Strawberry Creek Watershed—the Garden’s Backyard

The U.C. Botanical Garden lies in lower Strawberry Canyon, a significant landscape feature of the Berkeley Hills well known to joggers, hikers, and visitors to the Garden. Strawberry Canyon has a rich history of land uses that have dramatically affected the ecology of the watershed over time. The Garden is part of this story. Over the course of time, culverting, channel confinement, and diversions have significantly altered the natural drainage courses of Strawberry Creek (see map on page 2). The Garden is one of the few places where people can still see the creek flowing naturally.

The Canyon’s History

Before the arrival of the Spanish in the 1770s, Native American Indians lived in this area for thousands of years. The canyon landscape at this time was an open oak savanna—a grassland of perennial bunch grasses and wildflowers marked by shapely coast live oak trees. Most of the tree cover was limited to the stream corridors from the crests of the hills down to San Francisco Bay.

Following the Gold Rush of 1849, the East Bay land development boom displaced the Indians and introduced cattle into newly established dairy farms in the canyon. With the cattle came exotic annual grasses which outcompeted the native perennial grasses that could not withstand the impacts of heavy grazing. Grazing also allowed more rainfall to run off the bare slopes, adding to streambank erosion.

At this time, the University campus was oak savanna with oaks, sycamores, bays, and shrubs lining the forks of Strawberry Creek. As the college water company, the University built a large brick reservoir in 1867 near the present site of Memorial Stadium to supply water to land speculators and to campus. The reservoir was fed by Strawberry Creek and its tributaries as well as by a wood flume which carried water from springs two miles to the north. Waterfalls cascaded down a steep bedrock outcrop from the outlet of the reservoir.

In 1877, the University drained one fork of the creek to make way for a running track later covered by the Life Sciences Building. The Eucalyptus Grove was planted to protect the track from strong westerly winds. To reduce streambank undercutting from increased hill runoff, the University built rock check dams along the lower stretches of Strawberry Creek on campus.

However, the canyon runoff continued to increase as farmers in the hills cleared more land, causing severe erosion downstream. Farming, grazing, and logging were dominant activities in Strawberry Canyon. Dairy cattle, wagons, and horse logging teams travelled along the Canyon bottom back and forth to the hills. The Botanical Garden acres then appeared as tranquil pastures bordered by oak-bay woodlands along Strawberry Creek on campus.

Following the 1906 earthquake and fire in San Francisco, a growing East Bay timber trade significantly depleted tree cover in the upper creek watersheds, adding a further load to the creek runoff channels. Private water companies planted eucalyptus throughout the hills in the early 1900s, hoping to profit from the shortage in California hardwood lumber. Small conifer plantations, including those along the ridge above the
The upper watershed or the area drained by the upper reaches of Strawberry Creek encompasses the central U.C. Berkeley campus and Strawberry Canyon. The two major forks of Strawberry Creek come together in the Eucalyptus Grove at the western edge of campus. The South Fork together with Hamilton Creek drains most of the Strawberry canyon area. The North Fork drains the Lawrence Hall of Science area, the western half of the Lawrence Berkeley Lab complex, and the city's Northside district.

Garden, were also planted in the hills during the 1920s, mostly for aesthetic reasons.

Cattle grazing was phased out in the Canyon in the 1930s. The University had purchased the Canyon lands in 1909, and they now designated these as 'primitive areas' to protect their ecological features. With suppression of fires, no grazing, and a hands-off management policy, vegetative succession went unhalted. Coastal scrub, eucalyptus, and oak-bay woodlands invaded former grasslands. The hill area gradually took on the appearance that we are familiar with today.

Development Expands

In the early part of the 20th century, urbanization began to significantly affect lower Strawberry Creek and its watershed. To alleviate flooding hazards and allow for additional development, both forks of the creek were culverted extensively throughout the city of Berkeley. Memorial Stadium, built in 1923, obliterated the waterfalls that once cascaded down the South Fork. The creek was placed in a bypass culvert that conveyed water underneath the stadium and down to the central campus. The Botanical Garden was moved at this time from the central campus to its current location along Strawberry Creek in the canyon.

Further development of the hill area began with the construction of the Cyclotron in 1931. The entire upper north fork of the creek was culverted and incorporated into the hill area storm drainage system to accommodate the building and subsequent expansion of Lawrence Berkeley Lab. With construction in the 1960s of the Animal Behavior Research Station, Space Sciences Lab, and Lawrence Hall of Science, storm runoff was greatly affected by the increase in asphalted surface area. Impervious surfaces such as asphalt and concrete prevented water from percolating into the ground, thereby reducing dry weather creek flow and increasing wet weather storm runoff. The hydrologic regime of Strawberry Creek was severely altered.

The University spent over a half million dollars in the 1960s on storm drainage improvements to handle the excessive runoff. The creek became very "flashy"—the base flow of water dropped while peak flows increased. In 1962 a devastating peak flow through the Garden sent lanterns and boulders tumbling out of the Japanese Pool far down the canyon. Streambed downcutting and bank erosion accelerated throughout the watershed and the aquatic habitat deteriorated. Silt settled out of the turbid water after storms, causing sedimentation in creek channels. Urban runoff added significant pollution from heavy metals, bacteria, and organic wastes.
**Restoration Efforts**

Today Strawberry Creek's watershed and ecology are receiving new attention from the U.C. Office of Environmental Health and Safety. Through the U.C. Hill Area Fire Management Plan developed by Wildland Resource Consultants, the fire hazard in the Canyon will be reduced by lowering fuel volumes while restoring a more “natural” pre-Spanish oak savanna habitat. Crews will use selective cutting and prescribed burns to eliminate eucalyptus sprouts and much of the coastal scrub, and will reseed these areas with native perennial bunch grasses.

