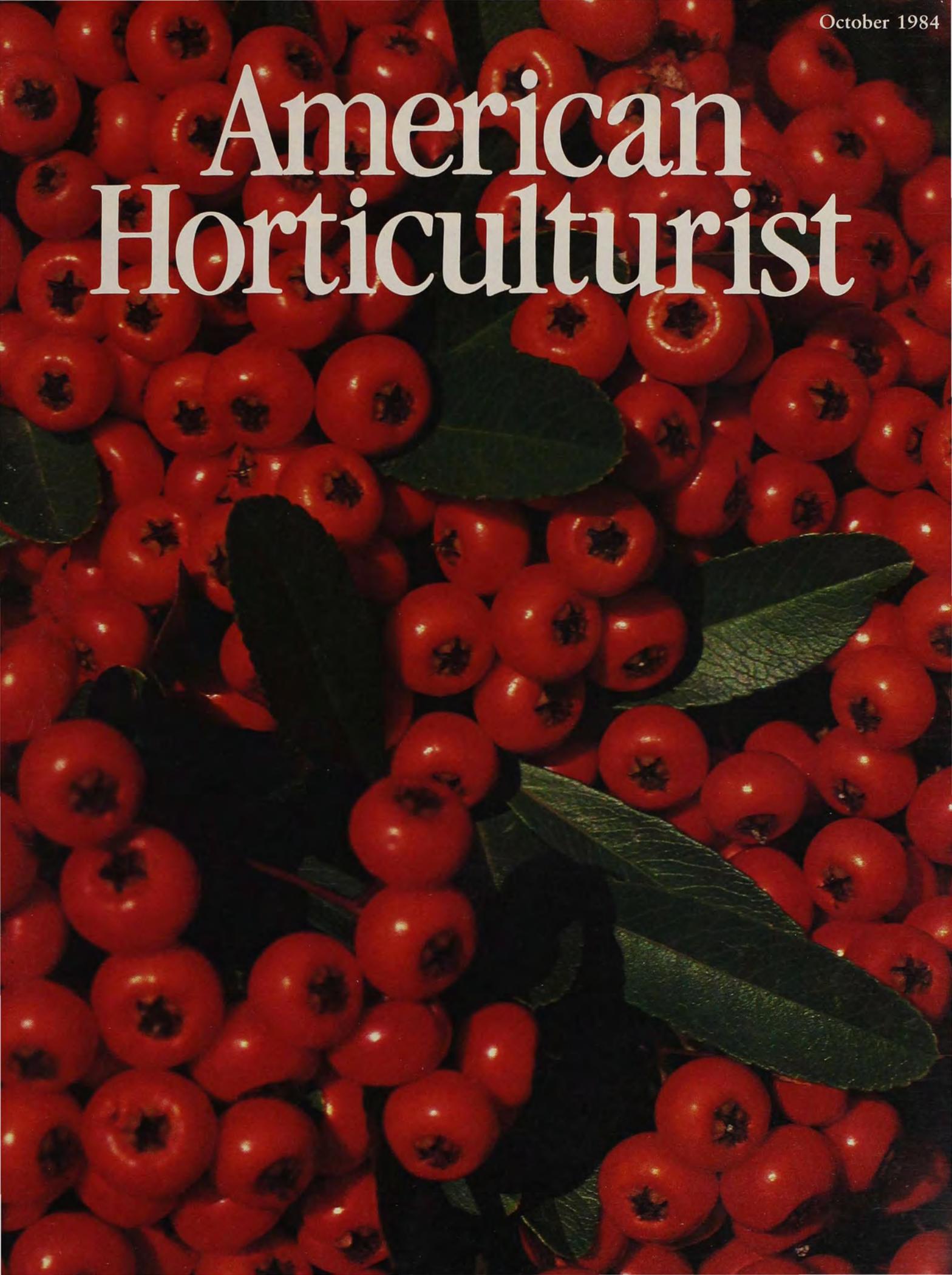


October 1984

# American Horticulturist



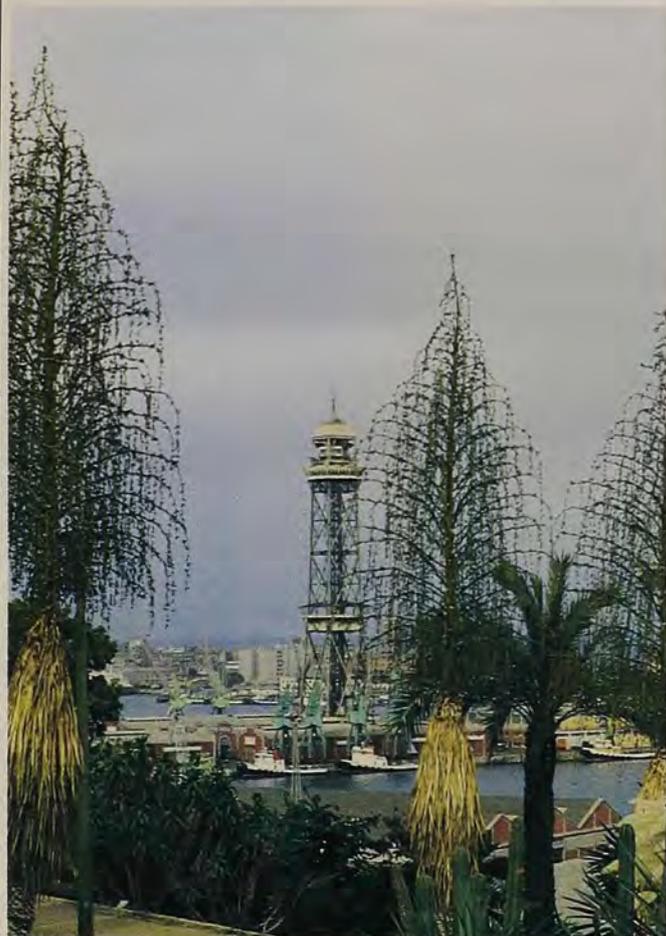
# Help Save America's Threatened Wildflowers



Photograph by Alvin Staffan/Courtesy Ohio Department of Natural Resources

**M**any of America's most treasured wildflowers—including the beautiful lakeside daisy, *Hymenoxys acaulis* var. *glabra* (above)—are threatened with extinction. In fact, experts estimate that one-tenth of the species and varieties native to the United States are in jeopardy. Over 50 taxa have already disappeared. Help save our endangered wildflowers by purchasing the American Horticultural Society's 1985 Endangered Wildflowers Calendar. Funds raised from sales will be used to support conservation projects. To order your calendar, turn to page 11.

# Contents



Overlooking the busy harbor of Barcelona, Spain, on the Mediterranean Sea sits a fascinating garden filled with a cosmopolitan collection of plants gathered from all the dry regions of the earth. In addition to these hula-skirted *Furcraea bedinghausii*, the garden is filled with cacti, euphorbias, agaves and yuccas, to name just a few. Join Allen Lacy on page 23 for a tour of the Garden of Father Costa i Llobera, located on the mountain of Montjuich overlooking Barcelona.

Photograph by Allen Lacy.

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**On the Cover:** Fiery orange-red pyracantha berries are a prominent feature of many October gardens. Autumn also brings ripening berries on other shrubs such as *Viburnum* and *Callicarpa*, as well as brilliant fall foliage, crisp air and chrysanthemums. For some thoughts on the season, turn to Pamela Harper's "Season of Mists" on page 16. Fred McGourty has other ideas about the joys of the season; turn to "Down With Leaves" on page 28. Photograph by Pamela Harper.

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# *Plant Conservation- A New Role for the Society*

