); i.e. the bile secreted by the liver aids digestion in the stomach and small intestine. Each element is associated with a particular emotion, which in excess can cause distress in the body. The elements are also connected with the temperate seasons, and each organ is particularly susceptible to imbalance at different times of year — the liver in spring, the kidneys in winter, the lungs in fall. Herbs are prescribed to counter these tendencies, both as preventive and curative medicine.



### Using the Herbs

The herbs in the garden are displayed by function groups including:

- Herbs for warming the interior*
- Herbs for regulating qi*
- Clearing heat herbs*
- Tonifying and nurturing herbs*
- Herbs for removing congestion*
- Herbs for pacifying the spirit*

Many of these function groups have equivalent descriptions in Western terms: for example, herbs for promoting the flow of water are primarily diuretics and clearing heat herbs are good for fever conditions.

Chinese herbs are almost always used in formulas, or combinations of herbs rather than a single prescription. Dried herbs are kept in long rows at the pharmaceutical counter and formulas are made up as needed to be boiled into teas or made into poultices. Not all of the herbs are of Chinese origin; in fact, some are quite cosmopolitan. Watermelon, mint, and rhubarb are surface relieving

herbs; fennel, black pepper, and ginger are all good for warming the interior. While Western medicine tends to make a clear distinction between medicine and food, Chinese medical philosophy emphasizes the medicinal properties of good diet.

Many acupuncturists and their patients are familiar only with the dried herbs; they may have never seen the plants growing in a natural garden or agricultural setting. This has turned out to be one of the greatest assets of the Chinese medicinal herb garden: it provides an opportunity to study the herbs in living form.

The Chinese Garden has drawn quite a bit of interest in the last six months through classes in Chinese Herbs with acupuncturist Barbara Wilt and weekend tours for the public. The first set of descriptive plant labels is in place, summarizing the medicinal effects of the plants. A leaflet will explain the different function groups, providing visitors with a self-guided tour through this garden. Although this new display is unique among botanical gardens in the United States, it is actually quite traditional in that the primary purpose of early botanical gardens was to grow the plants we depend on for health and life.

— Stephanie Kaza

*The marble dedication stone in the Chinese Herb Garden was a gift from Guangzhou College and the city of Guangzhou, commemorating the cooperative effort between our two institutions. (photo by Richard Anderson)*





## GARDEN NOTES

### A Bustling Spring and Summer



*Biology 1B students observe examples of pollination strategies as part of their spring field trip to the Garden. (photo by Stephanie Kaza)*

**New at the Garden:** Beginning in June for the summer, the Garden is now open late on Wednesday evenings until 7:00pm. The western light at the end of the day is quite lovely, and we are pleased to offer this option for after-work visitors.

The alpine fell-field bed is complete and plants have been transferred back into the soil and are settling in for the cold season. The new area provides a striking entrance to the California Native area, with unusual rock work, designed to evoke the character of alpine habitats. The Palm and Cycad Garden is being reorganized into Old and New World groups to coordinate with the arrangement of plants in the Tropical House. The plantings between the creek and the Meeting Room are Old World species, those between the buildings and the road are New World species.

Preliminary plans are being drawn up for trail access and plantings of native riparian species along the lower section of Strawberry Creek. This area offers a delightful view of the stream as it passes through a natural stream habitat. The Garden is investigating funding sources for creek restoration, landscape design, and trail development in cooperation with other restoration efforts on campus and in the city.

Architect Walter Brooks is now preparing the first round of designs for a new visitor entrance and administration building for the Garden. Staff and Friends are considering space needs, aesthetics, and a vision of the Garden in the next century as part of the planning. This large-scale project will bring a new face to the Garden and to Strawberry Canyon — a serious beautification project!

**Conferences and Collecting Trips:** Holly Forbes, Curatorial Assistant, and gardener Kurt Zadnik attended a conference on vernal pools in Santa Rosa in May, learning about the unusual flora of this endangered California plant community. This June Holly also traveled to Callaway Gardens in Georgia to attend the annual meetings of the Center for Plant Conservation and the American Association of Botanical Gardens and Arboreta this June as staff representative.