Plans for Strawberry Creek restoration entail the use of both creek and watershed management strategies to improve the creek in the upper watershed. Environmental Health and Safety staff will be trying to stabilize eroding streambanks, restore aquatic habitats, and eliminate point source discharges. On central campus stretches of Strawberry Creek they will build check dams to control streambed downcutting and provide pools for aquatic life. Where possible, they will use native riparian plants to stabilize banks. With improved street sweeping and regular cleaning of storm drains, urban runoff pollution should decrease. The Strawberry Creek Environmental Quality Committee—a Chancellor's advisory group composed of academics and personnel from Campus Planning, Environmental Health and Safety, and Facilities Management—will oversee restoration efforts for the University.

In 1982 citizen efforts at restoration unearthed and incorporated the creek as the centerpiece of Strawberry Creek Park in West Berkeley. Two citizen groups dedicated to the protection and restoration of natural streams in the urban environment are currently at the forefront of restoration efforts in the city. The Urban Creeks Council and Berkeley Citizens for Creek Restoration want to work with the Garden and other groups to educate the general public on the aesthetic, recreational, and ecological values of natural streams. The Garden offers a natural viewing area for this lovely creek that marks the shape of Strawberry Canyon. With increased public support and awareness, Strawberry Creek may yet return as a vital natural element in the urban setting of this campus.

— Bob Charbonneau
U.C. Office of Environmental Health and Safety

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**University Classes Use the Garden**

This fall, Stephanie Kaza, Education Coordinator, will teach an exciting new course for the University, to focus on ecology and conservation of plant habitats, with an emphasis on interpretation. The class, entitled Conservation Education, will help build a cooperative link between the Botanical Garden and the Department of Conservation and Resource Studies and will draw campus undergraduates up to the Garden. Students will work on projects in Garden interpretation and gain interpretive skills for leading tours and working with people who visit the Garden.

This course will also be the fall training class for the next group of garden docents. The topics of the class are the main teaching themes of the Garden: plant structure, ecology, evolution, distribution, economic botany, ethnobotany, and plant conservation. While field trips will focus on examples at the Garden, the course will be broad in application and should prepare students to work in a variety of environmental interpretation situations. Following the fall semester course, student docents will train for two more months in teaching techniques and then begin leading tours in March 1989.

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Coast Live Oak
Quercus agrifolia

Valley Oak
Quercus lobata

California Black Oak
Quercus kelloggii

In addition to this new course, the Garden also offers Botany 129, The Botanical Garden, with Dr. Robert Ornduff and Curator Jim Affolter—an introduction to the curation, management, and operations of botanical gardens. In response to undergraduate interest, we also offer Botany 128, Horticultural Methods in the Botanical Garden. Under Daniel Campbell, Garden manager, students learn basic horticultural techniques to maintain and propagate the diverse living collections of the Garden. Each course gives students direct hands-on experience under professional supervision with the important aspects of the Garden—education, horticulture, curation, and management.
Volunteers Honored

On Friday, June 17th the Friends held a lovely reception in the Garden to honor the tremendous contribution of volunteers on behalf of the Garden. The First Annual Volunteer Appreciation Party was long overdue and greatly appreciated by those who attended.

Nancy Swearengen, Volunteer Coordinator, reported on the enormous number of volunteer hours that keep the Garden running. In 1987-88, 52 docents hosted 250 tours, contributing 2072 tour hours. Preparation and administrative support took another 480 hours for a total of 2552 person-hours. In the Visitor Center 20 volunteers kept the Garden’s information center open seven hours a day throughout the year, contributing 2450 hours. Training and administrative support including book buying, stocking, accounting, and cleaning add on 500 more hours for a total of 2950 hours or 17 person-months.

The 30 volunteer propagators who grow plants for four plant sales each year usually worked two days per week, spending an average of 750 hours potting and repotting their thousands of young seedlings. This adds up to an astounding 20,000 hours. Curatorial and clerical volunteers put in many hours to help with the seed exchange (2000 hours), computer input (200 hours), newsletter and map brochure (150 hours), and plant sales (200 hours). The 18 board members, all volunteers, each spend at least nine hours per month in meetings, phone calls, and behind-the-scenes work. Totaling up all these volunteer hours for 1987-88 rounds out to 30,000 hours or the equivalent of almost 15 full-time employees!

All this volunteer effort, including volunteer time from the staff, has brought substantial income to the Garden—$4,000 from docent tours, $18,000 from Visitor Center sales, and $30,500 from Plant Sales, not to mention the generous gifts made possible by Friends’ efforts.

Board President Bob Riddell and Garden Director Robert Ornduff offered their deep thanks and admiration for the effort and dedication of so many volunteers. Without this assistance, the Garden would not be the place we know and love today. The Friends’ Board of Directors and the Garden staff thank all the volunteers who have made this year’s activities possible:

**DOCENTS**
- Carol Bacigalupi
- Elly Badé
- Betty Baird
- Doris Beatty
- Marge Brostrom
- Joey Clark
- Suzanne Clausen
- Addie Collins
- Ed Dankworth
- Kitty Dankworth
- Ramona Davis
- Sooz deMille
- Barbara Donald
- Edna Ellern
- Chris Elms
- Perry French
- Iris Gaddis

**PROPAGATORS**
- Elly BaDE
- Bill Brobsky
- Patty Brown
- Sally Chriton
- Joey Clark
- Addie Collins
- Klaus Dehlinger
- Barney Dietz
- Edna Ellern
- Dick Emory

**VISITOR CENTER**
- Patricia Allison
- Jean Backberg
- Elly Badé
- Betty Coggins
- Lysbeth Fernandez
- Evelyn Givant
- Francine Henderson
- Jerry Hoshimoto
- Elizabeth Hunt
- Liz Jewell
- Jean Kansitien
- Peggy Klenz
- Nancy Markell
- Isabel McKay

**CURATORIAL, CLERICAL, AND EDUCATION**
- Grace Abiko
- Linda Cook
- Ramona Davis
- Debra Elder
- June Falkner
- Katherine Fromberg
- Elizabeth Hammond
- Margriet Hecht
- Jean Kansitien
- Lizzie Lee
- Augusta McClure
- Mary Ricksen
- Myrtle Wolf
- Francora Wuesthoff
Seed Exchange Success

Every two years the Botanical Garden distributes a seed catalog to hundreds of botanical institutions around the world. The 1987-88 seed list was the most comprehensive in the Garden's history with 430 different California native plants. Our seeds were collected from wild populations with each item accompanied by thorough documentation including collector's name and collection number, date of collection, exact locality, and brief habitat description. These provenance data increase the scientific value of the seeds considerably.

