

UNIVERSITY OF CALIFORNIA BERKELEY

Botanical Garden Quarterly



July-Sept. 1977

Coping with the drought

By Sharon Smorsten

The drought has taken its toll on plants in California, but efforts are being made to preserve the plant collection in the botanical garden. Although water consumption in the garden has been drastically reduced by 50%, no plants — except the lawn — have been sacrificed. According to garden manager Anton Christ, mulching, hand-watering, and fewer plantings have helped ease the crisis.

Wood shavings and sawdust are being hauled into the garden for mulch at the rate of 40 yards per week. This material is then worked into the ground around the plants to reduce evaporation of water from the soil surface, and discourage water-guzzling weeds. However, since wood debris can steal essential nitrogen

from the soil, this mulch is infused with an organic source of nitrogen such as blood meal. Also, the material is thoroughly rototilled into the surface soil to prevent the loose shavings from blowing away when dry.

To reduce wasteful runoff and loss of water through evaporation, almost all the sprinklers have been abandoned in favor of hand-watering. Only the shallow-rooted rhododendrons in the Rhododendron Dell area continue to enjoy the luxury of overhead sprinklers. Also, watering has generally been restricted to the morning hours — often as early as 4 a.m. — to avoid the drying influence of the afternoon sun. These changes in watering methods have de-

manded a considerable increase in labor, but the docents have organized a volunteer group to help out, and most plants are still carefully tended by the staff.

Although drip irrigation systems (utilizing small hoses and slow seepage of water) are reputed to save up to 40% in water consumption, manager Anton Christ reported there are no plans to install such a system. He explained that this technique is effective in a garden consisting of plants with similar watering needs, but is difficult to use in the botanical garden due to the wide variety of plants.

New plantings have almost come to a halt, and the sale in May effectively re-

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New Himalayan display

By Bruce Bartholomew, Curator

One of the most recent additions to the botanical garden is a Himalayan area which is located below the lawn. The physical development of this area was made possible through funds allocated from the 1975 docent plant sale, and the renovation has been undertaken by John Domzalski. Although this area is one of the most conspicuous parts of the garden, it has previously been one of the least attractive and botanically least interesting.

The first stage in the renovation involved removing some of the heavy adobe soil and installation of drain pipes to keep the bed from being water-logged with runoff from the adjacent lawn. Truckloads of soil, sand, and mulch have

been added to improve the area, and new paths and rock work have greatly enhanced the area and made it more accessible. The physical development is almost complete and we are now ready to start planting.

In addition to the two existing trees, we have already established a few new plants although most of the planting will have to wait until after the current drought. The plant material will potentially include species from the whole of the Himalayas from Kashmir on the west to Arunachal Pradesh on the east. However, the initial planting will largely be from material I collected in Bhutan during the fall of 1974.

Bhutan is a small country to the east of

Nepal and Sikkim. My wife, Terese, and I were able to visit this small Himalayan Kingdom through an invitation from Her Royal Highness Ashi Kesang Wangchuck, Queen Mother of Bhutan, who my wife's family has known for years. The plants we are growing were collected as seed between an elevation of about 7,000 feet and 14,000 feet, and should be hardy in the Berkeley area. Although most of these seedlings are presently being held in our propagation area, a few have been planted.

One of the most interesting trees already planted is *Exbucklandia populnea* which occurs from the eastern Himalayas through to western China

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Himalayan display

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and southeast Asia. This tree — related to the sweet gum — grows to 100 feet and has large leathery heart-shaped leaves. A characteristic of the species is the extremely large stipules which enclose the young axillary buds. I collected seeds of this tree on the west side of the Wangdu Phodrang Valley. The tree was growing in association with an oak, *Quercus griffithii*, and *Rhododendron arboreum*. Many plants of the beautiful epiphytic orchid *Pleione praecox* were in bloom on the rhododendrons and oaks at the time of our visit.

Another plant collected at the same locality is *Cornus capitata* which is a small dogwood tree that will grow to about 30 feet tall. This species is widely distributed throughout the Himalayas and extends to western and central China. The tree has dull grey-green foliage that contrasts with the bright yellow flower bracts and red strawberry-shaped mass of fused fruit. These fruit are occasionally sold in the local markets in Bhutan, but they do not have much taste, and have a mealy texture.

