MANZANITA

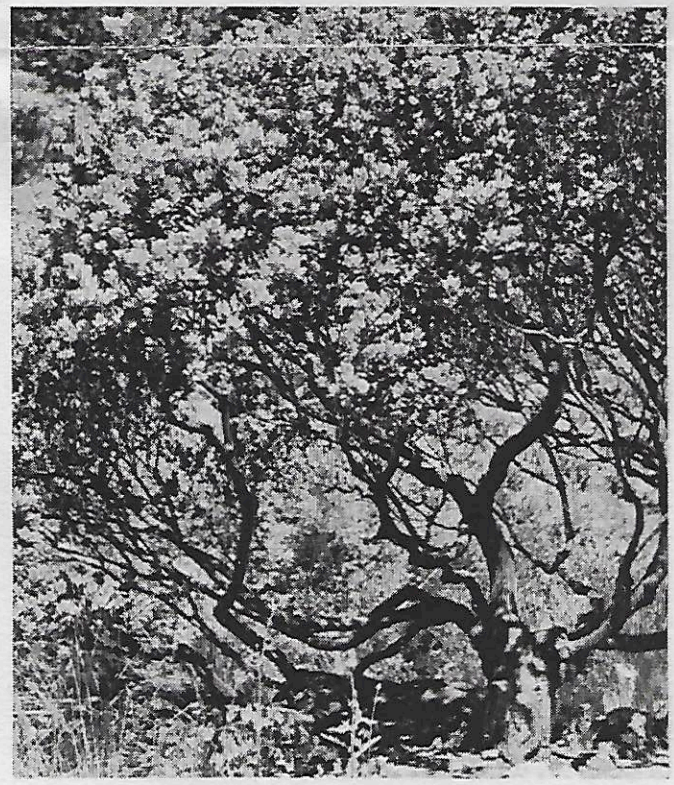
Volume 1, Number 1 ▪ Published by the Friends of the Regional Parks Botanic Garden ▪ Summer 1997

The Genus *Arctostaphylos*

KATHERINE GREENBERG

I think if I were forced to choose only one shrubby genus, giving up all others, I would say unhesitatingly 'Manzanitas, please,' for they can be all things at once to the lover of shrubs, giving you complete satisfaction at any time of year.

Lester Roundtree, Flowering Shrubs of California



Mature specimen manzanita (Arctostaphylos whatever) photographed in the Regional Parks Botanic Garden by Carrie Sprague.

This inaugural issue of *Manzanita* features the genus *Arctostaphylos* and is named for one of the notable collections in the Regional Parks Botanic Garden. The articles that appear in this newsletter explore various aspects of the fascinating manzanitas of California. Founding Director James Roof collected most species of manzanita, in the process saving some that were threatened by extinction. *Arctostaphylos franciscana*, extinct in the wild, was rescued from Laurel Hill Cemetery in San Francisco by James Roof before the bulldozers destroyed the last surviving plants. For years Alice Eastwood thought it was gone until James Roof brought her to the garden where she wept when she saw it.

In the March, 1976 issue of *The Four Seasons* James Roof wrote, "California contains the world's greatest aggregation of members of the manzanita family, the genus *Arctostaphylos*. The garden contains California's largest collection of *Arctostaphylos*: sixty-six named 'species and varieties' and many specimens apparently not referable to any of the accepted categories but kept for observation. The nearly complete collection offers opportunities to observe living manzanita material at any time--an undeniable advantage when critical information on certain species is required on short notice or in inconvenient seasons. Before being declared to be of a new species or variety, if they are so declared, subject plants are usually grown and observed in this garden for a minimum of five years, and

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Vol. 1 No. 1 Summer, 1997

Jeanne Ateljevich, Editor
Glenn Keator, Assistant Editor
Katherine Greenberg
Pat McRae
Carrie Sprague

Deadline for submittal of announcements and editorial material for the fall issue is August 15; for the winter issue, November 15.

MEMBERSHIP

The *Friends* of the Regional Parks Botanic Garden support the critical work of the garden in educational programs and horticultural experimentation. Funds raised by the *Friends* will help provide long-term financial security for the garden as well as new facilities and programs. Join with others and share enthusiasm for this vital garden.

Manzanita, a quarterly newsletter of the *Friends*, and *The Four Seasons*, an annual publication of the garden, are benefits of membership. The following nurseries offer discounts to *Friends*. These participating nurseries are sources for native plants, and are located throughout California. You may wish to call before visiting to find out hours and availability of plant material.

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California Flora (707 528-8813), Somers & D Streets, Fulton (north of Santa Rosa)
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* wholesale only; please call ahead

The Board of the *Friends* generally meets the first Thursday of the month at 1:00 P.M. All members are welcome. Call ahead to verify meeting date and time.