The seed list required a major commitment of staff and volunteer time over several seasons. In the summer and fall of 1987 we scouted desirable populations during the flowering season and then collected seed as the fruits matured. We cleaned the seed meticulously by hand and machine and packaged it into thousands of small envelopes for shipping. The seed catalog was written, produced, and mailed—a 62 page book!

Distribution of seeds is now complete and the summary statistics are impressive. We sent 515 catalogs to participating members in the seed exchange and 356 institutions responded with orders. From January to July, we distributed 10,548 seed packets—9,078 abroad and 1,470 in the United States. The institutions receiving the seeds will grow the plants for display, research, and education.

Managing the seed exchange is no small effort. Dedicated volunteers Margriet Hecht spent several hundred hours filling orders and preparing shipments with the assistance of Lizzie Lee and others. Staff horticulturists Roger Raiche and Kurt Zadnik spent an estimated 1000 hours collecting and cleaning seed. Between the value of staff and volunteer time and the costs of packaging materials, printing, and postage, the biennial seed exchange is an expensive project. It is, however, an investment as well as a service.

In return for our efforts, hundreds of other institutions participating in the exchange mail seeds to us free of charge. In the last year, 44% of the 1,740 additions to our collection were obtained via the seed exchange. The exchange provides seed for campus botanical research as well. Our participation in the program promotes display, propagation, and research of California native plants and is the largest source of new plants for our own collection. It offers one way of sharing the richness of our local flora with those who may never see it in the wild.

—Jim Affolter

As in previous years, native conifers and showy monocots were especially popular. The most requested item, the giant bromeliad Puya raimondii, was the only non-California species on the list.
When the long dry season and drought seem endless and Indian summer heat waves are upon us, the Garden can offer cool respite under the shade of tall redwoods. In two of the oldest sections—the Redwood Circle and the Mather Grove—the body and mind find relief and rejuvenation after many months of sunshine. These silent sanctuaries are full of human and natural history and together exemplify several of the main educational themes of the Garden.

In the Redwood Circle, in the heart of the Asian section below the Japanese Pool, you can see eight of the ten genera in the Redwood Family (Taxodiaceae). The family is distributed on both sides of the Pacific. Western Hemisphere species occur in California, the southeastern United States, and Mexico. The Eastern Hemisphere range extends through China, Burma, Japan, Taiwan, and Tasmania. Almost all of the redwoods are "relict" or leftover from pre-glacial times when these and other conifers covered great expanses of land.

The Redwood Family Tree

Local and Exotic Redwoods

But the Dawn Redwoods were not the first trees to form the Redwood Circle. A few years earlier our local Coast Redwoods (Sequoia sempervirens) and Giant Sequoias (Sequoiadendron gigantea) had been planted to provide moist conditions by the creek for rhododendrons—early efforts at restoration! Though only 43 years old, these trees are quite impressive, and look as if they have always been in the canyon. Giant Sequoias are relict in isolated groves on the western slope of the Sierra Nevada; Coast Redwoods are limited to the fog belt of northern California and southern Oregon. Here in the Redwood Circle you can compare these two California species with the Dawn Redwood and see similar structures and shapes, especially in the cones and needles.

Famous Evolutionary Link

The Dawn Redwood, Metasequoia glyptostroboides, is a "living fossil" link to the evolutionary past. For many years the fossil redwoods from around the northern hemisphere were thought to be seqouias, closely related to the Coast Redwood. But in 1941 Dr. Shigeru Miki noted that fossils from Japan, previously considered to be sequoia samples, had opposite rather than alternate needles, and so he named these Metasequoia. Three years later, a Chinese forester, T. Wang, made a historic botanical discovery.

At this time the Szechuan area in China was quite isolated and overrun with bandits. To improve wartime communication with the provincial capital, a road was built into the area. Wang followed this road to a formerly isolated village and came upon an enormous tree. On close comparison, the tree turned out to match exactly the fossils of Metasequoia.

Botanists were thrilled with this dramatic discovery and soon Dr. Ralph Chaney of University of California, Berkeley organized an expedition to see these amazing trees. After flying across the Pacific, traveling down river by boat, and walking across three mountain ranges, he found the Dawn Redwoods in a sandstone soil valley about 40 miles southeast of the Yangtze River. He collected seeds and seedlings—only the third set to be returned to the United States for propagation. Forty years after this pilgrimage into the back country of China, we now have five healthy trees, elegant in leaf and form—a fitting centerpiece to the Redwood Circle.

Taiwania cryptomerioides and Cryptomeria japonica have quite similar scale-like foliage when mature but their cones differ. Cryptomeria or Japanese Cedar is an important lumber tree in Japan and is widely planted there. Here in California stands of Cryptomeria have been selected for a forest restoration project at Green Gulch Farm in Marin County because of their similarity to...
Coast Redwoods and their long tap root. Probably the most unusual-looking member of the group is the Japanese Umbrella Tree (*Sciadopitys verticillata*) with its whorled leaves that resemble the ribs of an umbrella.

**Mather Grove Rescue**

The Redwood Circle provides a handy collection of family members for a quick lesson in taxonomy; across the road the Mather Grove offers our best demonstration of habitat ecology. The grove is named for Stephen Tyng Mather, Berkeley alumnus (1887), founder and first director of the National Park Service. Mather's friends originally wanted to establish a 300-acre arboretum in his honor in Strawberry Canyon. But with the Depression they only managed to plant five acres of Coast Redwoods. For 40 years the grove remained untended and locked behind the fences of Lawrence Berkeley Laboratory.