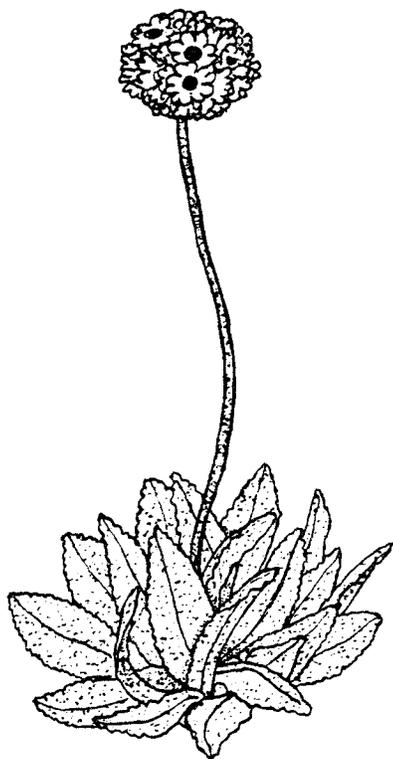
A spectacular Himalayan tree is the mountain-ash *Sorbus cuspidata* which occurs from northwest India through the Himalayas to Bhutan. This tree has large leaves to about 10 inches long that are a dull bluish-green on top and densely white tomentose or velvety beneath. The numerous white flowers are born in clusters, and the yellow crabapple-sized fruit are a spotted reddish-brown. I collected the seeds of this plant on Duchu La which is the pass between the Thimbu

and Wangdu Phodrang valleys. The area is a mixed rhododendron-coniferous forest. The top of the ridge that separates these two valleys seems to be con- taining the middle elevations of western Bhutan from the prevailing winds.

Primula capitata, a primrose, is the only herbaceous plant to be established so far. This plant has light blue flowers arranged in a tight spherical head on the end of a long peduncle or stalk. This species is the most common primula in the middle elevations of western Bhutan and often grows in sunny spots along trails and in disturbed areas. The population from which our plants came had unusually large flower heads. It will be interesting if this characteristic is present in our plants once they are well established.

The only shrub we have planted so far is *Pieris formosa*. This species occurs from the eastern Himalayas to China but is also very similar to *P. japonica* in Japan and *P. taiwanensis* in Taiwan. The species is an evergreen shrub 8 to 12 feet tall with pendent white urn-shaped flowers arranged in nearly erect panicles. Not only are the flowers very attractive, but the clusters of new leaves are a deep scarlet. Our plant was collected in the evergreen oak forests along a trail from the Paro Valley to Taksang Monastery which is perched precariously on a cliff overlooking the Paro Valley.

Once the current drought is over, we will add many more plants to our Himalayan area, and this area should eventually be a spectacular addition to the garden.



a Himalayan primrose, Primula capitata

Plans made to trace 'roots' of ornamentals

Now that the needed funds have become available through a grant from the Elvenia J. Slosson University of California Endowment Fund for Ornamental Horticulture, the botanical garden will develop a unique new section featuring ornamental plants and their presumed wild ancestors.

Plans are being made to acquire various cultivars and wild species of camellia, rhododendron, gladiolus, grape, rose, lily, and others. Also under consideration for inclusion in the display are various native California plants that gave rise to domesticates such as clarkia, delphinium, the Russell lupines, and the California poppy. Some economically important plants may be added as well.

The proposed new section will be laid out adjacent to the South American section, above the new propagation house. Although a number of cultivars of various ornamentals can be easily purchased, the garden will have to rely on its seed exchange program with 400 other botanical gardens to secure the wild relatives of these cultivars.

However, some plants already growing in the garden will be utilized in the new area. For example, the garden has a number of fuchsia cultivars, as well as the wild South American *Fuchsia magellanica* which played an important role in the ancestry of these plants. In addition, the garden has at least two wild *Dahlia*

species from Mexico, one of which contributed to the development of cultivated dahlias.

In addition to the permanent planting, the Slosson Fund has also made possible the construction of a lath house for a rotating display of plants. A few of the proposed display themes include horticulturally important hybrids and their ancestors, economic plants, plants in the public limelight such as waterway pollutant removers or energy producers, and plants with different pollination systems.

With the development of this new section and lath house display over the next few years, the garden's educational value should be greatly enhanced.

Striking plants attract visitors

The summer months are a popular time for the public to visit the UC Botanical Garden since many plants are reaching their peak of attractiveness.

In the new Fern and Carnivorous Plant Display House are two striking plants. The Venus Flytrap (*Dioneaea muscipula*), with its lobed leaves modified for insect trapping, has just finished flowering and seeds are beginning to develop. The Butterwort (*Pinguicula caudata*), another carnivorous plant, has leaves covered with a greasy coating similar to flypaper. When insects land on the sticky leaves, they become trapped and cannot escape. The Butterwort is in bloom now and has a lovely pink spurred flower.

In the New World Desert Area, near the Fern and Carnivorous Plant Display House, one can see several types of the large columnar White Torch Cactus (*Trichocereus* species). These cacti have large white flowers which are quite showy and fragrant.

Many of the herbs in the Herb Garden are in full bloom during the summer months. One striking example is the Clary Sage (*Salvia sclarea*) which was used by medieval herbalists to cure eye disorders.