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Please make checks payable to the Regional Parks Foundation and send to: Regional Parks Botanic Garden
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For Information:
Membership, Patrice Spencer 510 841-8732
About becoming a volunteer or docent 510 841-8732
About the *Friends*, Katherine Greenberg (President) 510 283-4322

A Refuge for Plants, Birds, and People

STEPHEN W. EDWARDS, PH.D.
Garden Director

Sitting in the botanic garden on a quiet afternoon in the first warm days of spring, it is not difficult to imbibe the peacefulness of the place. Stellars jays make insistent guests, but I grew to love their chattering long ago, as a child. The wind flows through Jeffrey pines and grand firs, reminding me of a far-off ocean. The truly Californian aroma of sage, the melodies of myriad songbirds, and the declining sun render the atmosphere blissful. But the pleasant solitude I feel here reminds me most powerfully of the presence of James B. Roof. There is no doubt that the garden is haunted. Curiously, that haunting seems to be the garden´s strongest guarantor of tranquility.

What a story teller, and homilist, he was. Not particularly kind to those who worked for him, he nevertheless kept them brilliantly entertained. An oft-repeated theme of his sermons was the nature of park service and what it meant to be a "good park man", as opposed to a recreationist. Of course, an absolute polarization of these is Cartesian and unreal. Nevertheless, sometimes the truth is made visible only when distinctions are highlighted by the searing insights of a visionary. When Jim called someone a "good park man" (or park person–he frequently remarked that the best directors of the park district had been women) we understood that he held that person in esteem.

Jim was not just a wildland conservationist. He was profoundly interested in parks–working parks, parks bringing together land, wildlife, and people. He recognized the deep needs and longings that people have for the peacefulness that flows preeminently and superabundantly from nature. He realized that people need refuge from the deformation of nature that threatens to drown us nearly everywhere, and that the highest calling of parks is to afford such refuge. The garden he laboriously built would be such a park, as free and as far as possible from the state´s accelerating homogenization, tarmacking, corniness, and panbanalization. All these manifestations of our supposed progress as a society send thousands more harried and half-stunned visitors to the garden every year, seeking refuge. They come to enjoy the plants, the birds, the landscape; to study, to picnic, to sunbathe, to get married, or, most commonly, simply to walk in this comforting island. The garden in spring and summer presnts a phantasmagoria of sights, colors, and biodiversity that can be overwhelming. On the other hand, it is fenced, patrolled, secluded, and secure: it feels safe. So, if one feels overwhelmed, one can simply lie down on the lawn and listen to the birds, or the gentle flutterings of aspen leaves, until all those trivial worries drift away.

"Keeping it simple" was a principal goal for Roof, and it remains focal for us. Our great challenge now is to improve the garden´s quality as a garden, and especially to improve our outreach to those who need it, without damaging the garden´s essential character. We must shun the baleful road to gimmickism, trinketization, and ineffectual busyness, which, like medieval bloodlettings, only increase the evil of any ailment. And we must not try to do too much.

This is the Regional Parks Botanic Garden, and it is haunted, thank goodness! I will never forget Jim´s last words to me, warning me of the dangers of excessive artificiality or contrivance. The garden should seem to a visitor like a piece of old California, where people could still be peacefully intimate with plants and the land.

Thus, welcome: plants, the land, birds, butterflies, bumblebees, and people; no wishing wells, no cafe, no video stations, no replicas of suburban backyard decks or landscape architects´ fads; no topiary, no sculpture garden, no conference center, no gift shop, no bandstand, no talking displays, no obscuring plant beds with intrusive interpretive panels, no fountains, no consigning every bench in any peaceful spot to someone´s personal brass memorial. Don´t get me wrong. Every one of these is a very, very good thing in its proper place. But the Regional Parks Botanic Garden is a small, delicate, naturalistic, historic place, definitively not the place for any of these things.

Every garden has its unique character. The character of this garden was forged in the furnace of Jim Roof´s love for a California of old, in all its irresistible simplicity. Strolling through the garden a quiet evening, his haunting presence can be a thing of joy.

The Botany of Manzanitas

GLENN KEATOR, PH.D.

The genus *Arctostaphylos* (Greek for bear grape) is the epitome of a California-based group. Although the manzanitas extend far beyond California's borders–one species, *A. uva-ursi*, actually is circumboreal–the genus's diversity is centered here. The new *Jepson Manual* lists more than 55 species, and several of those species have two or more varieties.

Manzanitas are characterized by reddish purple bark, often the new bark smooth and glossy; alternate, simple, usually entire, leathery, ovate leaves that are evergreen. Species that live in full sun generally have their leaves vertically oriented, an adaptation to cut down on the impact of water loss from the hot summer sun. Manzanitas are also noted for their early-blooming clusters of hanging urn- or lantern-shaped white to pink flowers. Each flower has five (occasionally 4) tiny sepals, five (occasionally 4) fused petals with small scalloped lobes at their tips, and ten dark stamens hidden inside the petals. Each stamen is a work of art, a triangular whitish filament supporting a chunky dark purple anther with two holes at its tip and a pair of tiny down-turned horns or appendages. Perhaps these appendages are tongue guides for pollinators. Manzanitas are also noted for their fleshy applelike fruits (manzana is Spanish for apple; -ita means little). Fruits contain a mealy flesh around several bone-hard seeds.