At the California Environmental Network's conference on *Communication Tools for Environmentalists*, Stephanie Kaza, Education Coordinator, and docent Nat Shoehalter offered a workshop in live TV-interviewing, teaching the art and power of non-verbal communication in media settings.



*Friends volunteers coordinating a major mailing for publicity and membership. From left to right, June Falkner, Bea Welty, Deborah Darnell, Jacqueline Woodfill, Gladys Eaton. (photo by Stephanie Kaza)*

**Special Events:** This spring the Garden hosted a number of special visitors, many of whom had never been to the Garden before. In April and May, the Berkeley Breakfast Club and Discover Cal came for meetings, along with the U.C. Berkeley Foundation trustees. The California Botanical Society held a joint meeting here with the California Native Plant Society, with Don Falk, Executive Director of the Center for Plant Conservation, as the guest speaker. Over 25 classes from the campus Biology 1B course with 800 students total explored the Garden with their new lab manuals — reports are that it was the best lab of the course!





Volunteer propagator Lizzie Lee before the big Spring Plant Sale which netted \$20,000 this year. (photo by Stephanie Kaza)

**International News:** From the Wilson Garden, Luis Diego reports that founder and horticulturist Robert Wilson died in May, 1989, leaving his legacy of tropical plants to students, researchers, and visitors. The Costa Rican conservation support group APRENABUS, of the Wilson Garden area in Coto Brus County, received a grant of \$6000 from Conservation International to support environmental education and agroecology work in the local community and nearby Parque Nacional La Amistad.

**New Staff:** Two new gardeners joined the staff this spring. Martin Grantham, botanist and ceramic sculptor comes to us from Berkeley Horticultural Nursery and will take charge of development in the Mesoamerican Area, following David Coronado's extensive efforts. Sean Hogan, expert in succulents, will give a much needed facelift to African Hill in addition to working on the Australia and New Zealand sections. Tony Zerilli has left the Garden to work in the travel business and expects to be on an ocean whenever possible. We wish both Tony and David well in their next endeavors.

Nancy Swearngen, Volunteer Coordinator, has joined the Education Program staff on a part-time basis to handle tour scheduling and class registration and assist with education projects. Soozie DeMille, docent and recent UCB graduate, is the summer instructor for children's day camp programs at the Garden.

**New Colleague:** East Bay Regional Parks Botanic Garden, just on the other side of the ridge from the U.C. Botanical Garden, has become the twentieth member of the Center for Plant Conservation consortium of gardens. Both gardens will work with California rare and endangered plants, sharing our skills and efforts on behalf of the disappearing rarities of California.

—Stephanie Kaza

## Tour Orientation Area Dedicated

On a beautiful spring evening, Sunday, May 7th, the new Tour Orientation Area was dedicated on behalf of future education efforts at the Garden. Major donors to the Friends and Garden were guests of the Board for the event. Dr. Robert Ornduff gratefully acknowledged the major contributors to the project, Alba and Bernard Witkin, Kay and Robert Riddell, and Jane and Nelson Weller, who honored her mother, Elizabeth Hammond with their gift. Each couple received a Hawaiian lei brought for the occasion by Dr. William Theobald, Director of the National Tropical Garden on Kauai. The Wellers also donated a drinking fountain to honor their friend and garden enthusiast, Mary Ricksen.

As part of the evening's program, Dr. Stephanie Kaza, Education Director, and Docent Francine Henderson gave a preview of the new tour for the visually-impaired that has been developed by the Garden and the Docents. The Friends thank former Board member Pat Haynes and her husband, who donated the excellent wine from their winery, Whitford Cellars. The event was catered by Trader Vic's.