In 1970 Garden Director Mac Laetsch incorporated the grove into the Botanical Garden. The grove was formally dedicated in 1976 with the building of the Calvin Townsend Amphitheater and the presentation of a plaque donated by the National Park Service. Since then many native understory plants have been added, and the grove has begun to take on the feel of a natural redwood community.

Inside the protected microclimate of the grove, the air is still and moist. The creek warbles under the small bridge and the ground is covered with redwood leaf litter and duff. Steller's Jays squawk over territories and Brown Towhees scratch for insect morsels. Wild ginger, huckleberry, and redwood sorrel cover the forest floor with green and many native ferns are now bushy and luxuriant.

In this section of the Garden—our most extensive representation of a California plant community—there is room to walk around and catch some feeling of the former forests that covered the coastal canyons. Here we have the opportunity to complement evolutionary understanding with an ecological overview—observing the relationship between species that have lived together in the same conditions over the long term. The Coast Redwoods dominate, penetrating the soil in all directions with their extensive shallow roots and filling the canopy with their many branches. The species has lasted well through fire and floods, using the ash or silt to its benefit for seedling germination.

Redwoods are famous for their size and longevity. Though our trees are still young, their presence suggests the possibility of a Garden that may still be thriving in 100 or 500 years. Just to sit near these historic relics is to gain a sense of time and to appreciate our botanic and ecological legacy. As the Fall Equinox rolls around, come pay a visit to the cool and quiet zones of the Garden where water still flows and time stands still.

—Stephanie Kaza
Fall Plant Sale
Sunday, September 25, 10am to 3pm

The Friends of the Botanical Garden will hold their annual fall plant sale on Sunday, September 25 from 10am to 3pm at the Botanical Garden, Centennial Drive. The sale will feature a wide array of lovely, reasonably priced plants for home and professional gardens, including many hard-to-find species and an unusual selection of California natives from the Garden’s collection. Proceeds from the plant sale go to support the Garden’s educational programs and activities.

The plants are propagated and cared for by a group of dedicated volunteers who work throughout the year watering and maintaining the plants until they are ready to be planted out. All of the plants are grown from horticultural sources rather than collected from the wild. They have been propagated from the garden collection, from other botanical gardens, from collectors’ gardens, and from seed houses in the United States. This fall, the sale will feature vines, shrubs, trees, herbs, and California natives.

Herbs: A sample of the very diverse collection of herbs for sale is listed in the box below with references for use. Herbs are easy to grow, requiring very little care or water. Herbal lore is some of the oldest botanical knowledge available to us and is full of fascinating stories. The fall is a good time to plant herbs so they will become well established before spring.

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Trees and Shrubs: Parrotia persica, one of the finest trees for fall color; Chiranthodendron pentadactylon, the monkey hand tree; Drimys winteri; Luculia gratissima; L. intermedia; Jovellana violacea; Chimonanthus praecox, scented yellow flowers on leafless winter branches; Cleyra japonica; Acer grosseri; A. griseum; Diospyros astro-africana; Cryptomeria japonica; Elegans with soft, feathery foliage turning red bronze in autumn and winter; Ilesia polycarpa; Clerodendrum trichotomum; Koelreuteria paniculata, the Golden Rain Tree with panicles of golden flowers; Berberis thunbergii; Oxypetalum arboreum, with crimson and yellow fall color; many Camellias including two Chrysanthas, the yellow Camellia; Synoum glandulosum, Australian tree with wood resembling rosewood; and many more.

Vines: Bomarea, Chorizema cordatum, Clematis, Clinanthus 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.

Seeds: For the first time, the Friends will be offering unusual and otherwise not obtainable seeds of California native wildflowers, bulbs, shrubs, trees, and succulents. These seed packets were collected for the 1988 Seed Exchange and are now available in limited quantity for use beyond research and botanical garden requests.

When Was UCBG Established?

If you read the various pamphlets, grant proposals, fliers, and other written information describing the University of California Botanical Garden, you will find some equivocation regarding the year in which the Garden was founded. Was it 1890, 1891, or the “1890s”? The issue now seems to be resolved. In the writings of an eye witness who was there when the first spadeful of soil was dug, we can find the key to the establishment of the Garden.

In his historic account of the first century of the Department of Botany, Lincoln Constance mentions that in 1890, the year that department was established, “a spring garden of native plants had been designed by Assistant Willis Linn Jepson.” Jepson, author of many books on the plants of California and perhaps best known for his classic Manual of the Flowering Plants of California, was then assistant to Edward Lee Greene, Instructor of Botany.

In August, 1987, I came into possession of some of Jepson’s personal diaries and other effects, which are now securely housed in the Jepson Herbarium and Library. In volume 7 of his Private Journal dated 1934, Jepson wrote “…I was in considerable part the founder of the Botanic Garden. I helped Professor Greene plant its first beds with California annuals. Continually for many years I brought in seeds and plants for it—The Garden of Native Plants as it was called. And in time the garden became in its flowering season a flowery place, its beds so colorful and engaging as to attract everyone’s attention.”

In another of Jepson’s journals, Berkeley College, that deals largely with campus matters, Jepson wrote in 1933 that “the Garden of Native Plants was started in December 1890. It occupied the hollow swale that ran east and west between North Hall and the north line of campus. This was unfrequented in those days. A farm lay just over the north boundary of the campus. Professor E.L. Greene and I planted the first beds with seeds of native annuals—with our own hands! It was a sort of ritual or dedication. Afterwards the seeds were planted mostly by the gardener. Soon we had a garden. A great quilt of many colors, beds of color furnished by the native annuals, although there were many herbaceous perennials and a few trees and shrubs were added each year.”