Despite all these traits that hold the genus together, manzanitas also have much variation. Some species, like *A. uva-ursi*, *A. edmundsii*, and *A. nevadensis* grow as widely trending woody ground covers only a few inches high. Others grow into medium-sized bushes; still others, such as *A. glauca*, *A. manzanita*, and *A. insularis* grow into small multitrunked trees up to twenty feet tall. Manzanita leaves vary from vivid green to blue- or gray-green and are smooth to closely felted with hairs or are even lined with shaggy hairs. Bark on some species becomes shaggy in age or splinters into tiny curls. And many manzanitas have no special root crown and are killed outright by fire, but a few are burl formers with an enlarged root crown that contains many dormant buds. Burl formers sprout vigorously after fire.

As you can see there is much variation within a common mold. To make matters more difficult, no two botanists exactly agree on the concept of what are valid species. Splitters would divide manzanitas into even greater numbers of species; lumpers would recognize these same species as varieties within fewer variable species. Partly this difference in viewing manzanitas is because there is frequent hybridization between closely related species, and hybrids sometimes masquerade as full-fledged varieties or even species.

Keying manzanitas is fairly complex. The following is a guideline to some of the more prominent key differences. You'll notice that just about every facet is used in figuring out relationships and identification:

- shape and texture of fruits. Fruits are usually globe-shaped and smooth, but one small subgroup of four species has cylinder-shaped fruits with vertical ribs on the covering skin.

- whether the seeds can be pulled apart or are fused into a single, solid mass.

- presence or absence of burls. Burls are easily seen as swollen woody bases where roots meet trunks, near ground level.

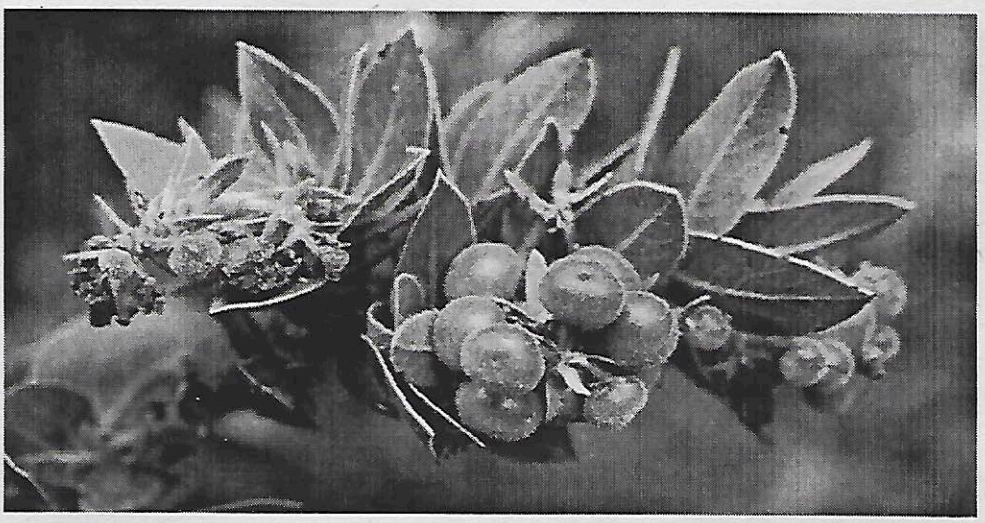
- arrangement of flowers. Flowers may be in simple racemes or complex panicles. Panicles are compound racemes or racemes of racemes.

- kind of floral bracts. The major section arctostaphylos has scalelike bracts. This means the bracts are shaped more or less like fish scales and pressed against the tiny flower branches. The sections pictobracteata and foliobracteata, by contrast, have lance-shaped or broader leafy greenish or pinkish bracts that turn outwards.

- color of leaves, especially whether the upper and lower surfaces are of a similar or different color.

- presence or absence of an obvious leaf stalk or petiole. Some species have clasping stalkless leaves.

- endless details of hairs on leaves and twigs. Some hairs are coarse and bristly; others are tiny and visible only under the hand lens; still others are densely matted and wooly. Hairs may also be sticky or not.



Manzanita berries, or "little apples". Photograph by Glenn Keator

The President's Message

Welcome!

The *Friends* of the Regional Parks Botanic Garden, dedicated to supporting this extraordinary garden and its programs, began offering memberships at the spring plant sale. The idea for the *Friends* was suggested by Glenn Keator last year in his docent training class. A small group of enthusiastic docents began meeting in the fall to organize a Board of Directors, Advisory Council, brochure, bylaws, newsletter and programs for the *Friends*.

I would like to extend a special thank you to our Advisor Glenn Keator who has generously given time and advice. Board members have also worked hard to organize and promote the *Friends*, and our distinguished Advisory Council has offered support and encouragement. Of course, none of this would be possible without the guidance of Garden Director Steve Edwards.

Steve has expressed surprise that the *Friends* are beginning so soon. The surprise to me is that the garden, established in 1940, has not had an ongoing Friends group sooner, although a group of volunteers in the 1960's began the California Native Plant Society here in the garden.

Thanks to a generous gift from the East Bay Chapter of C.N.P.S., we have a *Friends* T-shirt. This project will raise funds and increase awareness of the garden. The T-shirts were a popular item at the spring plant sale. Both the T-shirt design and our distinctive logo, featuring a manzanita branch, were designed by Peg Steunenberg.