—Gladys Eaton

*Friends Board president Robert Riddell announces the opening of the new Tour Orientation Area, designed by Renee Bradshaw and Associates. (photo by Stephanie Kaza)*







Nancy Swearingen and Jim Van Sicklen (left) receive a hearty thank you from Friends' president Bob Ridell for their extensive efforts in the Visitor Center. (photo by Jerry Parsons)

## Volunteers Receive Kudos

On Friday, June 16th, the Friends held the Second Annual Volunteer Appreciation Party to honor the tremendous contribution of volunteers on behalf of the Garden. Nancy Swearingen, Volunteer Coordinator, reported on the astonishing volunteer efforts that keep the Garden running.

In 1988-89, 63 docents hosted 209 tours, contributing 1362 tour hours. Preparation and administrative support for docents took another 580 hours, for a total of 1942 person-hours. In the Visitor Center, 20 volunteers kept the Garden's main link to the public open seven hours a day throughout the year, contributing 2500 hours. Training and administrative support for the Visitor Center, including book buying, stocking, accounting, and cleaning, added on another 750 hours for a total of 3300 hours, the equivalent of 19 person-months.

The 24 volunteer propagators who grow plants for three plant sales each year, worked an average of two days per week, spending 750 hours each potting and repotting their thousands of young seedlings. This totals to an astounding 18,000 hours, or 19 person-months. Curatorial and clerical volunteers put in many hours to help with computer input (40 hours), logo items and brochure production (400 hours), and plant sales (800 hours). The 16 volunteer board members each spend at least 10 hours per month in meetings, phone calls, and behind-the-scenes work. The grand total of all these volunteer hours for 1988-89 rounds out to approximately 27,160 hours or the equivalent of 13 full-time employees!

The efforts of all these volunteers has produced substantial income for the Garden — \$1900 from docent tours, \$15,000 from Visitor center sales, and \$34,000 from

plant sales, as well as the generous gifts made possible by Friends' efforts. Board President Robert Riddell and Garden Director Robert Ornduff offered their deep thanks and appreciation for the hard work and dedication of so many volunteers.

Volunteers who received special awards for this year's activities are: Linda Cook, Francine Henderson, Robert Ratcliff, and Sarah Wikander. The Friends' Board of Directors and the Garden staff would like to thank all the volunteers who have made this year's activities possible:

### DOCENTS

Donna Andrews	Mitchell Harvey	Anne Poley
Carol Bacigalupi	Francine Henderson	Jean Portello
Elly Bade	Ruth Hendrix	Susan Rhoades
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Sha Brown	Bob Lichtenstein	Leonard Skinner
Joey Clark	Britt Lofgren	Al Stout
Suzanne Clausen	Nancy Markell	Tomiye Sumner
Addie Collins	Joan Minton	Mark Sutton
Ed Dankworth	Margaret Mitchell	Nancy Swearingen
Kitty Dankworth	Paul Mucci	Leland Unsell
Ramona Davis	Peggy Newell	Jim Van Sicklen
Nancy Decker	Jane Orsini	Janice Vargo
Soozi deMille	Esther Oswalt	Bea Welty
Barbara Donald	Liz Ozselcuk	Brenda Wong
Edna Ellern	Andre Panheco	Jacqueline Woodfill
Chris Elms	Mary Pierpont	Betty Wren
Perry French	Chris Pires	Florence Yaffa
Iris Gaddis		

### PROPAGATORS

Elly Bade	Iris Gaddis	Joan Mirov
Bill Brobisky	Judy Hatch	Chuck Page
Addie Collins	Kate Heckman	Dorothy Pitelka
Klaus Dehlinger	Nancy Holland	Jean Portello
Barney Dietz	Jim Jones	Mary Schroter
Edna Ellern	Jo Larson	Don Stang
Dick Emory	Lizzie Lee	Sarah Wikander
Olga Estela	Jim Lewis	Myrtle Wolf
June Faulkner	Anne Longo	Jacqueline Woodfill

### VISITOR CENTER

Antonio Albuquerque	Elizabeth Hunt	Jean Nunnally
Patricia Allison	Liz Jewell	Kay Riddell
Elly Bade	Susan Kahn	Nancy Swearingen
La Nelle Clack	Jean Kanstien	Jim Van Sicklen
Betty Coggins	Peggy Klenz	Michael West
Evelyn Givant	Nancy Markell	Mary Ann Whaley
Francine Henderson	Isabel McKay	Nancy Wilson
Jerry Hashimoto	Peggy Newell	