So 1890 it is—in December 1990, the Garden will mark its official centennial year.

—Robert Ornduff
Awards: Garden staff and volunteers garnered several awards this spring, receiving recognition from a variety of organizations. From the California Horticultural Society, Roger Raiche received a Plant Award for Education for his work establishing the bulb bed collections and a Merit Award for his work with *Arctostaphylos cruzensis*. June Falkner received a Certificate of Excellence at the San Francisco Landscape Garden Show for her exhibit on the Botanical Garden—a lovely three-panel display of color photographs accompanied by a beautiful arrangement of Garden flowers. For outstanding achievements in fundraising for the Friends of the Botanical Garden, Gladys Eaton was selected for the 1988 Trustee’s Citation Award given by the U.C. Berkeley Foundation. Congratulations to all!

Conferences: The Symposium on Australian Horticulture sponsored by U.C. Santa Cruz Arboretum in March was attended by Garden staff John Domzalski, Daniel Campbell, Holly Forbes, and Roger Raiche, and Friends’ June Falkner, Myrtle Wolf, Elly Badé and others. Roger and Gwynne Elliot, who manage a nursery and garden in Australia, discussed cultivation and commercial production of Australian natives and offered a demonstration on techniques for propagating from cuttings.

Under the sponsorship of the Friends, Peter Klement traveled to Huntington Botanical Garden in Pasadena for an April Symposium on Old Roses. Speakers addressed the problems of maintaining old rose varieties, noting the role of home gardens, nurseries, botanical gardens, and city parks. The Heritage Rose Foundation has been organized to track the gene pool of old roses on computer by cataloguing the location of many collections.

In May, Robert Ornduff, Jim Affolter, and Stephanie Kaza attended the annual meeting of the American Association of Botanical Gardens and Arboreta in Scottsdale, Arizona. Dr. Ornduff presented a paper in the special session on University gardens, and Jim gave a talk on the Chinese Medicinal Herb Garden. Jim also represented the Garden at the Center for Plant Conservation meetings preceding the conference. Field trips to the Desert Botanical Garden and the Boyce Thompson Arboretum provided new ideas on creative and effective interpretive exhibits.

Travels: Gardener Kurt Zadnik and Instructor Fred Dortort headed off for the desert in early May, covering 3700 miles in 12 days across Nevada, Arizona, New Mexico, Colorado, and Utah. They met with cactus experts and photographed rare and endangered species in their habitats. Many of these are naturally rare relictual populations limited by soil types. Kurt also traveled to Utah in April and June to see several rare *Sclerocactus* and the tiny 3/4 inch Navajo Plains Cactus (*Pediocactus peeblesianus var. peeblesianus*) that retracts into the ground after flowering, making it rather a challenge to find! Kurt is now in charge of both indoor and outdoor succulent plant collections and hopes one day to develop a display on rare and endangered cacti.

An unusual hybrid cross bloomed this spring: *Chiranthodendron pentadactylon x Fremontia californica*. 

Director Robert Ornduff congratulates Gladys Eaton, vice-president of the Friends, on her Trustees’ Citation Award.
In June, Jim Affolter visited the headquarters of the Merck Sharpe and Dohme pharmaceutical company in Rahway, New Jersey, to discuss the Garden's Chinese Medicinal Herb Project with Merck researchers and areas of future cooperation. In an effort to develop new drugs for western medicine, Merck has already screened extracts of many Chinese medicinal herbs for pharmacological activity.

In July, Jim Affolter and Stephanie Kaza headed south to Costa Rica on a grant from the Stanley Smith Horticultural Trust to establish a computerized record-keeping system for the Robert and Catherine Wilson Botanical Garden in San Vito. Kerry Walter from the Center for Plant Conservation, Jim, and two staff from the Organization for Tropical Studies spent several days adapting BG-BASE to the Wilson Garden's needs and collections. With Director Luis Diego Gomez, Stephanie and Jim developed an interpretive trail design and future map brochure for the public. They also spent several days at La Selva Biological Station discussing the preparation of labels and interpretive materials for the Holdridge Arboretum, a collection of 250 of the most common of La Selva's 480 tree species. Stephanie met with several key people involved in environmental education in Costa Rica, suggesting a possible internship exchange in the future.

The Friends' trip to Ireland covered 1760 miles in two weeks and two gardens per day. Daniel Campbell co-led the group through private and public gardens in the green jewel island. Compared with England, gardens in Ireland have had an uphill battle for survival in the midst of political struggle and upheaval. They did see one garden established in the 17th century and a 300-year old hedge row but no four-leaf Irish clover.

Roger Raiche and Stew Winchester took a Friends' group of hearty hikers to the top of Mount Eddy—the highest peak in the Klamath Range. Though it has been a dry year, there was plenty to see, especially in the wet meadows. This serpentine area is much older geologically than nearby Mount Shasta and has many disjunct plant populations. The group delighted in the acres of carnivorous Darlingtonia and other bog plants.

New Plants: From Edgewood County Park in San Mateo County, Kurt, Roger, and Holly collected 515 seeds of the endangered mint, Acanthomintha obovata subsp. duttonii. This federally listed species is one of our 1988 additions to the Center for Plant Conservation's national collection. Jim and Stephanie returned from Costa Rica with several dozen plants from the rainforests of the Wilson Garden, unusual anthuriums, Elaphoglossum ferns, and more orchids for the Rainforest House. Jim and Holly have recently printed out the full computer list of plant accessions to the Garden—637 pages of 16,221 entries!

Fall Features: Autumn is one of the most colorful times of year in the eastern North American section with asters and goldenrods at their flowering peak. Their bright yellow and white blossoms contrast with the scarlet autumn foliage of chokecherry (Aronia arbutifolia), black gum (Nyssa sylvatica), and the scrambling Virginia creeper (Parthenocissus quinquefolia). The Asian section offers brilliant fall color as well with the bright red foliage of Cornus kousa and the fiery orange of Sorbus commixta. This is the time to experience the essence of eastern autumn, here at the Garden.