**T**his month marks the beginning of a new program for your Society: publication of the Endangered Wildflower Calendar. Through this calendar we hope to call attention to the plight of America's plants that are threatened with extinction.

The calendar is the latest in a series of calendars previously published by the Rare and Endangered Native Plant Exchange. Although the Exchange, which has been under the inspiration and guidance of Dr. Rolf Martin throughout its four-year life, formally terminates its programs this year with the transfer of responsibility of publishing the calendar to AHS, its members will remain active in conservation and will continue to function in an advisory capacity to the Society. Thus concludes one of the most laudable efforts in American conservation ever undertaken by a purely volunteer organization. And, thus begins one of several programs being planned by your Society on behalf of America's natural heritage, particularly on behalf of those rare plants that represent the building blocks of our gardens, past, present and future.

The calendar, now as in the past, is not simply the product of one organization. Advice, financial assistance, publicity, resource materials and distribution services have been contributed freely by the following organizations: Garden Club of America, World Wildlife Fund, California Native Plant Society, New England Wild Flower Society, Center for Plant Conservation, Natural Resources Defense Council and The Nature Conservancy. Their

contributions ensure that this effort will continue to have meaning and value no matter which organization coordinates the overall program.

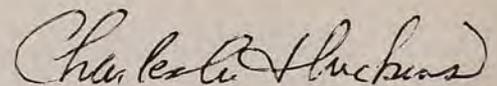
Besides being a useful chronicle of your year, the calendar will enable you to become personally involved in the effort to save some of America's most precious plants. Owners of the calendar are encouraged to rediscover populations of the more than 200 kinds of plants that are now classified as possibly or probably extinct in this country. With proceeds from the sale of the calendar, the Society will offer rewards of up to \$250 to non-profit organizations whose friends or members are the first to provide confidential information specifying locations of wild populations of any plants thought to be extinct. The Society will also offer rewards of up to \$100 to those individuals who make these discoveries or other such tangible contributions to conservation.