### CURATORIAL, CLERICAL, AND EDUCATION

Grace Abiko	June Faulkner	Diane Kothe
Richard Anderson	Katherine Fromberg	Dick Lee
Linda Cook	Peggy Grier	Linda Price
Jack Darnell	Elizabeth Hammond	Mary Ricksen
Ramona Davis	Margriet Hecht	Myrtle Wolf
Tamira Elul	Jean Kanstien	



## Fall Plant Sale

Sunday, September 24, 10am to 3pm

**P**lants grow. Anyone who has selected a plant, bought some potting soil and a container has had a first taste of propagating. If a plant propagated by a Garden volunteer does not die of known or unknown causes, or rest in the pot and seem to shrink instead of grow, it will become a candidate for a Friends' Plant Sale.

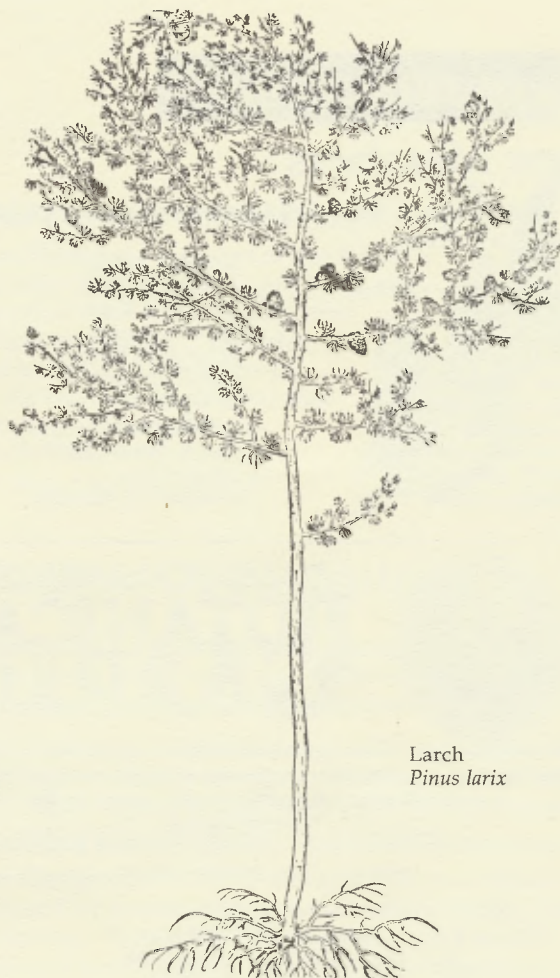
The first plant sales were held at the tract of land owned by the University on Oxford Street. Innocent about Berkeley tax-collecting rules, the first propagators found themselves chipping in to pay the tax collector, since the customers had already gone home tax-free. Other plant sales were held at the concrete apron outside the Lawrence Hall of Science and the soccer field of the former School for the Deaf. Many trays of plants were taken in commandeered cars some distance from the garden, leaving many sore muscles after the sales were over.



Common Solomon's Seal  
*Polygonatum multiflorum*

### TREE SPECIALTIES

- Berberis x Stenophylla 'Irwinii'* — compact small shrub with rich yellow flowers
- Cercidiphyllum japonicum* (Katsura tree) — new leaves reddish purple changing to bluish green in summer; fall color from yellow to apricot. Large wide-spreading shade tree.
- Chinonanthus praecox* (Wintersweet) — very fragrant yellow flowers in early spring, large shrub
- Cornus kousa* var. *chinensis* — covered with flowers of which the white bracts are most conspicuous, rich fall color
- Cornus sericea* 'Kelseyi' — forms dense low mound to 18" tall with red twigs
- Correa pulchella* — small shrub from Australia bears pale pink flowers throughout the winter
- Eucrypha x Nymansensis 'Nymansay'* — large pure white flowers cover this evergreen shrub or slender tree in late summer
- Metasequoia glyptostroboides* (Dawn Redwood) — fast growing large tree with soft green foliage
- Pistachia chinensis* — a handsome large shrub with glossy leaves turning gorgeous fall colors
- Stranvaesia davidiana* — brilliant crimson fruits follow small white flowers with red anthers