More New Staff

Two new gardeners have joined the staff, coming to the Botanical Garden with strong backs and backgrounds and new enthusiasm and ideas for their sections. Jerry Parsons, botany graduate of San Francisco State University, comes from Rod McLellan's Acres of Orchids. He spent two and a half years there as a greenhouse grower, specializing in orchid seedlings. Jerry is now in charge of the Tropical House where he is displaying the vines across the ceiling to create more of a jungle effect. He also takes care of the Western Herb Garden and the Slosson Garden.

David Coronado, graduate in art and Spanish literature from Humboldt State University, learned gardening while training with John Vellum Ltd. in England for two years. For the past eight years he has been beautifying Berkeley as a landscape gardener specializing in perennial borders. David is developing the new Mesoamerican area of the Garden, drawing on his strong interest in tropical flora and fauna and his extensive travels to Mexico and Costa Rica.
Symposium 1988: the Mixed Border
Three full days of guest speakers, demonstrations, and tours covering many different aspects and styles of mixed borders. In an additional Sunday workshop speakers will focus on factors specific to San Francisco Bay Area gardens; participants will visit Bay Area example gardens in the afternoon. The Symposium and Workshop will be held at the Joseph Wood Krutch Theater, Clark Kerr campus, 2601 Warring Street, Berkeley. Each session, $75.

Chinese Herb Garden Tours
This is an opportunity to learn more about the feature garden of traditional Chinese medicinal herbs. Docents will lead one-hour tours on Sunday afternoons in October at 1:30pm. They will explain basic principles of Chinese herbal medicine and point out commonly used herbs in the various function groups planted in the garden. Admission free.

Chinese Medicinal Herbs
An introduction to five-element theory and principles of Chinese herbal medicine. Barbara Wilh, Herbalist and licensed acupuncturist, will suggest common herbs for improving health and demonstrate herb combining on Saturday, October 8th from 9:30-12:30pm, Meeting Room. Limit 20, $12 members, $15 non-members.

Propagation Workshop
Jack Osegueda, well-known Bay Area horticulturist, will discuss and demonstrate propagation techniques for Bay Area and exotic plants. The class takes place Saturday, October 29th from 10-2pm. $30 members, $35 non-members. Bring a bag lunch to the Meeting Room.

Culinary Herbs
An introduction to cooking with herbs, using some of the many species and varieties in the Garden’s Western Herb Garden. The class will be taught by staff from the Herb Society on Saturday, November 5th from 10-12noon, Meeting Room. $8 members, $10 non-members.

Holiday Decorating
Wayne Roderick, former director of the Tilden Botanical Garden, will share his collection of dried native plant materials and vast wealth of experience in wreath-making and dried arrangements. Participants will make a wreath or arrangement to take home for the holidays. Two sessions on Sunday, November 20th from 1-4pm and Saturday, November 26th from 9:30-12:30pm. $20 members, $25 non-members includes the cost of materials. Meeting Room.

Patrick Bowe, guest lecture
Architect, landscape designer, garden historian, and author of The Gardens of Ireland will speak on Spanish and Mediterranean gardens Thursday, December 1st at 7:30pm, location to be announced. $8 members, $10 non-members.

Gardening Between the Covers
Barbara Worl, of Sweet Briar Press, will review the best in garden books, giving an insider’s view of garden publishing. There will be a sale of second-hand garden books following the class. In the cold, rainy days of winter, this is a good time to build up your library. Class meets Saturday, January 14th from 10-12noon, Meeting Room. $5 members, $7 non-members.

Yellow Sand-Verbena
Arenia latifolia

Children’s Classes

Exploring Plants through Art
A chance to use beautiful fall leaves to prepare a grass weaving and leaf-printed t-shirt using unusual plant samples from the Garden. Celia Cuomo, instructor with Lawrence Hall of Science, will offer two sessions on Sunday afternoon, October 2nd, 1-2:30pm for ages 5-7 and 3-5pm for ages 8-11. Limit 12 per class, $6 per child.

Cooking With Plants
Children will make and taste delicious herb teas, grass cookies, and special tropical treats using plants that grow in the Garden. Celia Cuomo will teach two sessions on Sunday afternoon, November 6th, 1-2:30pm for ages 5-7 and 3-5pm for ages 8-11. Limit 12 per class, $6 per child.

Wreath-making
Education Coordinator Stephanie Kaza will lead children in making holiday wreaths of native dried plant materials. No experience necessary; every wreath is a success. The class will be held Sunday, December 4th from 1-3pm, Meeting Room. Limit 12, ages 8-12. $6 per child.

Call 642-3343 for information on adult classes.
Call 642-3352 to register for children’s classes.
Book discounts at the Visitor Center are one of the benefits of being a member of the Friends. Here are two new and beautiful books which have already drawn attention from many visitors and staff.


The first guide to seed propagation of native California plants was a small leaflet published in 1964 by the Santa Barbara Botanic Garden. Since then, interest in California plants has grown steadily and with great enthusiasm. This new expanded edition of that first leaflet incorporates information on seed propagation of California plants accumulated over the past 20 years through many people’s efforts and experimentation.

The introductory discussion on seed collection and storage, seed dormancy and treatments, and seed propagation is useful and well-written. The rest of the book is a carefully laid out chart describing specific treatments of hundreds of plant seeds. This small but compact volume is a very handy reference for amateurs starting their own wildflower gardens and for professionals working to save endangered plants.

—Elly Bade

"Although seeds of California wildflowers can be started in flats like those for bedding plants, better results are usually obtained by sowing them directly on the open ground, or with very small-seeded types, several seeds to a three-inch peat or paper pot. The seedlings, when large enough, can be thinned and later planted out in the garden with practically no root disturbance."