In the Orchid Display House, the *Dendrobium thyrsiflorum* is now blooming with thick clusters of white and yellow flowers, and the showy *Odontoglossum* species is displaying its large white ruffly flowers. Many other species of orchids are also currently in bloom.

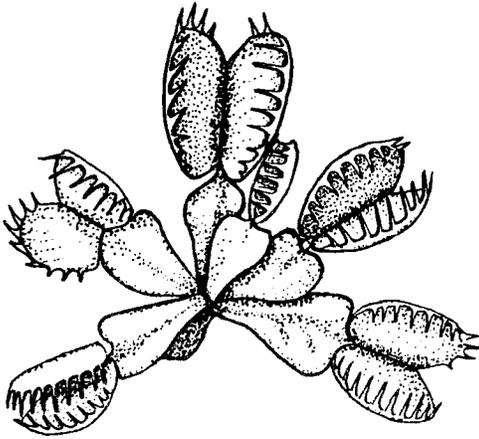
The Coastal Bluff Community of the California Area is currently carpeted with hundreds of individuals of South-

ern Farewell-to-Spring (*Clarkia rubicunda*). These lovely pink flowers should last through the summer months.

Another handsome plant to be seen in the California Area how is the Matilija Poppy (*Romneya coulteri*). At the ends of the 5-foot tall stems are large fragrant white flowers with bright yellow-orange centers. Further into the California Area, the Calabazillo or Fetid Cucumber (*Cucurbita foetidissima*) can be found trailing along the ground. The Fetid Cucumber takes its name from the foul odor which the plant emits. California Indians often used the fruits of this plant for food.

The Tropical House is always a popular place to visit because there are always interesting plants to be seen. As you enter, look on your right and you will see a large gray wirey clump of thin leaves. This is Spanish Moss (*Tillandsia usneoides*), a member of the Pineapple family. Opposite the entrance to the Tropical House is the Chenille Plant (*Acalypha hispida*), a source of perfume. It is covered with long red tassel-like clumps of flowers.

The Chocolate Tree (*Theobroma cacao*) is located on the right hand side of the Tropical House and is bearing pods at this time of the year. These pods are filled with seeds which when cracked yield the raw materials from which chocolate and cocoa are made. Several species of banana are growing here. One of which, the Dwarf Banana (*Musa rubra*), has red flowers and short stubby pink fruits.



Venus flytrap, *Dioneaea muscipula*

Write your Congressman

You can help release millions of dollars for botanical gardens and arboreta around the nation by urging your congressman to support 3 bills currently under consideration in the House of Representatives. If passed, these bills would appropriate a total of \$60 million for grants to various museums, botanical gardens and arboreta:

Bill HR 949 (Koch). Provides \$30 million for grants. Introduced April 1977. Referred to the House Committee on Education and Labor.

Bill HR 1615 (Alexander). Provides \$15 million for grants. Introduced January 1977. Referred to the House Committee on Appropriations.

Bill HR 2956 (Alexander). Provides \$15 million for grants. Introduced February 1977. Referred to the House Committee on Appropriations.

These 3 bills are important since they will provide the funds to put the recently passed Brademas Bill into effect. This landmark bill, passed April 1976, was a victory for plant enthusiasts since it extends the National Foundation of Arts and Humanities Act to include botanical gardens and arboreta for the first time, and thus opens the way for national funding. If the 3 bills are passed, botanical gardens and arboreta will be able to obtain funds under the new Institute of Museum Services in the Department of Health, Education, and Welfare.

Garden

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duced the number of thirsty potted plants in the holding area. The Mather Redwood Grove is still lacking some of its understory plants, and the Himalayan area has been only sparsely planted even though a wealth of seeds were collected in 1974 by curator Bruce Bartholomew. The herb garden is being deprived of many of its annuals since these temporary plants have high water demands. Researchers using the garden have also responded by propagating the minimum number of plants for their experiments.

So far, the lawn has been the only casualty of the drought. Watering here was stopped a year ago, and the grass is finally showing the effects with a sickly yellowish cast. Since highly competitive weeds tend to choke out a weakened lawn and reduce its chances of renewal, reseeding will be necessary when the rains return — or the lawn will have to be replaced with a more drought-resistant ground cover.

Fortunately, the garden does have an independent source of water within its borders, Winter Creek in the redwood

grove. 500 gallons of water from this creek are pumped out daily to hand-water the grove, and plans are underway to install two additional storage tanks to hold 3,000 gallons more. Even though the flow in this creek has declined from 50 or 60 gallons per minute to 10, and the water is undrinkable due to its high sulfur content, Winter Creek is capable of providing enough water to support even more plants in the garden.