Larch  
*Pinus larix*

When the Friends began to help with Plant Sales, these almost quarterly events returned to the Garden grounds. Experienced volunteers came back to help, year after year, rewarded by cookies and lemonade. Propagators work throughout the year watering and maintaining the plants until they are ready to be planted out. At sale time, they are glad that their plants are so popular, but they are also sorry to see them go, often so quickly that it is hard to remember the buyers.

This fall, featured plants are trees and shrubs, vines, herbs, and California natives.

**Herbs:** *Achillea, Artemisia, Helichrysum, Lavandula, Lychnis, Marrubium, Mentha, Monarda, Nepeta, Origanum, Phlomis, Poterium sanguisorba, Prunella, Rosmarinus, Ruta, Salvia, Tagetes, Teucrium, Thymus, Valeriana.*

**Vines:** *Bomarea, Chorizema cordatum, Clematis, Clianthus puniceus, Dipogon lignosus, Discorea, Hardenbergia, Hibbertia, Jasminum, Kennedia, Lapageria rosea, Lophospermum, Mandevilla, Passiflora, Solanum, Thunbergia*

**California Natives:** *Arctostaphylos, Brodiaea, Camassia leichtlinii, Delphinium, Heuchera, Iris, Romneya coulteri, Smilacina, Vancouveria hexandra, Zauschneria,* ferns and annuals.

— Edna Ellern  
Volunteer Propagator



## CONTRIBUTIONS

## New Members

The Friends of the Botanical Garden welcome the following new members:

David L. Abbott  
& Lynda Turley-Abbott  
Milton O. Abbott  
Sheryl A. Albers  
Robert & Gertrude Allen  
Barbara Anderson  
Margo Hart Anderson  
P.K. Anderson  
Yvonne Anthony-Cahill  
Robert Z. Apte  
Dr. William Arthur

James A. Askins  
Richard Atwood  
Edward S. Ballis  
Jonas A. Barish  
Soledad D. Barker  
Shari Lee Bashin  
Judith Becker  
Martha Becker  
Ray & Eleanor Bedford  
Maren Bell  
Margaret H. Benedict

California Sycamore  
*Plantanus racemosa*



Illustration by Jane Gyer

Martha S. Berberich  
Anne Bikle  
Mrs. H.H. Bishopric  
Mark Blackburn  
Les Blank  
Ed & Gertrude Blue  
Beverly Bouwsma  
Margret S. Bowman  
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Haig G. Kistosturian  
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AleK Koomanoff  
Margo J. Laine  
Helen G. Lang  
Miriam Leeffe  
Sterling Leisz  
Mrs. Rosemary Levenson  
Diane Luth & Philip Becraft  
Ron Lutsko, Jr.  
Bruce Lyon & Katie Hunter  
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Paul McConas  
Eleanor Morgan McPeck  
Merdith Melville  
Laurie Miller  
Janet & Sheldon Milligan  
Nicola Mohr  
William R. Moore  
Diana Montaigne  
Alexander Montenegro  
Debra E. Mugnani  
Joel Myerson & Peggy Radel  
Nature's Calling  
Judy Nedoff  
Elizabeth Neumann  
Liz O'Hara  
Kent Okasaki  
Katherine G. Olson  
Margo A. Partridge  
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Kenneth Pleasants  
Grace Dour Popkin  
Patricia Joan Posner  
Donna & Darwin Poulos  
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Katherine Rhee  
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UNIVERSITY of CALIFORNIA  
**BOTANICAL GARDEN**  
BERKELEY • CALIFORNIA 94720

The Newsletter is published by the Friends of the Botanical Garden, a non-profit organization that provides support for the U.C. Botanical Garden.