The Endangered Wildflower Calendar is but one manifestation of your Society's interest in the preservation of America's natural heritage. Within the next year, the American Horticultural Society will seek to provide an effective forum for conservation-minded horticulturists to share their good works and to communicate their common concern for uncommon plants. Increasingly, we recognize the need to enlist and support as wide a variety of alternative approaches to solving the problems of endangered species as possible. Unfortunately, too few of us are aware of the superb conservation efforts, including

plant rescue operations, propagation programs and rare plant sales, that have been going on for some years at such progressive gardens as the North Carolina Botanical Garden, the New England Wild Flower Society's Garden in the Woods, and the Desert Botanical Garden. With enough advance notice to a wider audience, such programs could become even more successful than they already are.

Your Society stands ready to function as a national information network for horticulturists and horticultural organizations interested in conserving threatened and endangered plants in their respective areas of the country. Although the problems of conservation and wise management of natural resources are planetary ones, it is not inappropriate for us to combat them wherever we have the most likelihood of achieving results; for most of us, this means encouraging and supporting the efforts of our local botanical gardens, garden clubs, plant societies and other conservation-minded organizations concerned with endangered plants.

In order for the Society to be effective as an information network for conservation activities involving the public, it needs the help of organizations and individuals throughout the country engaged in sponsoring these activities. I encourage you to let us know about conservation programs and resources involving endangered plants of horticultural merit in your area that would benefit from publicity. We will do our utmost to bring them to the attention of the entire membership.



—Charles A. Huckins



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# The Glossy Amethyst Orchid

by Ronald Van Ruyckevelt

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# Ornamental Nightshades

**D**usk draws its gray mantle slowly over the greenhouses, concealing the brightly colored flowers and deep, verdant foliage under its cloak. While all else is hidden in the shadows, a tree covered with dozens of luminous white blossoms is revealed in full splendor. By day, *Brugmansia suaveolens* is clothed in limp attire, but nightfall brings life to those huge ivory trumpets, which appear to float lightly on thin air. A breeze sends a thick, sweet aroma wafting through the night air and sets the multitudinous blossoms dancing with ghostly grace. No wonder the solanum family, of which *Brugmansia* is one of the most popular ornamental members, was nicknamed the nightshade family.

The very name nightshade sends shivers down the spine. It evokes images of evil potions, black magic and poisonous brews. The members of this family do their epithet justice, as they are associated with all of these things and more. They have poisoned and also cured; they have murdered yet aided in birth as well. Their flowers can look darkly sinister or gaily flamboyant. The fruit of some nightshades will kill, while other nightshades have become dietary staples.

The tree known as *Brugmansia suaveolens*, or angel's-trumpet, is but one of over 2,200 species in Solanaceae. These species of herbs, shrubs, trees and vines are distributed among about 90 genera. A handful of family members are well known as edible plants; the majority are infamous as potent poisons. Because of their distinctive flowers, the nightshades were recognized as a group to avoid when collecting edible fruits and greens long before Carl Linnaeus conceived of his system for categorizing plants based on floral similarities. In fact, the Latin derivation of the family name, *solanum*, meaning quieting, is perhaps an allusion to the "permanent silence" that can result from ingestion. The family as a whole was greatly affected by the stigma attached to such poisonous members as *Atropa belladonna* (deadly nightshade), *Nicotiana tabacum* (tobacco) and *Hyoscyamus niger* (henbane). Henbane in particular was believed to cause



Block's

ABOVE: These double *Datura* blossoms appear as if one trumpet were placed inside the other. FAR RIGHT: *Brugmansia X insignis* sports delicate pink- or salmon-colored trumpets. RIGHT: The golden, chalice-shaped flowers of *Solandra* emit a sweet fragrance at night.



Block's

madness, a reputation that has endured since Dioscorides's time. Shakespeare alludes to the weed in *Macbeth*: "Were such things here, as we do speak about? Or have we eaten of the insane root, that takes reason prisoner?"

Until recently, due to the reputation of a few family members, some of the world's most valuable vegetables were avoided. Even the potato, *Solanum tuberosum*, was not considered to be edible, although its tubers were used as an aphrodisiac. Sir John Falstaff, infamous philanderer in

Shakespeare's plays, alludes to this use in *The Merry Wives of Windsor* when he cries, "Let the sky rain potatoes; let it thunder to the tune of green sleeves."

We can thank such men as Frederick the Great of Prussia and Louis XVI of France for vindicating the potato's poor reputation and promoting it as a vegetable. These men set the stage for the acceptance of other solanums for table use. In the eighteenth century, 200 years after the potato was first introduced from the Northern Andes into Spain, the European prejudices



Hollen Johnson

## THE INDOOR GARDENER

against this vegetable were finally quieted, and its virtues became widely exploited. Tomatoes, potatoes, peppers and eggplants gradually gained acceptance and are all now cultivated for their fruits or tubers. However, not all parts of these plants are edible. The foliage of tomato, *Lycopersicon lycopersicum* (formerly *L. esculentum*), for example, is highly poisonous.

Less popular than these edible solanums are the family members that have earned their fame for their aesthetic beauty.