—Dara E. Emery


When she was First Lady, Lady Bird (Mrs. Lyndon) Johnson was a prime figure in the Beautification Movement, an interest that has continued to the present day. In 1982, Mrs. Johnson founded the National Wildflower Research Center outside Austin, Texas. The mission of the Center is “to stimulate and carry out research on the propagation, cultivation, conservation, and preservation of wildflowers”. The wildflowers discussed and illustrated in this handsome volume are those growing without cultivation in the United States, including species that some might consider weeds.

Mrs. Johnson has written much of the text throughout the book; she reveals considerable skill and charm in her writing, which includes reminiscences of her youth in Texas. Carlton Lees, noted author and horticulturist, has contributed sections that include a lengthy account of past plant explorers of North America and their descriptions of the unspoiled landscape. In a chapter entitled “Return to Eden”, he argues forcefully for greater use of wildflowers in urban and rural landscaping.

The book contains lovely reproductions of hand-colored illustration of American wildflowers from 19th century botanical works. Even more stunning are the dozens of pages of superb color photographs of wildflowers taken from the deserts to the high mountains of North America. The geographical representation is well balanced, and westerners will find many familiar species illustrated here. Royalties from the sale of the book will support research and education work of the National Wildflower Research Center.

—Robert Ornduff

"Almost every person, from childhood on, has been touched by the untamed beauty of wildflowers: buttercup gold under a childish chin, the single drop of exquisite sweetness in the blossom of wild honeysuckle, the love-me, love-me-not philosophy of daisy petals. I grew up in the country—rather alone—and one of my favorite pastimes was to walk in the woods, exploring, particularly in the springtime, searching for the first wild violets and starry white blossoms of dogwood..."

—Lady Bird Johnson
New Members of the Friends

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

- Mr. and Mrs. Charles Agard
- Alfaro/Davidson
- Susan Araneta
- Sally Babson
- Anne Badé
- Mr. and Mrs. Ray N. Baker
- Larry Barnett
- Peter Barr
- Bay Area Succulents
- Mrs. Harris Benedict
- Nancy Bleckt
- Diane Bloom
- Anne Boardman
- Sue Bolton
- Katherine Bornschlegel
- Mrs. William Boyd
- William H. Brett
- Alan Brubaker
- Kathleen Buchanan
- Mr. and Mrs. Hugh Caperton, Jr.
- Joanne M. Carder
- Anthony and Barbara Cary
- Robert W. Caughlan IV
- Chris Chappell

- Peter Cocotus and
  - Kathryn Sucher
  - James A. Cook
  - Doug Daniels
  - Loris P. Davanzo
  - Mrs. Bryce Douglas
  - Jacqueline S. Dullois
  - Patrick Duffy
  - Chris Elms
  - Dave S. Fafarman
  - David Feix
  - Penny A. Finklea
  - Jerry Flavin
  - Mr. and Mrs. LoRoy French
  - Irene Gabriel
  - Mr. and Mrs. Milton Gordon
  - Louise A. Haberer
  - Sue Haffner
  - Clark Haussko
  - Michelle Hollarstein
  - Bruce W. Heyer
  - Alander F. Hodgland
  - Robert Hunt
  - Valerie Hurst
  - Randy M. Husssong
  - Darren L. Jekel
  - Robert R. Jones
  - Mr. and Mrs. Leal Kanstein
  - Katherine A. Karr
  - Dean G. Kelch
  - Howard and Carol Kirk
  - Margaret Klopfer
  - Drs. David and Evelyne Lennette
  - John M. Liddell
  - Munro and Catherine Lyeth, Jr.
  - Hina and Narensha Malani
  - Suzanne L. Marr
  - Pamela Franz McParland
  - Mrs. Bernard McKenna
  - Mr. and Mrs. Thomas McLaren
  - Robert L. Middlekauff
  - Helen R. Miller
  - Malcolm R. and Jennie M. Miller

- Peter H. Molendyk
- Mrs. Edward Mullinix
- Karen M. Nichols
- J.W. Nicklaus
- Laura Owens-Swain
- Sharon L. Peeler
- Paul and Mildred Petersen
- Claudia R. Pitas
- Patrick and Shanieve Power
- C. Anne Prutchman
- Mimi Overton Rea
- Elizabeth P. Riddle
- Gard Roper
- Don Samuel
- David Schwartz
- Simone Scioberetti
- David Soffer
- Joan A. Sophier
- David Tabb
- Brian D. and Carolyn Thiessen
- O.B. Towery
- Carolyn Culver Ulatowski
- Dorothy E. Walker
- Mrs. Joyce Shon Wheeler
- Lindsay Wheeler
- Karen Wildman
- Peggy Wilson
- Ellen G. Woods
- Alvin Zander

GARDEN CLUB MEMBERS

Berkeley City Club—Garden and Travel Section
Berkeley Garden Club
Bonita Garden Club
Diablo Women’s Garden Club
El Cerrito Garden Club
Hillside Gardeners of Monclair
Hoe and Hope Club
Home Gardeners of Piedmont
Montclair Women’s Club
Piedmont Garden Club
Skyline Garden Club

Varicolored lupine
Lupinus varicolor

Thanks to the University of California Press for permission to reprint many of the drawings in this edition of the Newsletter.
Silk-tassel Bush
*Garrya congdoni*

**In Appreciation**

We have received many gifts honoring special friends on behalf of the Garden. Our thanks to:

**In honor of Harland Hand:**
from various visitors to his garden

**In memory of S. Floyd Hammond, Jr.:**
from Mrs. S. Floyd Hammond, Jr., Mr. and Mrs. John Ricksen, Mr. and Mrs. John W. Higson, Jr., and Merle McHenry

**In memory of Mrs. Ethelwyn (Beth) Lloyd:**
from Malcolm and Jeanne Miller

**In memory of Stathe (Steve) Angelo, Frank De Benedetti, Roy F. De Vincenzi, Sue Winder Field, Edne Di Carli:**
from Mr. and Mrs. Duke Leffler, Jr.