This vital creek is actually the runoff from a well and large reservoir perched high in the hills behind the Space Sciences building. Although the well was drilled about 4 years ago, the adjacent 45,000-gallon reservoir and pump were installed only 6 months ago as protection against fire. To catch this runoff water as it rushes downhill, the botanical garden has constructed a 900-gallon reservoir from which water is pumped daily into the two 250-gallon storage tanks in the grove.

Winter Creek could also supply the main garden if there were some means of transporting the water across Centennial Drive to the large storage tank there.

But the radiation lab's 32-foot long tanker truck is too large to maneuver in the garden's parking lot, and the smaller UC tanker is too decrepit to make it up the hill. Hopefully, this problem will eventually be remedied.

Another alternative for reducing water consumption, of course, would be to switch to more drought-resistant plants, but this solution would obviously defeat the main purpose of the garden. Only through a variety of plants can a university botanical garden fulfill its essential educational and research functions. However, home gardeners are urged to consider switching to many of the attractive drought-resistant plants available for landscaping. In fact, the garden has developed a self-guided tour for visitors interested in drought-tolerant native California plants. This descriptive list and map can be obtained for 5 cents in the main office.

So far, the botanical garden has still not suffered any damage from the drought. But hopefully California will be relieved with abundant rains in the fall which will open the way for renewed activity in the garden.

Botanical garden notes

Grants for collectors. Recently the garden initiated a small program using docent and other funds to subsidize plant collecting by individuals who are traveling to, or reside in areas of particular botanical interest. Thomas Veblen, a geographer, has collected seeds for the garden in Southern Chile. And Lytton Musselman of Old Dominion University has sent seeds from New Caledonia. His collection included a few genera that are believed to be among the most primitive of extant flowering plants.

Rare palm. The garden has provided the Palm Society with a small grant to support their attempts to obtain seed of the rare palm, *Juania australis*, endemic to the Juan Fernandez islands off the coast of Chile.

Correction. Two plants were mislabeled at the preview plant sale on April 30. The "Climbing Hydrangea" is *Hydrangea macrophylla* var. *Hortensia*. Plants in the greenhouse labeled "*Rhipsalis* sp." are a *Euphorbia* species. Anyone wishing an adjustment should call Mary Schroter, plant sale chairman, at 254-0596.

Mexican plants. On July 1 the garden received funds to support the second and final year of a project aimed at introducing Mexican plants of potential horticultural merit into the trade. This grant is held in collaboration with the Saratoga Horticultural Foundation.

Botany class. The university's course in practical botany is being taught this summer quarter in the garden by Douglas James, a graduate student in the Department of Botany, who is being assisted by a volunteer, Bonnie Ng.

Merger. A merger of the Friends of the Botanical Garden and the Docent Council was recently approved by both organizations. Although a Nominating Committee has been appointed to select a new slate of officers and Board members, suggestions for nominees are welcome. Write to Nominating Committee, Friends of the Botanical Garden, University of California, Berkeley, CA 94720.