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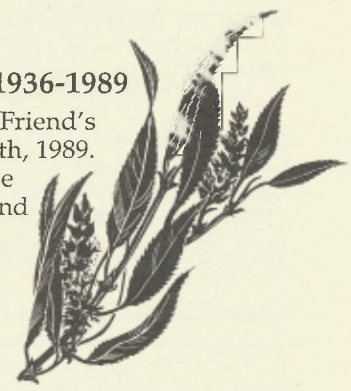
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(415)642-3343 Visitor Center • 642-0849 Administration  
643-8040 Curation • 642-3352 Education  
643-7265 Friends of the Garden



Pacific Willow  
*Salix lasiandra*



**Arthur Dahlton Whitehair 1936-1989**

Art Whitehair, member of the Friend's board since 1984, died on April 30th, 1989. Art received his M.A. in Landscape Architecture from U.C. Berkeley and served as Project Development Chair for the Friends. He was also Past-President of the Rhododendron Society. His presence on the Board will be missed.

**Volunteer Opportunities**

**T**he Garden is looking for volunteers to help with its many activities. If you enjoy coming to the Garden, you might like to join these programs:

**Docent Training:** Another training will begin again at the end of August. This is an outstanding chance to interact with all kinds of people of all ages and to develop your knowledge of the Garden and its collections.

**Visitor Center:** If you like meeting people and are not intimidated by a cash register that does everything, this job is for you. Visitor Center volunteers work as salespeople and hosts from 9:30am-1pm or 1-4:30pm once a week or once every other week. We especially need you if you can help on weekends.

**Plant Sales:** We can always use help at the Fall Plant Sale, especially as cashiers, runners, and security. The sale is Sunday, September 24th.

For more information on these volunteer opportunities, call Nancy Swearngen, Volunteer Coordinator 642-3343.

- Ruth Sayre
- Melanie Scardina
- Virginia Schrock
- Alexis L. Schuler
- Margareta Sequin
- Evan Raacke Shively
- John C. Shiver
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- Helmut Winkelhake
- Connie Woods

**Grateful Thanks**

The Friends wish to thank these donors who have made a substantial gift over and above membership:

- |                              |                           |
|------------------------------|---------------------------|
| Jerry Carlin                 | Joan Mirov                |
| Estol & F.I. Carte           | Margaret & James Mitchell |
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| David & Evelyne Lennette     | Myrtle Wolf               |
| Robert & Beverly Middlekauff |                           |

Our thanks also for these donations given in memory of:

- Ruth Benner, from Eleanor & William Bade
- Dr. O'Neill Ray Collins, from Dr. Baki Kasapligil
- Al Horton, from Eleanor & William Bade
- W. Newell Nelson, Jr., from Eleanor & William Bade
- Mariantonia Violich, from Eleanor & William Bade
- Art Whitehair, from Gladys Eaton and Eleanor & William Bade

and in celebration of Philip and Mary Pierpont's 50th wedding anniversary, anonymous donor.

**Membership**

The Friends of the Botanical Garden offers public education programs and provides independent funding to support the many needs of the Garden. You can enjoy and support the Botanical Garden year-round by becoming a member of the Friends of the Botanical Garden.

**Membership benefits include:**

- Newsletter
- Workshops, lectures, and tours
- Discount on Visitor Center purchases
- Discount on educational classes
- Early admission to Spring Plant Sale
- Volunteer opportunities

**Friends of the Botanical Garden Membership Application**

*Yes, I would like to support the U.C. Berkeley Botanical Garden as a member:*

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Contributions are tax deductible. Please make checks payable to Friends of the U.C. Botanical Garden and mail to:

Friends of the Botanical Garden  
U.C. Botanical Garden  
Berkeley, CA 94720

# Calendar of Events

## BROWN BAG TOURS      Weds/Sats, JULY 5-AUG 12

Bring your lunch for a new tour each week, from 11am-1pm:  
1 - Ethnobotany, 2 - California Plant Communities, 3 - Greenhouse collections, 4 - Evolution and Diversity, 5 - Rare and Endangered Plants, 6 - Flowers and Seeds.