Nurseries located throughout California have offered discounts as a benefit of membership to *Friends*. You will find them listed on page 2. They are sources for many native plants, including various manzanitas featured in this issue. We are also planning a field trip for *Friends* to several nurseries in the fall.

I have been inspired by the garden since my first visit twenty years ago. It reflects the beauty and diversity of California's native plants and recreates the character of the state's natural landscape. Walking through the garden along rock-edged paths offers many possibilities for discovery. Steve Edwards suggested to one visitor, who asked what was of particular interest, that he approach the garden like a "treasure hunt". The Regional Parks Botanic Garden is truly a treasure in the East Bay hills, and we encourage you to visit often.

–Katherine Greenberg

Manzanita Mania

BERT JOHNSON

Manzanita bark is unusual, for during the warm months of summer the papery-thin bark is shed in ribbon-like strips, first exposing a greenish coloration and then ripening to its typical color. This somewhat reptilian or snake-like feature of manzanita bark is, of course, essential in order to allow the trunks and branches to annually grow and expand.

Besides their magical bark, manzanitas have a lot more going for them. For unlike most of their other relatives of the Heath Family (Ericaceae), which often require lots of water, specialized organic soil conditions, and are often difficult to grow (rhododendrons, azaleas, huckleberries, heather and so forth), manzanitas are generally very drought tolerant, often thrive on poor soils, and are relatively easy to grow.

In California, there are somewhere between 50 to 70 different kinds of manzanitas. Across the vast and varied terrain of the golden state, manzanitas come in a wide range of sizes and shapes: from very tall and nearly treelike, or as high as your knees, or as low as turf. Their leaves range in size between that of a dime and a silver dollar and are often thickish, waxy and glossy. Leaf color can be dark green, bright green, yellow-green, blue-green, grayish to silvery-white.

Perhaps the most striking feature of manzanitas is their flowers. Manzanitas bloom in winter, predominantly during the months of December, January, February, and early March. This is unlike most other plants, which flower in spring or summer. As a result, manzanitas are an important natural source of nectar for winter-hungry hummingbirds.

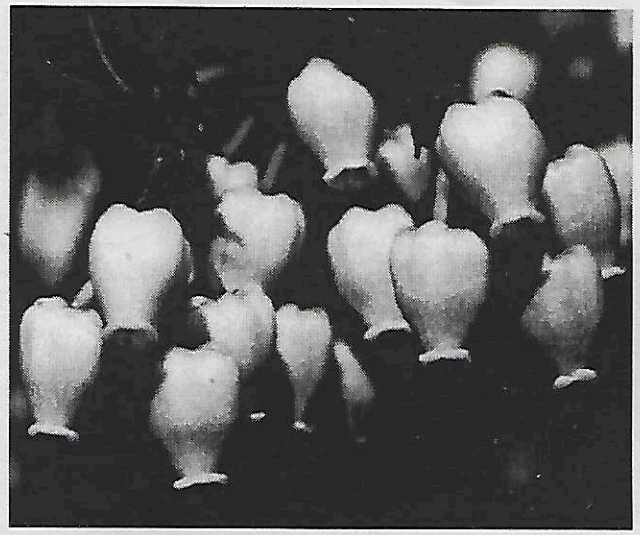
Strangely enough however, manzanitas begin their flower development during the summer months. Then, minute, dormant flower buds attached to tiny-branched floral stems (this is called a nascent inflorescence) crown the tip of each leafy branchlet. And there they sit and wait, dormant, until winter arrives. As the winter rains and/or snowfall begin, the flowers open. This may seem unusual, since the coldness and wetness of winter would normally be devastating to most other types of flowers (frost damage, mildews, washing away of pollen, etc.). But not so with the winter-blooming manzanitas; they have adapted a most perfect strategy.

First, their flowers are tiny and densely arranged in clusters with their petals fused together into a vase or urn shape. Collectively, these features afford both insulation and frost protection to the flowers. Second, the flowers have a waxy, almost waterproof coating and hang downwards or upside down, thus allowing rainwater to be freely shed and to protect the pollen from being washed away. And third, the cool winter temperatures allow the flowers to last for a long time, often for many weeks or months. Flower color ranges from pure white to pink to deep rose. And when in bloom, these exceedingly ornamental clusters of tiny flowers adorn the tip of each and every branchlet; the spectacle being breathtaking–to say the least.

Also, one cannot overlook the charm and beauty of manzanita berries, or "little apples" as they are called, clustered at the branch tips during the spring and summer months. These miniature apples can be bright red, orangish to tan. Though edible and quite tasteless to humans, manzanita berries are relished by bears, hence the scientific name *Arctostaphylos* which means bear grapes. Or perhaps you have heard of the trailing bearberry (*Arctostaphylos uva-ursi*) which popularizes this love affair between manzanita berries and bears.