To my eyes, *Brugmansia* is by far the most beautiful of the solanums. An awesome and eerie apparition after dark, *Brugmansia* was named for Sebald Justin Brugmans, a Dutch professor of natural history who lived in the late eighteenth century. Brugmansias tend to blossom most profusely during a full moon, a phenomenon that has not yet been completely explained. These plants are also noctiflorous, or night-flowering; every evening at twilight, the blossoms of *Brugmansia* awaken. Not only do they visibly inflate at dusk, but the entire greenhouse is dominated by

the intensely sweet aroma emitted by the swollen blossoms. By morning, no telltale scent is left floating on the air, although many of the trumpets remain open if the morn is cool and cloudy.

*Brugmansia suaveolens* completely dominates the greenhouse at dusk. It is the ultimate nightshade, ruling over its kingdom of darkness with regal, yet slightly malevolent magnificence. It is not difficult to imagine why the bush is often found in cemeteries reigning over the dead in its native Mexico. There is a commonly held superstition that slumbering under the tree's branches will bring eternal repose upon the sleeper.

Also attractive is a group of hybrids known as *Brugmansia* × *insignis*, created by crossing *B. suaveolens* with *B. versicolor*. These trees appear in pastel shades of pink and salmon, with wings accentuating the tips of the trumpets.

*Brugmansia* is closely related to *Datura* and is sometimes included in that genus. *Datura*, like other members of the Solanaceae, exhibits circadian cycles, that is, 24-

hour patterns of nocturnal or diurnal behavior. However, members of the genus *Datura* seem to be affected not only by a 24-hour clock but by a monthly calendar as well.

*Datura* boasts a long history of tribal and religious usage. It was primarily employed as an intoxicant or a hallucinogen. Every part of the plant contains extremely poisonous alkaloids; potions made from these plants were given to participants in ritual ceremonies, particularly during initiation rites. South American Indians administered a drink containing ground-up *Datura* seed to the youths of the tribe, who then became comatose for several days. During this time, the initiates were said to have forgotten their childhood and to have received instruction from their forefathers. In Colombia, *Datura* was dispensed at burial ceremonies to the wives and slaves of the deceased; once they became unconscious, they were buried alive in their masters' tombs. In India, the plant is known as Dhatura and is referred to as the tuft of Shiva, god of destruction. Gangs of

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thieves in that country have become known as Datureas, as criminals there have been known to surreptitiously feed their victims *Datura* seeds.

Members of the genus *Datura* should never be taken internally. The poisonous alkaloids contained in the plants' parts—hyoscyamine, hyoscyne and atropine—are extremely potent; four to five grams of the leaf or seed are sufficient to kill a child. One reported case of *Datura* poisoning involved a family that had grafted tomatoes onto rootstock of *Datura stramonium* in an attempt to create a hardy tomato. Unfortunately, the family did not know that the alkaloids are produced in the roots, and ate the grafted tomato. The symptoms of *Datura* poisoning include excessive thirst, vomiting, dilated pupils and dizziness. The victims may become incoherent, and hallucinations may occur, accompanied by a rapid, weak pulse. Most solanums contain these poisonous alkaloids, and similar symptoms will result upon their ingestion. Obviously, none of these plants should be grown where small children would have access to them.

Although *Datura* alkaloids can be poisonous, man has found beneficial uses for them. For instance, atropine can be used to relieve bronchial spasms. At one time, smoking *Datura stramonium* leaves was a common cure for asthma. Peruvian Indians found the paralyzing effect of the plant to be useful in trepanning operations. (Trepanning is a primitive form of brain surgery.) The Jivaro Indians of Ecuador occasionally used the drug to quiet unruly children. Although solanums are usually thought of as aphrodisiacs (perhaps because of their relationship to another family member used for this purpose, mandrake, *Mandragora officinarum*), *Datura* was also once employed to lessen sexual excitement in cases of nymphomania. *Datura* was once administered during childbirth to reduce the pain, until it was discovered that the drug harmed the newborn infant.

In North America, by far the best known member of *Datura* is the weed, *D. stramonium*. It can be found adorning overgrazed pastures and waste areas throughout most of the country. Attractive, four-inch-long, white flowers crown the plant. *D. stramonium* is not a handsome plant without its blossoms, however, and the foliage is often pocked by insect damage. Flea beetles, the same insects that ravage eggplants, poke millions of tiny holes in the thick leaves. Seed capsules, encased by

a thick rind covered with spines, are formed after the plant blossoms. This unique fruit has earned *D. stramonium* one of its nicknames, the thorn-apple. The most frequently invoked common name for the plant is jimson-weed, a contraction of Jamestown weed. The epithet alludes to the fact that the first settlers in Jamestown, Virginia mistook *D. stramonium* for edible pot-herb, with disastrous results. The most popular genus member is *Datura metel*, sometimes listed as *D. chlorantha* and commonly known as horn-of-plenty. Although the species typically bears white flowers, horticulturists have selected naturally occurring yellow forms, and now the species is known for its rich, canary-yellow blooms. The flowers may be double or single. *D. metel* 'Cornucopia' bears double, yellow trumpets that appear as if one blossom were placed within the other. Each trumpet sports a deep purple throat and outer petals that are mottled purple.