**In memory of Varda Korach Schub:**

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**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 by becoming a member in the following category:

- Student $7.50
- Regular $20
- Family $30
- Contributing $50
- Supporting $100
- Sponsor $250
- Patron $500
- Benefactor $1000
- Friends’ Circle $5000

**Name**

**Address**

**City/State/Zip**

**Telephone**

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

U.C. Botanical Garden
Berkeley, CA 94720

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**Grateful Thanks**

In addition to gifts of cash to the Garden, many people give us gifts-in-kind that are very useful and are also tax deductible to the donor. This past year we have been the happy recipients of a redwood and glass greenhouse with mister and heater for propagators and a frost-free refrigerator for staff. We have accessioned or propagated a number of gift plants including two Norfolk Island pines, aeoniums, cymbidium orchids, and iris. We have been grateful for the many volumes given to the library and also for Plant Sale pots for propagator use. Thank you to all our donors for your generosity.

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

- Elly Badé
- Helen Benedict
- Nancy Bleck
- Elizabeth Boyd
- Kathleen Buchanan
- Mr. and Mrs. Hugh Caperton
- Jerome and Jo Carlin
- Dr. Estol and F.L. Carte
- Judith and Michael Cirilo
- Jean and Klaus Dehlinger
- Joyce Douglas
- Gladys Eaton
- June Falkner
- Louise Haberer
- Ruth Hendrix
- Mrs. S. Floyd Hammond, Jr.
- Constance Hart
- Kathleen Heckman
- Mr. and Mrs. John Higson, Jr.
- Alander F. Hogland
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- Frances Hussey

- James H. Jones
- Adele and Lewis Lawyer
- Evelyne and David Lennette
- John M. Liddell
- Errol W. Mauchlan
- Merle McHenry
- Elizabeth McKenna
- Dr. Robert Middlekauf
- Joan Mirov
- Virginia Mullinix
- Mr. and Mrs. Newell Nelson
- Mr. and Mrs. R.H. Peterson
- Piedmont Garden Club
- Carla M. Reiter
- Mr. and Mrs. John Ricksen
- Mr. and Mrs. Robert Riddell
- James Robinette and G.B. Marsh
- Mary Schroter
- Frances and Charles Townes
- Jim and Irma Uren
- Eleanor Ely Wakefield
- Jane and Nelson Weller
- Myrtle and Frantisek Wolf
Calendar of Events

CAMPUS PLANT SALE    Thurs, SEPT 8
Houseplants, bromeliads, orchids, ferns for students and the
site of the campus community. 10-3pm, Lower Sproul Plaza, UCB.

THE MIXED BORDER    Fri-Sun, SEPT 16-18
Symposium of guest speakers with garden tours, and Sunday
workshop demonstration. $75 each session.

FALL PLANT SALE    Sun, SEPT 25
Trees, shrubs, herbs, vines, and California natives in time for fall
planting. 10-3pm at the Garden.

CHINESE HERB GARDEN    Suns, OCT 2-23
Free public tours of the Chinese Medicinal Herb Garden.
1:30pm, Visitor Center.

CHINESE MEDICINAL HERBS    Sat, OCT 8
Introduction to principles of Chinese herbal medicine with
Barbara Wilt, 9:30-12:30pm. Meeting Room, $12 members, $15
non-members.

FRIENDS' LECTURE & MEETING    Tues, OCT 11
Meeting with talk by Dr. Robert Ornduff, "Plant-hunting in the
Andes", 7:30pm, Haas House Clubroom, Strawberry Canyon.
New Friends welcome. Members free, non-members $3.

PROPAGATION WORKSHOP    Sat, OCT 29
Join Jack Osegueda to learn techniques for propagating from
cuttings. Limit 18. $30 members, $35 non-members. Meeting
Room, bring bag lunch. 10-2pm.

CULINARY HERBS    Sat, NOV 5
Using garden herbs in the kitchen with Staff from the Herb
Society. $8 members, $10 non-members. Meeting Room, 10-12noon.

HOLIDAY DECORATING    Sun, NOV 20, Sat, NOV 26
Make wreaths and arrangements from dried natural materials
with expert Wayne Roderick. Limit 18. $20 members, $25 non-
members. Meeting Room, 9:30-12:30pm Sat, 1-4pm Sun.

PATRICK BOWE    Thurs, DEC 1
Special guest lecture on Spanish and Mediterranean gardens by
author of The Gardens of Ireland. 7:30pm, location to be an-
nounced. $8 members, $10 non-members.

HOLIDAY PLANT SALE    Sat-Sun, DEC 10, 11
Orchids, bromeliads, ferns, cacti, succulents, houseplants,
garden and nature books for holiday gifts. 10-3pm both days.

GARDENING BETWEEN THE COVERS    Sat, JAN 14
Barbara Worl of Sweet Briar Press discusses the best in garden
books. 10-12noon, Meeting Room. $5 members, $7 non-members.

CHILDREN'S CLASSES

EXPLORING PLANTS THROUGH ART    Sun, OCT 2
Prepare beautiful leaf prints and other craft items with dyes and
plant samples from the Garden with Celia Cuomo. 1-2:30pm for
ages 5-7, 3-5pm for ages 8-11. $6 per child.

COOKING WITH PLANTS    Sun, NOV 6
Create and taste delicious herb teas, grass cookies, and special
tropical treats from the Garden with Celia Cuomo. 1-2:30pm for
ages 5-7, 3-5pm for ages 8-11. $6 per child.

WREATH-MAKING    Sun, DEC 4
Make a holiday wreath of native dried materials with Stephanie
Kaza. 1-3pm, ages 8-12. $6 per child.

For information on adult classes, call 642-3343.
To register for children's classes, call 642-3352.

The Garden is open every day of the year except Christ-
mas from 9:00am to 4:45pm. Public tours led by docents
are given on Saturdays (except on football home game
days) 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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