The Ecology of Manzanitas

In nature, manzanitas most commonly grow with other shrubby plants in a densely arranged manner called chaparral. Often, chaparral is referred to as an "elfin forest", since this shrubby assemblage is



Manzanita flowers. Photograph by Glenn Keator

generally waist or head high. Chaparral usually occupies hilly or sloped regions of foothills and mountains on often very poor soils which are low in organic matter and nutrients. These sites are sometimes extreme, and called barrens, where little else may grow except one or two kinds of manzanita and a few herbs. Soils are usually rocky, gravelly to sandy where manzanitas occur and they are often on steeply sloped terrain or ridgetops. Due to the dense growth of chaparral, along with the often summer-hot and dry conditions, manzanita is highly subject to, and in fact, dependent on periodic wildfires. Fire actually rejuvenates manzanitas and other chaparral plant populations by eliminating old and diseased plants while providing an ashy seedbed for seeds to germinate, grow and prosper.

Growing Manzanitas

Now, how to grow manzanitas. Manzanitas can be successfully cultivated on seemingly the lousiest soils imaginable. Rocky, gravelly or sandy soils are preferred by manzanitas. Yet, they do not at all resent being on highly organic or even clayey soil, so long as drainage is adequate, which means one must have some degree of slope. If the site is perfectly flat or level in combination with heavy clay soil, it is deadly to manzanitas. In the botanic garden we are sometimes faced with this problem. The way we overcome it is to premix a generous portion of some sort of coarse, rocky material (we use base-rock mix) with an equal part of a good, organic potting soil and mound this soil mix on top of the clay soil, thereby creating a raised plant bed or "hill". This provides adequate drainage and loose, well-aerated soil conditions for our manzanitas. Again, if you have heavy, even clayey soil on a slope or hill, manzanitas will generally perform well with little or no soil amendment.

Manzanitas are notorious hybridizers both in nature and in cultivation. So you cannot trust that seed will reproduce your chosen selection. Besides, seed propagation is difficult, slow, and unreliable. Manzanitas are best propagated from tip cuttings of the current season's growth. The best time to take cuttings is mid to late summer, as the growth is then fresh and properly ripened. At this time, you will see the dormant flower buds forming at the branch tip, and these should be cut or pinched off. However, you can take manzanita cuttings at any time of year with fair to good success. Depending on the variety, cuttings take anywhere from several weeks to several months to root. The low-growing varieties, particularly the trailing bearberry (*A. uva-ursi*), root the most quickly.

Remember that manzanitas, with few exceptions, require full sun, at least a half day or more of direct sunlight. The low-growing types are somewhat more shade tolerant. In general, the upright or tall-growing manzanitas are the most drought tolerant and require little watering once established. The low-growing kinds appreciate occasional to more frequent watering during the dry months. The low-growing and/or trailing varieties are also the fastest growing.

Over the years, this botanic garden has cultivated nearly all of the 50 to 70 varieties of manzanita known to occur in California. And through all of those trials, errors, and successes, we have learned a lot about their successful cultivation. Chiefly, the manzanitas whose range is the higher, interior mountains of California (mainly the Sierra Nevada) have proven unsuccessful and are largely ungrowable. The most promising manzanitas for horticultural success in our gardens are those found in our Coast Ranges, notably the manzanitas found in central coastal California--Marin, San Mateo, Santa Cruz, Monterey, San Luis Obispo and Santa Barbara counties. We have had the greatest success with the sessile-leaved group of manzanitas (often called the *Arctostaphylos andersonii* complex) and most of the lower growing or sprawling types of manzanitas, notably the trailing bearberry (*A. uva-ursi*) and its selected cultivars and hybrids.

The Regional Parks Botanic Garden is an excellent place to view the wide variety of manzanitas, get some landscaping ideas and inspirations and begin or continue your venture in the wonderful world of manzanitas. Come and visit both our manzanitas and our "manzanita mania" staff.

Help!

Way back in time immoral, as Jim Roof would have put it (the term fits our time quite snugly, too), there was a founding Friends of the Garden group, consisting of many notable East Bay residents, some of whom are now in the (U.S. or world) history books. They saved the garden from extinction in the 1960's. That group then created the California Native Plant Society. When Proposition 13 lowered the boom on the park district in the late 1970's, CNPS and other supporters of the garden created the plant sale volunteers (in short, "The Volunteers"). Their mission was to create a nursery operation and run a plant sale, so that the park district would not compel us to charge entrance fees. This has worked enormously well. The plant sale has grown grander year-by-year.

Now two fresh groups of volunteers, the docents and the officers of the *Friends*, are extending the garden's reach in education and public support. Yet all is not rosy. The plant sale volunteers, consisting originally of longtime members of CNPS, and many old hands at native horticulture, have dwindled in number. The remaining hard-working few are now older than the bristlecone pines. . . some came over the pass with Fremont or Bidwell. It's getting hard for them to maintain their customarily high level of production, and so to put together their phantasmagoric plant sale. Thus the volunteers, and the garden, are looking for a noble few who might rally to the call to take up this good work.

Volunteer labors are not without rewards. Those who come to propagate, pot, [not propagate pot!] or water are typically treated one day to a hands-on horticultural workshop by volunteers who have successfully "done it all"; on another, to unforgettable tales of California, CNPS, or the park district; on yet another, to an impromptu slide show. There are frequent visits by interesting guests, and there are parties. The volunteers at the garden have the most magical work site imaginable right in the middle of one of America's most beautiful gardens. The "potting shed" where most of their work is done is heated, and it has a refrigerator and microwave. In recent years popcorn, tea, cookies, and other such fortifications have become standard elements of the operation. Volunteers are seen frequently ducking out for a pleasant stroll around the grounds, grabbing seed as they go.