Although daturas are more compact in size than brugmansias, a characteristic that would seem to make them better suited for pot culture, they tend to produce flowers less frequently in a home environment. Brugmansias become rather sizable trees, although they can be easily pruned to fit on a sun porch without forfeiting blossoms. Many gardeners plant the trees in tubs for outdoor use, pruning them back severely in the fall and storing them inside during the winter in a dark, cool basement, where they experience a semi-dormant period. In spring, the tubs are again placed outdoors, and growth resumes.

Both daturas and brugmansias prefer full sun; a southern exposure is ideal. They will tolerate a broad range of temperatures but should be provided with nighttime temperatures above 50° F to stimulate growth. Frequent repotting will keep the foliage lush and green. However, when the plant has grown large enough to require an eight- to 10-inch container, graduate it no further; fertilize periodically instead. Be aware that providing the plant with too much fertilizer will encourage foliage production at the expense of flowers. Pruning is absolutely necessary to keep the plant within bounds. Although daturas can easily be pruned to three-foot specimens, brugmansias usually reach five or six feet in height.

The foliage of daturas and brugmansias is notoriously rank in odor. However, this does not seem to deter insects from attempting to eat it. As with most solanums, these plants are very attractive to white flies, red spider mites and, when grown

outdoors, flea beetles.

Another genus in the nightshade family is *Solandra*. Solandras are stunning ornamentals with golden trumpets known as cups-of-gold. Their blossoms are similar in appearance to those of *Datura*. However, solandras have never been as popular as daturas, nor have they ever been as well known in folk culture.

The 10 known species of *Solandra* are native to the West Indies, Mexico, Central America, the Caribbean and tropical South America. The genus was named for Dr. Daniel Solander, a Swedish botanist and colleague of Carl Linnaeus. Dr. Solander is best known as the first naturalist to botanize the east coast of Australia.

Solandras are fast-growing vines; if unchecked, they have been known to travel over 100 feet horizontally and to climb to a height of 40 feet. The plant will bloom quite satisfactorily if pruned to a four-foot bush. In fact, rank growth should be discouraged; buds are only produced from short, sturdy branches. For this reason, solandras should be fertilized sparingly. Withholding water, especially during the summer, will also help ripen the wood and thus encourage bud formation. Frequent repotting should prevent the plant from continually wilting, but I have yet to find a plant that could not be revived from a brief swoon. The blossoms of *Solandra maxima* (formerly *S. nitida*) are not borne profusely, although they are well deserving of their common name, golden chalice. Each flower is seven inches long and five inches wide, forming a deep tube that is fluted at the tip. Five dark purple lines stripe the inside of every cup. Each blossom opens to a creamy white, but during its four-day life span, it slowly brightens to maize, and finally, to golden-yellow just prior to dropping. A sweet fragrance greets anyone who buries his nose in the flower's chalice.

Far more profuse of bloom are the members of the genus *Brunfelsia*. The showy flowers of the most popular *Brunfelsia*, *B. pauciflora* var. *calycina*, act in just the opposite manner from the blooms of solandras: rather than increase in color intensity during their three-day life span, they fade in hue from their original deep purple to a pale, bleached blue. Blossoms of every color adorn the bush, earning *Brunfelsia* its nicknames, yesterday-today-and-tomorrow and morning-noon-and-night.

The name *Brunfelsia* honors Otto Brunfels (1489-1534), a German botanist who began his career as a Carthusian monk and later became a Protestant theologian and,



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eventually, a physician. He was one of the earliest herbalists, drawing from the works of Pliny, Theophrastos and Dioscorides to produce an illustrated and descriptive herbal.

Members of the Solanaceae are generally not difficult to grow if they are given enough sun and if their roots are allowed enough room. Brunfelsias pose more of a challenge than most solanums, however. Unlike most solanums, brunfelsias prefer warm temperatures, especially while setting buds. In fall and early winter, the nighttime temperatures should not drop below 55° F; 60 to 65° F would be preferable. When the buds begin to open, the temperature may be reduced to 50° F. Also unlike most of their relatives, brunfelsias require frequent feeding. Fortunately, however, they do not produce rank growth as a result. In fact, if not fed regularly, they rapidly exhibit the typical symptoms of malnourishment—yellow and dwarfed foliage. Although brunfelsias wilt easily, they should not be overpotted; buds only set on tightly potted plants. When repotting is necessary, a rich, acid soil is preferable and will prevent chlorosis, a common problem with these plants.

*B. pauciflora* var. *calycina* is a winter-blooming shrub from Brazil. Used extensively as a shrub on the west coast of the United States, it thrives outdoors in moderate climates if it is given partial shade; direct sun can cause the foliage to yellow and drop. Indoors, *B. pauciflora* var. *calycina* should be provided with as much light as possible during the spring, autumn and winter, although in the summer it should be sheltered from the sun's rays.