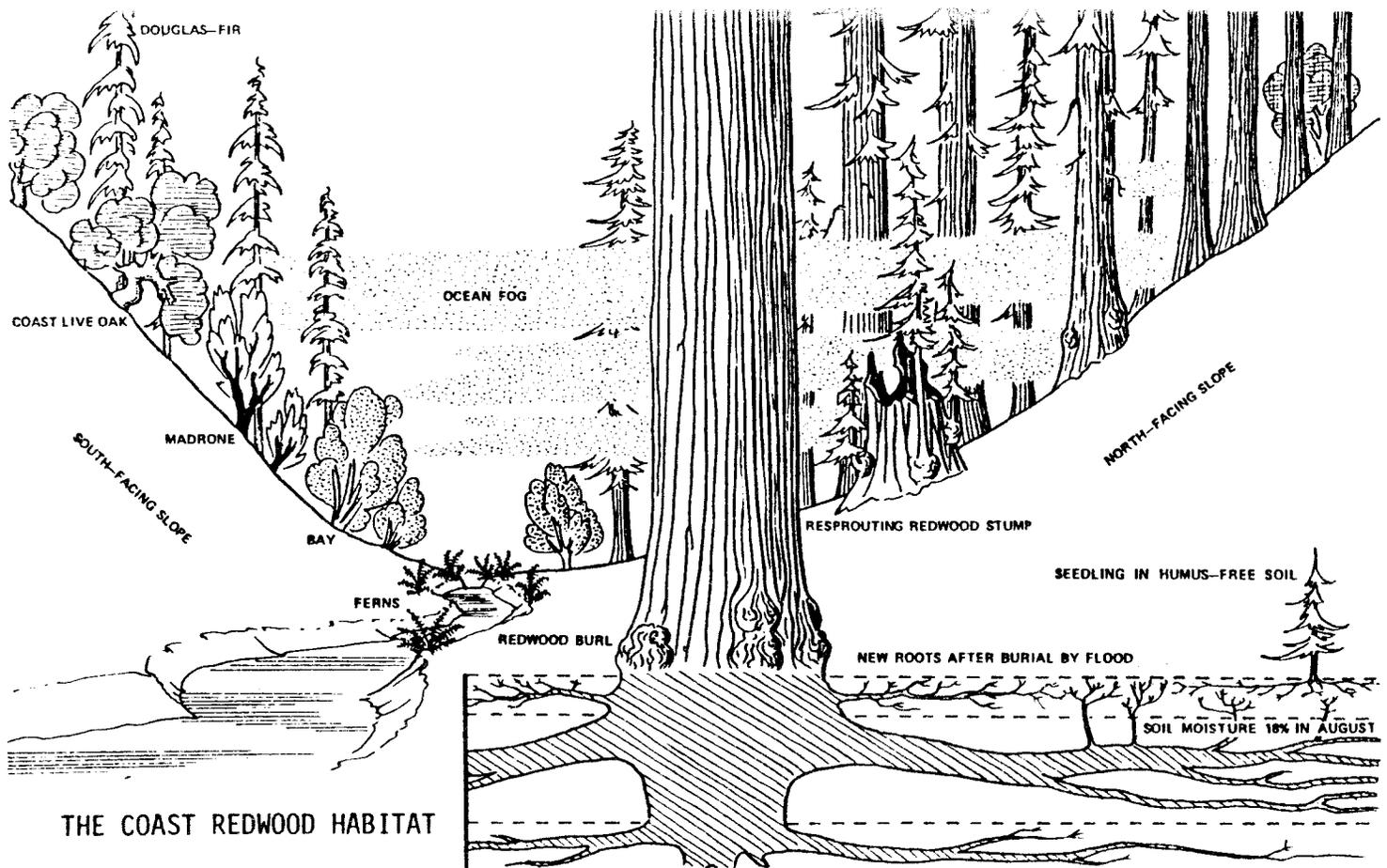
Successful plant sale. The docent plant sale preview on April 30, and the sale on May 7 were quite a success, and

resulted in an additional \$10,100 for the garden.

Al Irving. of the botanical garden staff, will serve as a judge of succulents at the preview for the San Francisco County Fair flower show in August. Mr. Irving also recently served as a judge in the 12th annual show of the Cactus and Succulent Society of America.

Director Robert Ornduff and Board member Alice Q. Howard paid visits to Sacramento where Dr. Ornduff testified before the Senate Finance Committee on behalf of Senate Bill 308. This bill is concerned with protection of rare and endangered plant species in California.

Thanks. Special thanks are extended to Editor W. George Waters of *Pacific Horticulture* for his advice and guidance in the development of the *Botanical Garden Quarterly*. Also, Dr. Robert A. Main, Professor of Biological Sciences at California State University, Hayward, offered valuable assistance in securing future illustrations. And the staff at Heliographics are appreciated for the special aid they provided in solving the problems of production.



from *An Island Called California*, by Elna Bakker.

Redwood grove duplicates natural forest

By Laurianne L. Hannan

On five acres of land directly west of the UC Botanical Garden is a fascinating model of a Coast Redwood plant community, the Stephen T. Mather Redwood Grove. Magnificent redwoods tower above a setting of gentle slopes dotted with ferns, shrubs, and herbs native to natural redwood forests. A narrow creek completes the scene and provides essential water as it flows slowly through the center of the plantings.

All the trees in the grove are *Sequoia sempervirens*, or Coast Redwoods. These trees grow along the Pacific coast of California and Oregon for about 500 miles from Curry County, Oregon to Monterey County, California.

Normally, these redwoods enjoy winter and spring rains averaging 60 inches per year. Also, the dense fogs that roll in from the ocean daily during the summer months are important in Coast Redwood ecology. The "fog drip" produced when moisture condenses on the leaves of the trees accounts for 10 inches or more of precipitation during the summer months. These fogs not only add moisture to the soil, but also serve to

reduce evaporation and transpiration from the trees.

Coast Redwoods are truly marvels when one considers their size, age, and resistance to disease. They are the world's tallest trees, and can reach over 350 feet. Also, they are very long-lived, and trees 2,200 years old have been reported. The average age of mature redwoods ranges from 500 to 1,000 years.

These trees do not have a central taproot, but have several stubby main roots which usually penetrate less than 6 feet into the soil. From these main roots grow a network of filamentous roots which cover an extensive area under the tree. This network is very efficient at drawing all available water into the tree.