They do need help, and they need it badly. But they are not looking only for "potters." They need people who want to take cuttings, bring them on to beautiful plants, and shepherd them all the way to the spring plant sale. They need seed people–"seedy friends"–as Wayne Roderick calls them, who will collect, germinate, and grow on quality plants. Some of this can even be done at home. (For my own part, I must say that germinating seed and watching the new young plants progress through their various ontogenetic stages, growing on to maturity, is among the most joyous of experiences.) They need a fern enthusiast. Finally, they need one or two energetic souls to begin training to take on the important (but not arduous) duties of coordinating the volunteers and serving as official liaison to CNPS.

Unlike some other gardens, we do not hold a pre-sale, where the best and rarest plants, embodying complex histories of acquisition, propagation, and care, are snatched up by friends or volunteers just before the main sale, where people stand in line (sometimes for hours) in hope of obtaining such plants. No problemo. Our volunteers can take home, as partial reward for their labors, cuttings, divisions, or seed of desirable plants year-round.

Ultimately, there is no reward to compare in satisfaction with good, old-fashioned, public service, and charitable hands-on support for a venerable botanic garden. Please call us at (510) 841-8732 to find out more about how the plant sale volunteers work.

–Steve Edwards

From The Garden Volunteers

Plant Sale a Success

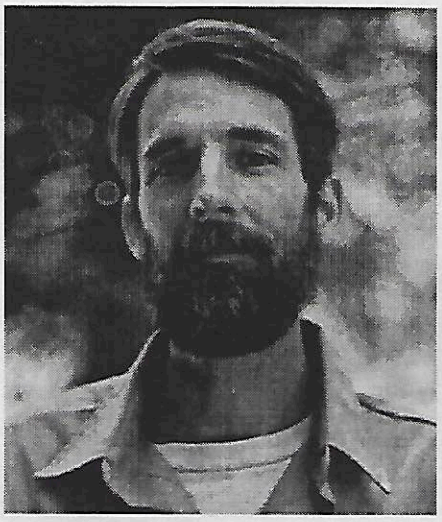
The Botanic Garden Volunteers held our annual plant sale on April 19. During the year we meet regularly once a week to propagate seeds and cuttings taken from the garden, hence the selection of plants at the sale includes many natives not readily available elsewhere.

Rain the day before the sale caused much consternation. However, it freshened up the plants. Saturday dawned fine and we had a record crowd. The sale took in over $20,000 which goes directly to the garden. Some of the plants left over may be purchased from the volunteers on most Thursday mornings.

Last year half of the profits were spent on buying a "mule" - a motorized cart to move our plants to sale position. It is used by garden staff most days of the year for moving rocks, soil, etc. Some of this year's profits are earmarked to be spent on a ride-on mower for the lawns and a shed to house it and the mule.

–Es Anderson

People



Stephen W. Edwards, the director of the Regional Parks Botanic Garden, took on that job when Wayne Roderick retired. Steve had first worked in the garden during the summers of 1970 and 1971 when he was attending St. Mary's College. After graduating summa cum laude with a degree in philosophy in 1973, Steve continued working for the Regional Parks during the summers as he attended graduate school at the University of California at Berkeley to earn an M.A. degree in mammalian paleontology in 1975 and a Ph.D. in paleobotany in 1983. Steve worked at the Botanic Garden every summer from 1977 to 1983.

Steve worked for both James Roof, the founding director, and for Wayne Roderick, and learned a great deal from both of them. He also worked with Walter Knight, the supervisor of the Garden in 1970 and 1971, and worked with him at Las Trampas and on the eucalyptus crew in 1973 after the big freeze which killed back so many of those trees. Steve says that Walter Knight was a wonderful field teacher. Steve assisted Walter Knight with his *Flora of Sonoma County*, and felt that the experience was a valuable enhancement of his floristic abilities.

Steve grew up in Oakland, California. He was the youngest of three boys. He learned how to grow plants very early and remembers winning many blue ribbons for his cacti at the San Francisco County Fair and from the Cactus and Succulent Society of California in his grade school years. Steve's mother is a skilled artist, painting wildlife and landscapes. It is from her that Steve began to develop his love of the natural world. When the family went to the Calaveras and Lake Tahoe regions in the summer, Steve and his mom brought home young conifers to plant in the yard of the family home in the Montclair hills.

After receiving his M.A. degree, Steve became a research assistant on the University of California interdisciplinary expedition to Ethiopia in winter 1977. Steve was in charge of paleontology and supervised the excavation of a Developed Oldowan occupation horizon, under the direction of J. Desmond Clark. At that time at UCB, African prehistory was a major focus. Steve says he was in heaven. He learned flintknapping from Glynn Isaac and still does class demonstrations of this skill. He is still vitally interested in prehistoric archaeology and paleoanthropology.