In addition to the popular yesterday-today-and-tomorrow, many other new brunfelsias are becoming available. *B. uniflora* (formerly *B. hopeana*) is very similar in both foliage and flower to *B. pauciflora* but surpasses its relative in profusion of bloom. Its longer-lasting purple blossoms are marked by a small, white bull's eye at the center. Like most of the purple brunfelsias, its blooms fade with age. Known in its native Brazil as manacá, *B. uniflora* was once commonly used in that country for the treatment of syphilis.

A promising cultivar of *B. pauciflora* has recently threatened to steal the show. 'Macrantha' is notable for its larger flowers and generally grander stature. Another *Brunfelsia* sold under the name *B. jamesonii*, to which I can find no reference in the literature, is indisputably unique. A large plant, it is adorned with clusters of

sizable cream-colored flowers with long, slender tubes that flare at the tips like trumpets. The outward appearance of the blossoms is quite different from that of most members of the genus. In the evening, a subtle, clove-like scent greets anyone who happens to come close to the blossom. This type of flower, with its long tube, is also found on a Cuban species, *B. nitida*. However, the blossoms of *B. nitida* are much smaller and more profusely displayed than those of *B. jamesonii*. Furthermore, unlike most brunfelsias, *B. nitida* is compact enough to grow in a hanging basket. This species is also evening-scented; its perfume floats nearly unnoticed on the night air.

Far more intense is the full-bodied and syrupy-sweet perfume emitted by *Cestrum nocturnum* after dark. The members of the genus *Cestrum* generally bear small flowers in plump umbels. Colors of the blossoms are usually subdued. *C. nocturnum* has gained notoriety for its extremely strong aroma. In fact, it has become known as the night-blooming jessamine, a name that has caused a great deal of confusion about the plant's family ties. (Cestrum are not true jasmines, which are members of the genus *Jasminum*, in the Oleaceae, or olive family.) The blossoms of *C. nocturnum* appear in terminal or small axillary clusters. Each flower is an inch or less in length and flares open to one-quarter inch in width. Their pale cream, almost green color nearly camouflages them in daylight when they are closed, so that by dark, one must search for the source of that mysteriously romantic perfume that completely permeates the air. The aroma is so heavy that many people find it offensive. For this reason, the species has been given some rather uncomplimentary epithets, such as the commonly invoked *dama de noche*, or lady-of-the-night. In India, the plant is rarely used as an ornamental around dwellings, for its perfume is said to attract snakes.

In the West Indies, where *C. nocturnum* is native, there grows another *Cestrum* that is not quite so renowned—*C. diurnum*. This bush, of slightly smaller stature than *C. nocturnum*, complements its nocturnal counterpart; its flowers open in daylight to produce a considerably less potent perfume. Interestingly, scientifically controlled experiments have revealed that neither *C. nocturnum* nor *C. diurnum* is affected by light or the absence of light; both blossom according to an internal clock and keep to their schedule despite efforts to confuse them. A hybrid of these two plants, *C. nocturnum* × *C. diurnum*, com-

bines the attributes of both plants, although it emits a much less intense fragrance.

Two cestrums are valued for their ornamental inflorescences rather than for their scent: *C. elegans* and *C. aurantiacum*. *C. elegans* is crowned with hot-pink blossoms in wintertime. A native of Mexico, it bears tall, four- to five-foot branches of slender, furry leaves. The bush is an attractive specimen even when it is not in bloom. *C. aurantiacum* is another ornamental member of the genus that is not readily available in this country. It is frequently used in Europe for outdoor displays; *C. aurantiacum* flowers in late summer, when it is adorned with bright golden blossoms.

Cestrums are extremely poisonous. Fortunately, the foliage is so rank in odor that there is little danger that someone might mistakenly eat a leaf. Although the berries—white on *C. nocturnum*, and purple on *C. diurnum*—appear very inviting, they should never be consumed. The symptoms of poisoning from cestrum ingestion are headache, nausea, dizziness, hallucinations, muscular spasms, high fever and watering of the mouth. Fortunately, the tempting berries are usually borne well out of a child's reach.

The chief challenge in growing cestrums is to time the pruning to create a well-branched specimen without forfeiting the flowers, since the latter will appear in terminal clusters. Pruning is necessary but should be accomplished before the plant sets buds, preferably in the fall or mid-winter. As with most solanums, cestrums grow rapidly, and their container size should keep pace with the plants' growth. Using the proper-sized container will alleviate the problem of frequent wilting that often plagues these plants, especially *C. nocturnum*. Full sun (plants should be provided with a southern exposure if possible) will encourage thick, rich, green foliage.