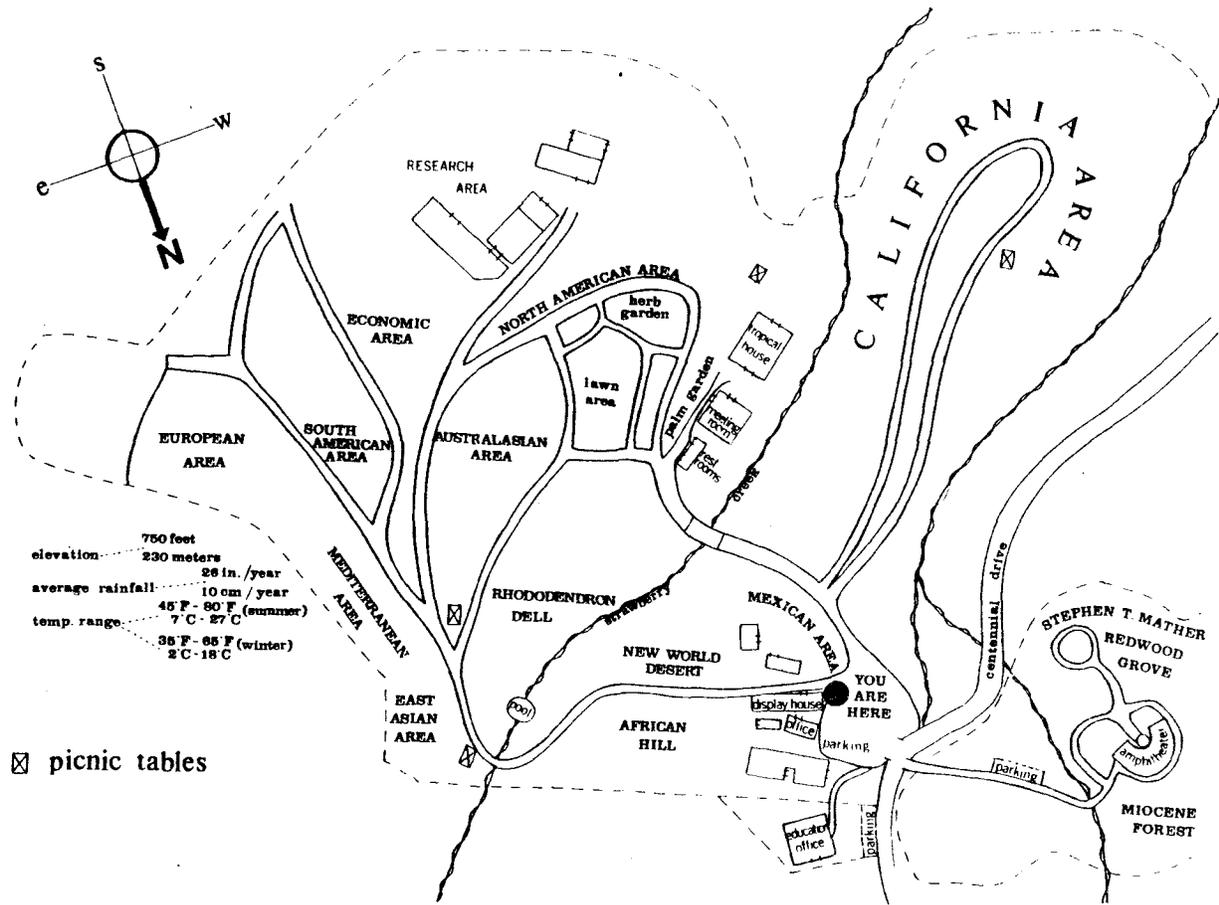
Although Coast Redwoods produce a large number of seeds, few pass through the thick layer of duff to reach a favorable spot for germination. But another common form of reproduction is by means of root-crown sprouting from burls, which are masses of buds on the trunks. After fires, floods, disease, cutting, or some other damage to the trees, the burls are stimulated to produce

branches. Burl sprouts can be very numerous, often with several hundred on one tree.

The ability to regenerate from burls, and the thick, shaggy covering of bark help account for the resistance of redwoods to fire and floods. Potential competitors such as Douglas Fir (*Pseudotsuga menziesii*) are not tolerant of fire and are killed. The fire burns all the detritus on the forest floor, kills the competing trees, and adds a new layer of enriching ash to the soil.

Floods leave silt around the trunks of trees, which smothers the roots of most species. However, redwoods respond quickly by producing a new layer of roots in the silt and thus do not die. After fire or floods, redwood seeds find more opportunities for germination due to the abundant water, nutrients, and light resulting from the death of competing seedlings.

These magnificent trees, plus the many interesting understory plants can currently be viewed in the grove, and more detailed botanical information is available in several booklets offered for sale in the main office of the garden.