Steve has a long and interesting list of publications which deal with geology, horticulture, paleontology, field botany, prehistoric archaeology, flintknapping and plant systematics. He has written self-guided tours for the Garden and for Sibley Volcanic Regional Preserve. His articles have appeared in *The Four Seasons*, *Current Anthropology*, *California Geology*, *Fremontia*, the *Journal of Vertebrate Paleontology*, and *Pacific Horticulture*. He also writes poetry and hopes to publish it eventually.

Since Steve became director of the Regional Parks Botanic Garden, he has become editor of *The Four Seasons* as well as writing articles for it. He continued Wayne Roderick's Saturday lecture series at the garden during the winter months and does many of the lectures himself. He also lectures widely to a variety of groups on California-native botany, horticulture, the co-evolution of large mammals and California native plants, etc. Three years ago, with much encouragement and support from Glenn Keator, Steve instituted an annual docent training program taught by Glenn, with a continuing docent enrichment program. Steve established an endowment program for the garden and most recently encouraged the establishment of the *Friends* of the Garden. A collaborative effort between Steve and Al Seneres, the garden's supervisor, has created numerous naturalistic bedrock outcrops which are new in the garden's history. With the help of two Americorps students, Steve built hypertufa troughs which are newly planted and on display around the Visitor Center and the east greenhouse. His long term goals for the garden include careful capital development, and gradual enrichment in numbers of taxa on display without compromising the beauty of the existing landscape.

Steve continues to love field work. He found the first site of fossil *Lyonothamnus* (ironwood) in the Sierra Nevada, and he and his wife Janet found the first example of Canadian buffalo berry (*Shepherdia*) in California on Mt. Eddy in Siskiyou County. Steve also found the second known locality for western viburnum in the San Francisco Bay Area. Steve loves botanizing and photographing what he finds and sharing his wide range of knowledge with all of us. His willingness to do so enriches the lives of the rest of us involved in the Regional Parks Botanic Garden.

–Carrie Sprague

Arctostaphylos *cont'd*

often–especially if the genus in question is *Arctostaphylos*–for a considerably longer time. There is no better method of learning the complexities of this state's manzanitas."

The garden's collection of manzanitas is well known and has been the basis for monographs from people outside the garden. Phil Wells from the University of Kansas, contributor of the section on manzanitas for *The Jepson Manual*, knows the garden well and has studied it many times. Walter Knight, an authority on manzanitas and foreman during Roof's years, did much of the work on Wells' monograph, as yet unpublished. Recently, Tom Parker and Mike Vasey from San Francisco State University have taken leaf samples for DNA sequencing to solve certain problems for a revision of the genus. They are conducting research for the treatment of *Arctostaphylos* in the new *Flora of North America*.

A walk through various sections of the garden, representing geographic regions of California, reveals the diversity of manzanitas and offers many outstanding examples. Bert Johnson notes, "In the valley section are two particularly fine specimens of the King Mountain manzanita (*Arctostaphylos regismontana*), a manzanita native to the northern reaches of the Santa Cruz Mountains. Planted in 1947, these half-century-old shrubs have since matured into some of the most ornamental manzanitas in the garden. Both shrubs are about ten feet tall and wide. One has several twisting trunks arising from its base; the other has a single mysteriously crooked, corkscrew-like trunk. The onlooker is quite mesmerized by observing either. Over the years, I have witnessed countless people stroll by these manzanitas, unable to resist the temptation to stroke their smooth and colorful bark–with oh's and ah's often remarked."

The research, conservation efforts and horticultural experimentation begun by James Roof have continued. With the help of Roman Gankin, *Arctostaphylos uva-ursi* var. 'Leo Breweri' was reintroduced on San Bruno Mountain after becoming extinct. In recent years, several outstanding manzanita cultivars have been developed in the garden.

- ***Arctostaphylos edmundsii var. parvifolia* 'Bert Johnson'** from Monterey County. Mounds compactly to 2'; creeps and roots at the margin. Interesting hummocky habit. Tiny leaves less than 1.5 cm long. New leaves bronze with reddish margins becoming bronze. Slow-growing. Good rock garden and container plant. Tolerates clay.
- ***A. refugioensis* 'Pink Glory'-** Rare and endangered. 6-8' tall. Erect manzanita, highly ornamental. Extremely rare in nature. From Santa Barbara County. Tolerates garden conditions with good drainage. Likes sun and heat, but not pruning. Dense, pale green heart-shaped leaves with reddish edging in spring. Garden has both a white and a pink-flowering form. Hummingbirds like it.
- ***A. uva-ursi* 'Green Supreme'-** Superior for ground-covering qualities (was a chance seedling in valley section), 6" tall x 12' wide. Bright green, glossy, showy leaves. Suppresses weeds. Extremely drought tolerant. Does not freeze. Unexciting flowers.
- ***A. uva-ursi* 'Lillian'** from Point Reyes. (RPBG red label 194). Most floriferous of all bearberries-deep pink flowers in March and April.
- ***A. uva-ursi* 'Point St. George'** - Shown in the coastal dunes section of the garden. Has highly ornamental large cranberry red berries which hold for much of the year.
- ***A. viridissima* 'White Cloud'** from Santa Cruz Island. Extremely rare and listed as rare and endangered. (4 shrubs in the Channel Island section) 4-5' high and 3' wide. Growing in shade. Long whitish hairs cover stems and petioles. Densely crowded snowy white flowers in spring.