## SUMMER DAY CAMP      Aug 7-11, Aug 14-18

Children's programs in the Garden with instructor Soozie DeMille on the wide world of plants, how people use plants, plant stories, art, and games. Session I for 8-11 years, 9am-3pm Mon-Fri; Session II for 5-7 years, 9am-2pm. \$85 per session. Call 642-3352 to register.

## CHINESE MEDICINAL HERBS      Sat, AUG 12

Principles of Chinese herbal medicine with a special emphasis on anti-viral and immune-enhancing herbs, with Barbara Wilt, licensed acupuncturist and herbalist. 9:30am-12:30pm, Meeting Room. \$12 members, \$15 non-members.

## INTRODUCTION TO ORCHIDS      Sat, Sept 9

Instructor Fred Dortort will cover basics of orchid propagation, potting, how and when to water and fertilize, and which groups to grow indoors, outdoors, and in the greenhouse. 10am-4pm, Meeting Room. \$25 members, \$30 non-members.

## ADVANCED ORCHID GROWING      Weds, Sept 6,13,20

For the experienced grower, Fred Dortort will offer a class in unusual and rarely seen orchids, orchid ecology and diversity, and approaches for working with challenging species. 6:30-8:30pm, Meeting Room. \$25 members, \$30 non-members.

## FALL PLANT SALE      Sun, SEPT 24

Trees, shrubs, herbs, vines, and California natives available for sale in time for fall planting. 10am-3pm at the Garden.

## THE PLANTSMAN'S GARDEN      Fri-Sat, SEPT 29-30

Learn about unusual plants and how to grow them at this symposium of special guests who specialize in a diversity of gardens. Speakers include: Jack Elliot from England; Marco Polo Stufano from Wave Hill, Bronx; Dr. J.C. Raulston from North Carolina; Stan Farwig and Robert Kourik from the Bay Area; and David Hockings from Australia. Cost \$95 before Sept 14th, \$110 after Sept 14th.

## PROPAGATION WORKSHOP      Sun, OCT 29

Join gardener Martin Grantham to learn propagation techniques with cuttings, grafts, and seeds, and tour the Garden's propagation area and greenhouses. 10am-1pm, Meeting Room. Limit 18. \$25 members, \$30 non-members. Bring a bag lunch.

## PATRICK BOWE      Thurs Dec 7

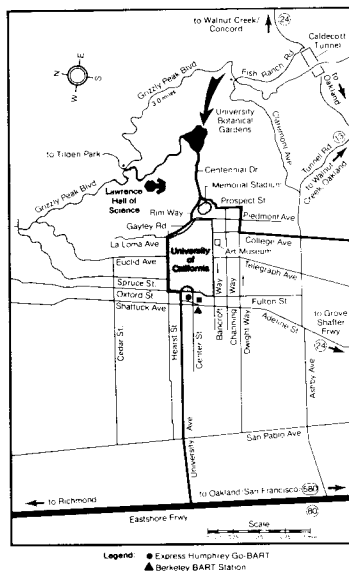
Here to introduce his new book *Gardens of Portugal*, Patrick Bowe will show slides of some of the highlights of next spring's garden tour to Portugal. Lecture and book-signing at Haas Clubhouse, 7:30pm.

## THE GARDENS OF PORTUGAL      March 17-30, 1990

Patrick Bowe will lead this Friends' tour to historic gardens and museums in Lisbon and Oporto. The journey will take us through the Lima Valley and on to the nearby mountains and remote villages of the Peneda-Geres National Park to see the native Mediterranean flora.

For information on classes and events,  
call the Visitor Center, 642-3343.

The Garden is open every day of the year except Christmas from 9:00am to 4:45pm, Wednesdays until 7:00pm during the summer and early fall. Free public tours led by docents are given on Saturdays and Sundays at 1:30pm. Admission to the Garden is free.



Friends of the Botanical Garden  
University of California  
Berkeley, California 94720

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