Introducing the garden

The University of California Botanical Garden was established in 1895 in the heart of the campus, and moved to its present location in Strawberry Canyon in 1928, where it now covers a fenced area of 32 acres. The present site of the garden was previously a dairy ranch almost totally devoid of trees.

The garden currently has a collection of about 8,000 different kinds of plants, most of which are arranged in geographical collections. Touring the garden can give you a sample of many of the world's major floristic zones. Displays include plants from South America, East Asia, South Africa, California, Mexico, and other parts of the world. Also, special sections such as the Palm Garden, Rhododendron Dell, the Tropical House, and Herb Garden are further attractions.

Although it is sometimes difficult to believe that many of the magnificent plants in the garden were acquired as seeds, this has been a common means of acquisition. Seeds have been collected on various plant expeditions, or received through seed exchanges with other botanical gardens, as well as from collectors

and various scientific institutions.

There are many outstanding displays in the garden, and one of the highlights is the spectacular collection of cacti and other succulents in the New World Desert, African Hill, and Mexican areas. Also, succulent enthusiasts should not miss the large greenhouse near the main entrance that contains hundreds of potted succulents. This display is open daily in the afternoons from 12:30 to 1:30.

The same greenhouse also houses a fascinating collection of orchids. The orchid family, *Orchidaceae*, is the largest plant family, with over 20,000 species. Many of these plants are epiphytic, and grow perched on living plants and other objects.

Also, the recently opened greenhouse near the Succulent and Orchid House contains an excellent collection of carnivorous plants, as well as an unusual collection of ferns. Here you can view the 2-foot tall pitchers of the Cobra Plant (*Darlingtonia californica*), or the jewel-like tentacles of the Sundew (*Drosera species*). Also, the primitive *Psilotum* and *Tmesipteris* are on display here. According to fossil records, plants similar to these two

existed 300 million years ago.

The Herb Garden is another fascinating section. Separate plots divide the herbs into categories based on use, such as "medicinal," "flavoring for liqueurs," "fragrances," etc. It is interesting to note that in the Dark Ages, knowledge of herbs was forbidden, but kept alive in monastery "physic" gardens, many of which later developed into botanical gardens.

Also, the recently dedicated Stephen T. Mather Redwood Grove should not be missed. This 5-acre display of tall Coast Redwoods (*Sequoia sempervirens*) and understory plants is an outstanding model of a natural redwood forest. The entrance to the grove is on Centennial Drive, on the opposite side of the street from the main entrance to the garden.

These, and the many other fascinating sections of the garden can be visited 7 days a week from 9 a.m. to 5 p.m. The garden is located in Strawberry Canyon, a few minutes drive from the UC football stadium. The road to the garden, Centennial Drive, can be reached by following Rimway Road up behind the stadium.

How cacti conserve water

The cactus family (Cactaceae) contains some of the most efficient water-users in the plant world. All cacti have succulent stems which are modified for water storage. Inside every stem is a woody core surrounded by a large cylinder of spongy cells which can expand to hold water, and contract as the water is utilized by the plant. The outer surface of the stem is covered with a waxy layer called the cuticle which helps control evaporation and keeps the plant from drying out.

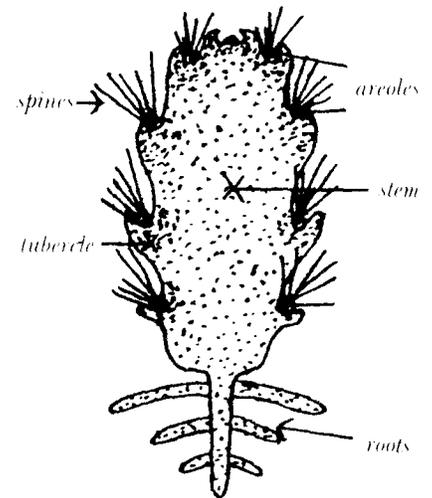
The roots of cacti are close to the surface of the ground and spread out in a network around the plant. During the brief rainy season in arid and semi-arid areas, cacti produce numerous "rain roots" which increase the root surface-area and pull in more water. After the rainy season is over, these rain roots wither away. The permanent roots are fleshy and can tolerate long droughts. Some of the larger cacti do possess a deep tap root along with a modified shallow root system.

Water loss from the surface of leaves is a problem for most plants when mois-

ture is scarce, but cacti are generally leafless or produce only small temporary leaves. The opuntias and their allies possess very small, ephemeral leaves which appear only briefly and are then shed. The group of cacti including *Cereus* and its allies never produce leaves.

The spines of cacti are modified branches which serve a number of important functions. Not only do they protect the plant from hungry predators, but they help to reflect sunlight which would otherwise increase the evaporation rate of the plant. Also, some cacti possess spines which curve downward. These spines act as "drip-tips." During a storm, water runs down the spines and is directed toward the base of the plant where the greatest number of roots are located.