Manzanita Cider

Native-Americans celebrated their harvests with a cider-like drink. This recipe is from *Edible and Useful Plants of California* by Charlotte Bringle Clarke.

green manzanita berries
water
sugar or honey

Cover the berries with water in a saucepan and simmer 15 minutes or until somewhat soft. Bruise the berries but do not crush. Let stand overnight. Decant the liquid, let sediment settle, and decant again. Sweeten if desired.

Classes

COURSES WITH GLENN KEATOR, SUMMER 1997
California Academy of Sciences, Information, Barbara Hudler (415) 750-7100
Learning to identify California's complex composites. Composites are the most successful of all flowering plant groups, but people find them difficult to key. We'll show you the secrets to success and what great fun looking at their flowers can be. Three Wednesday evenings, August 6, 13, and 20 and one Saturday field trip August 9.

Wildflowers of Mt. Lassen Volcanic National Park. This underused park is a lovely place to learn all about trees, wildflowers, and ferns and is the southernmost mountain of the Cascade Ranges. Saturday, July 26 through Tuesday, July 29.

University of California Botanical Gardens, Information, (510) 642-3352
Flora of Yosemite's east side. We'll botanize and hike near the crest of the Sierra in starkly grand Yosemite country, including Virginia Lakes and Sonora Pass. Saturday, August 2 through Tuesday, August 5.

Beginning botany for families: basic leaf and flower workshops. Come and join the fun of seeing the many angles to leaf design and the miraculous intricacy of flowers and their pollinators at U.C.'s beautiful botanical gardens. Two Thursday evenings: August 7 and 14.

COURSE WITH KATHERINE GREENBERG, FALL 1997
Merritt College Department of Landscape Horticulture, Information, (510) 436-2418
Design with Natives to create a California garden. This class will explore design concepts, plant materials, sources, planning, installation and care. Field trips will include visits to interesting local gardens that are examples of seasonal interest, habitat gardening for wildlife, drought tolerance, low maintenance and integration with surrounding open spaces. Four classes, September 6, 13, 20 and 27, 10 a.m. - 4 p.m.

COURSE WITH JEANNE ATELJEVICH, FALL 1997
City of Lafayette Park and Recreation Department, Information, (510) 284-1038
Growing California Native Plants in Inland Climates. Class will discuss plant selection, sources, care, and integration into the garden and includes hands-on propagation and a field-trip to the Botanic Garden in Tilden Park. Four Thursdays 9-11 a.m., September 25 through October 16.

In the Wild

Some nearby places you can explore for manzanitas

Huckleberry Trail in the Oakland Hills
Arctostaphylos crustacea, brittle-leaf manzanita
A. pallida, Alameda manzanita
Wall Ridge, Mt. Diablo
A. auriculata, Mt. Diablo manzanita
King Mountain, Peninsula
A. regismontana, King Mountain manzanita
Montara Mountain, Pacifica
A. montaraensis, Montara Mountain manzanita
San Bruno Mountain, near SFO
A. imbricata, shingle-leaf manzanita
Pt. Reyes lighthouse
A. uva-ursi, kinnikinnick
Empire Grade, Santa Cruz Mountains
A. andersonii, heartleaf manzanita
Bonny Doon Area, Santa Cruz Mountains
A. silvicola, silver-leaf manzanita

Contributors to this Issue

Stephen W. Edwards, Ph.D., is Garden Director of the Regional Parks Botanic Garden. He is profiled elsewhere in this issue.
Katherine Greenberg is a landscape designer and is currently serving as a docent and President of the *Friends* of the Regional Parks Botanic Garden.
Bert Johnson is a long-time gardener on the staff at the Regional Parks Botanic Garden. He has worked closely with James Roof and is particularly known for his interest in *Arctostaphylos*.
Glenn Keator, Ph.D., is a well-known freelance instructor of botany in the Bay Area. He currently leads many trips for the California Academy of Sciences and provides docent instruction in botany for the Regional Parks Botanic Garden. He is the author of several books on native plants and a forthcoming book on oaks.
Carrie Sprague is a docent and a Board Member for the *Friends* of the Regional Parks Botanic Garden.

Friends Notes

ATTENTION! Fall event for *FRIENDS*. Don't miss our trip to Suncrest Nurseries in Watsonville, where we will see lots of native plants and have a chance to do some wholesale shopping. Then on to Sierra Azul and its demonstration garden, and last–the U.C. Santa Cruz arboretum. Wayne Roderick and Glenn Keator will be along. Saturday, October 11. Call Janet Herben (510) 524-7972 or Sue Rosenthal (510) 547-0433 for arrangements.

The *Friends* Board is still looking for a few more members. We need help with publicity, fund-raising, grant writing, and special projects. Call Katherine Greenberg for more information, (510) 283-4322 .

Friends
of the
REGIONAL PARKS

BOTANIC GARDEN