The solanum family abounds with well-known members, both edible and ornamental. However, when staring into the bright, innocent face of a newly opened petunia, or when enjoying a juicy sliced tomato, it is difficult to imagine why the family was given the nickname nightshade. A look at many little-known, yet highly ornamental, solanums leaves no doubt that the nickname is suitable. ☉

—Tovah Martin

Tovah Martin is the begonia specialist at Loge's Greenhouses in Danielson, Connecticut. She is also a free-lance writer and photographer.

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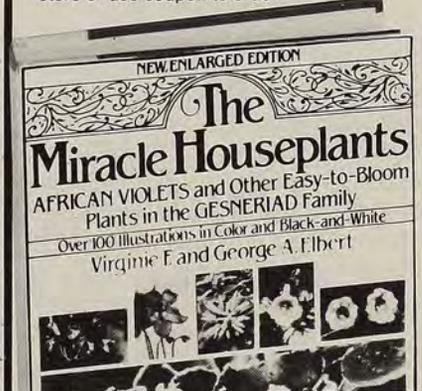
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# Book Reviews

### BONSAI.

Christine Stewart. *Orbis Publishing, Ltd.* London, England. 1981. 112 pages; hardcover, \$16.95. AHS discount price, \$15.05 including postage and handling.

### BONSAI—ITS ART, SCIENCE, HISTORY AND PHILOSOPHY.

Deborah R. Koreshoff. *Timber Press.* Portland, Oregon. 1984. 304 pages; hardcover, \$39.95. AHS discount price, \$35.45 including postage and handling.

Stewart's *Bonsai* is a well-illustrated beginner's book on how to grow your own bonsai. It is not for the serious bonsai grower, but for the gardener who would like to create a bonsai with relatively little effort.

*Bonsai—Its Art, Science, History and Philosophy*, on the other hand, is what its subtitle indicates: a serious book about bonsai. Although this book explains how to create your own bonsai, it is not for the gardener who is in a hurry. The author has been growing bonsai since she was a very young girl under the guidance of her father, who was born in China and grew up with the traditions of penjing, the Chinese equivalent of the well-known Japanese art of bonsai. Both the Japanese and Chinese traditions, as well as the many specialized forms of each, are discussed and illustrated. All of the mature plants shown in the color plates were grown by the author. The fine line drawings, which give many details of the structure of the trees and the methods of creating a living family heirloom, were also drawn by the author. Simultaneously published in England, South Africa and Australia, as well as in the United States, *Bonsai—Its Art, Science, History and Philosophy* should be a standard reference work and guide for anyone seriously interested in bonsai.

### A LIFE IN ROSES.

Alain Meilland. *Southern Illinois University Press.* Carbondale, Illinois. 1984. 158 pages; hardcover, \$19.95. AHS discount price, \$17.45 including postage and handling.

Any serious rose grower will know the name Meilland, but even the most casual gardener will have heard of the 'Peace' rose. While 'Peace' may be the most fa-

mous Meilland introduction, the family can trace its earliest rose introductions back to 1872. This book is a translation of an earlier family biography by the current senior member of the firm. It is a delightful story of how the efforts of many generations of devoted rose growers helped develop this highly successful horticultural firm. Whether or not the rose is your favorite flower, if you like plants, you will enjoy the story of the Meilland family.

### HANDBOOK OF CULTIVATED SEDUMS.

Robert L. Evans. *Science Reviews, Ltd.* Middlesex, England, 1983. 345 pages; hardcover, \$25.00. AHS discount price, \$22.25 including postage and handling.

As a group, sedums fill many roles in the garden, from groundcovers to rock garden plants to perennial border plants. The hundreds of species, varieties and cultivars of sedums are all included in this book. Excellent descriptions are accompanied by line drawings of each species, as well as 16 color plates. The scope of this work makes it a good standard reference of botany. However, the book is also intended for the gardener, and the descriptions can be easily understood by the non-botanist.

### GEORGIAN GARDENS—THE REIGN OF NATURE.

David Jacques. *Timber Press.* Portland, Oregon. 1983. 240 pages; hardcover, \$39.95. AHS discount price, \$35.45 including postage and handling.

If any one style of garden comes to mind when one thinks of the stately homes of England, it is the parkland, or natural, style of garden. Such names as "Capability" Brown and Humphry Repton are synonymous with this uncluttered style, featuring rural vistas, carefully placed exotic temples and even ruins. David Jacques presents a well-researched study of the history and development of landscape architecture in England during the period from 1730 to 1830, when great wealth was devoted to "improving" the landscape. Fortunately, much of what was accomplished during this time can still be enjoyed by the visitor today. This garden history is presented not only as the story of the wealthy patrons and their architects, but also as

the social and political history of a period when gardening was very highly regarded. This is a book both for the serious student of garden history and for the literate traveler who wants to better understand what he sees.

**WOOD AND GARDEN.**

Gertrude Jekyll. *The Ayer Company.* Salem, New Hampshire. 1983. 312 pages; hardcover, \$24.50. AHS discount price, \$21.10 including postage and handling.