You can view all of these features discussed by visiting the Succulent House or the New World Desert area. The cacti in the New World Desert area can tolerate our cool climate, but cacti which need a hotter, drier climate can be seen in the Succulent House.



Tour guides needed

Persons interested in becoming tour guides for the UC Botanical Garden are invited to apply for the Fourth Docent Training session. This program consists of 10 classes which will be taught by Mrs. Laurianne Hannan, Garden Educator and Botanist, on Thursdays, 9 a.m.-12 noon, from October 6, 1977 to December 8, 1977. These classes will train participants to conduct the 6 basic tours offered by the garden, as well as a few specialty tours.

Although tour guides are not required to have previous training in botany, enthusiasm for the garden and the general public are important qualifications. Also, upon completion of the course, all participants will be expected to conduct tours on a regular weekly basis for a minimum of 1 year.

The tours are usually given for school-age children, from Kindergarten to 9th grade, although clubs request them occasionally. Tours include *Life in Early California* (a look at plants used for food, fiber, medicine, and utensils by the California Indians), *The Five Senses* (recommended for grades K-2, a tour emphasizing the senses — smelling herbs,

seeing colors, hearing sounds, etc.), *Life in the Forest and Desert* (a discussion of how the environment affects forest and desert plants), *General Tour of the Garden* (a walk through the major areas of the garden), *Plant Kingdom* (a survey of the different types of higher plants), and *Economic Plants* (a tour of the plants used for food, fiber, etc.).

You may pick up an application form at the garden's main office, or call the Education Program at 642-3352 to have one sent to you. Or you may write to the Education Program, Botanical Garden, University of California, Berkeley, CA 94720. The deadline for applications is September 1, and those persons whose applications are accepted will be called in for a short interview with Mrs. Hannan between September 12 and September 16. A materials fee of \$20 will be charged for the course.

There are presently 30 active tour guides, and with the addition of the 15 new trainees from the upcoming fall class, the garden will be better able to meet the rising demand for school and club tours.



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Coming events

Cacti and other succulents: lecture and tour. A potpourri of growing tips for cacti and other succulents will be provided in a panel discussion on Sunday, August 14, 11 a.m. to 12 noon in the meeting room of the UC Botanical Garden. Participants are urged to bring a bag lunch for the informal discussion afterwards. Drinks will be provided. After lunch, from 1-2 p.m., the docents will provide a general tour of the garden.

Flower show preview. A preview of the San Francisco County Fair flower show will be held on Thursday, August 25, 6-8 p.m. at the Hall of Flowers, 9th Avenue and Lincoln Way in Golden Gate Park. Cheese and wine will be served, and a donation of \$5.00 per person is

requested to benefit the sponsoring Josephine D. Randall Junior Museum Society. Checks should be made payable to this society, and sent to Mrs. Jack Halpern, reservations chairman, 45 Forest Side Avenue, SF 94127. All donations are tax deductible.

Flower show. The annual San Francisco County Fair flower show will take place Friday, Saturday, and Sunday, August 26-28, at the Hall of Flowers, 9th Avenue and Lincoln Way in Golden Gate Park. Hours are 10 a.m.-8 p.m. Friday and Saturday, 10 a.m.-6 p.m. Sunday. Admission is \$1.50. The spectacular display of specimen blooms and flower arrangements continue to make this a popular annual event.

Nursery tour. Three nurseries will be visited on a fund-raising bus tour offered by the Saratoga Horticultural Foundation Associates on Thursday, Sept. 15. Included on the tour are Shaffer's Tropical Gardens and Antonelli's in Capitola, as well as the Beach Garden Nursery in Santa Cruz. A donation of \$15 per person is requested. For details and reservations, contact Mrs. Albert W. Turner, 981 Baileyana Rd., Hillsborough, CA 94010. Include a self-addressed stamped envelope for tickets. (415) 343-1730.

Plant sale. Another UC Botanical Garden plant sale is being planned for this coming fall. Watch for further announcements.

Members welcome

You are invited to become a member of the Friends of the Botanical Garden. This organization was developed to provide assistance to the botanical garden in improving and extending the plant collection, enriching the education program, and meeting general capital requirements.

Members, in return, are offered spe-

cial programs on plants and gardening, a 25% discount on selected UC Press books (such as *California Spring Wildflowers* by Munz), preview privileges for the annual sale of unique plants from the garden, and a quarterly publication which covers topics of general interest to plant enthusiasts as well as news of the garden.

Student and Senior Citizen memberships are discounted to \$5. Standard dues are \$10 for an individual, \$15 for a family. The Friends of the Botanical Garden function as a support group under the auspices of the UC Berkeley Foundation, and dues and gifts are tax deductible.

UC Berkeley Foundation
Friends of the Botanical Garden
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