**ROSES.**

Gertrude Jekyll. *The Ayer Company.* Salem, New Hampshire. 1983. 194 pages; hardcover, \$23.50. AHS discount price, \$20.30 including postage and handling.

The work of Gertrude Jekyll, known as the artistic designer of smaller natural gardens, can almost be considered a reaction to the structured formality of the Victorian garden. Jekyll's concepts are still applicable today, and these two reprints of her books, originally published around the turn of the century, are well worth reading. A new introduction by Graham Stuart Thomas and a number of color plates have been added to both books, which otherwise are fine facsimiles of the original editions.

**CAMELLIAS.**

Chang Hung Ta and Bruce Bartholomew. *Timber Press.* Portland, Oregon. 1984. 211 pages; hardcover, \$29.95. AHS discount price, \$26.95 including postage and handling.

This book is an amended translation from Professor Chang's monograph on the genus *Camellia*, which was published in Chinese in 1981. Nearly 200 species of *Camellia* are described, including 92 new species described by Chang. The original Latin descriptions of the 1981 work are repeated for the botanist, but all of the Chinese text is translated into English. The many new species offer new possibilities in color, growth habit and hardiness. For the grower of camellias, this is an essential reference work. For the camellia hybridizer, this book offers the key to an almost unlimited number of new and exciting hybrids. ☼

—Gilbert S. Daniels

Gilbert S. Daniels is the Immediate Past President of the American Horticultural Society.

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# A VISIT WITH REED ROLLINS

TEXT BY JOAN SILVERMAN  
PHOTOGRAPHY BY STEPHEN J. SHERMAN

“I’ve got problems stacked up in this closet, in that cabinet and that cabinet, too.”

Problems. That’s the term for the unsolved puzzles, mistaken identities and assorted botanical perplexities that occupy Reed Rollins’s days. Not that Rollins is complaining; he’s simply describing his role as a taxonomist—a combination botanist, plant explorer and sleuth.

The mysteries Rollins is trying to crack derive from his study of Cruciferae, the plant family that includes mustard, broccoli and cabbage. His study of what is commonly called the mustard family has spanned nearly half a century, as well as an entire continent. His reputation as an authority on the subject is world renowned.

Rollins’s expertise is not limited to the taxonomic field, however. This quiet, modest man has also long been a leader at international botanical conferences, heading the sessions on plant nomenclature. A latter-day Linnaeus, Rollins has helped to define the official language that the botanical world uses. He has been described by Richard Cowan, senior botanist at the Smithsonian Institution, as “one of the top botanical figures during his lifetime.”

It all started with sagebrush, the plant that first led Reed Rollins to botany. Growing up in a ranching town in Wyoming, Rollins was keenly aware of the landscape. He was also curious about the plants around him, but no one, it seemed, could answer his questions about them. One day, Aven Nelson, a botanist at the local university, came to speak to Rollins’s eighth-grade class. On the way to the school, Nelson had pulled some plants from the ground. He held up the specimens in class, and began to narrate the history of sagebrush. “It was at that time,” Rollins recalls, “I realized that somebody knew about the plants.”

As a student at the University of Wyoming, Rollins had planned to study agriculture; one botany course changed all that. Rollins went on to Harvard University, where he ended up spending most of his career, first as a graduate student, then as a teacher, and for 30 years, as director of the university’s Gray Herbarium. Today, at 72, he’s still at Harvard, working daily despite his alleged retirement.

Although Rollins has lived in Cambridge, Massachusetts all these years, he has remained loyal to the West. His research and explorations related to Cruciferae have actually fostered this loyalty, for most of the crucifers in this country are found in the western states. The name Cruciferae refers to the four-petaled, cross-shaped flowers characteristic of family members. The family includes plants of all types, from the lowly weed, shepherd’s-purse, to ornamental sweet alyssum, to food plants such as turnips and cauliflower. Although the edible crucifers lack the protein of grains, they still have nutritional value. According to Rollins, a recent report from the National Academy of Science suggests that people who eat a crucifer-rich diet are less prone to cancer. In time, research may uncover other virtues of these plants. “The only way we find out anything like that,” says Peter Raven, director of the Missouri Botanical Garden, “is by having large-scale, careful systematic studies like the one Reed has produced over a lifetime of effort.”

Rollins’s efforts have encompassed a major segment of the crucifer family—namely, the family members native to North America, which account for 87 genera and some 500 species. These plants are the focus of Rollins’s upcoming book, a monograph that experts say will be the definitive work on the subject. Rollins has studied all of the North American species, and has collected more than half of them in the field.

“There are a variety of reasons to find material and seize it in the field,” he says. Sometimes an existing specimen is inadequate, lacking good fruits, for example. That was precisely what spurred Rollins, on his last trek, to gather more samples of *Lesquerella*, a genus of about 40 species commonly called bladderpods. “Now I have enough to really work it out,” he says. “I’ll be able to see what the seeds are like, to handle the flowers.”

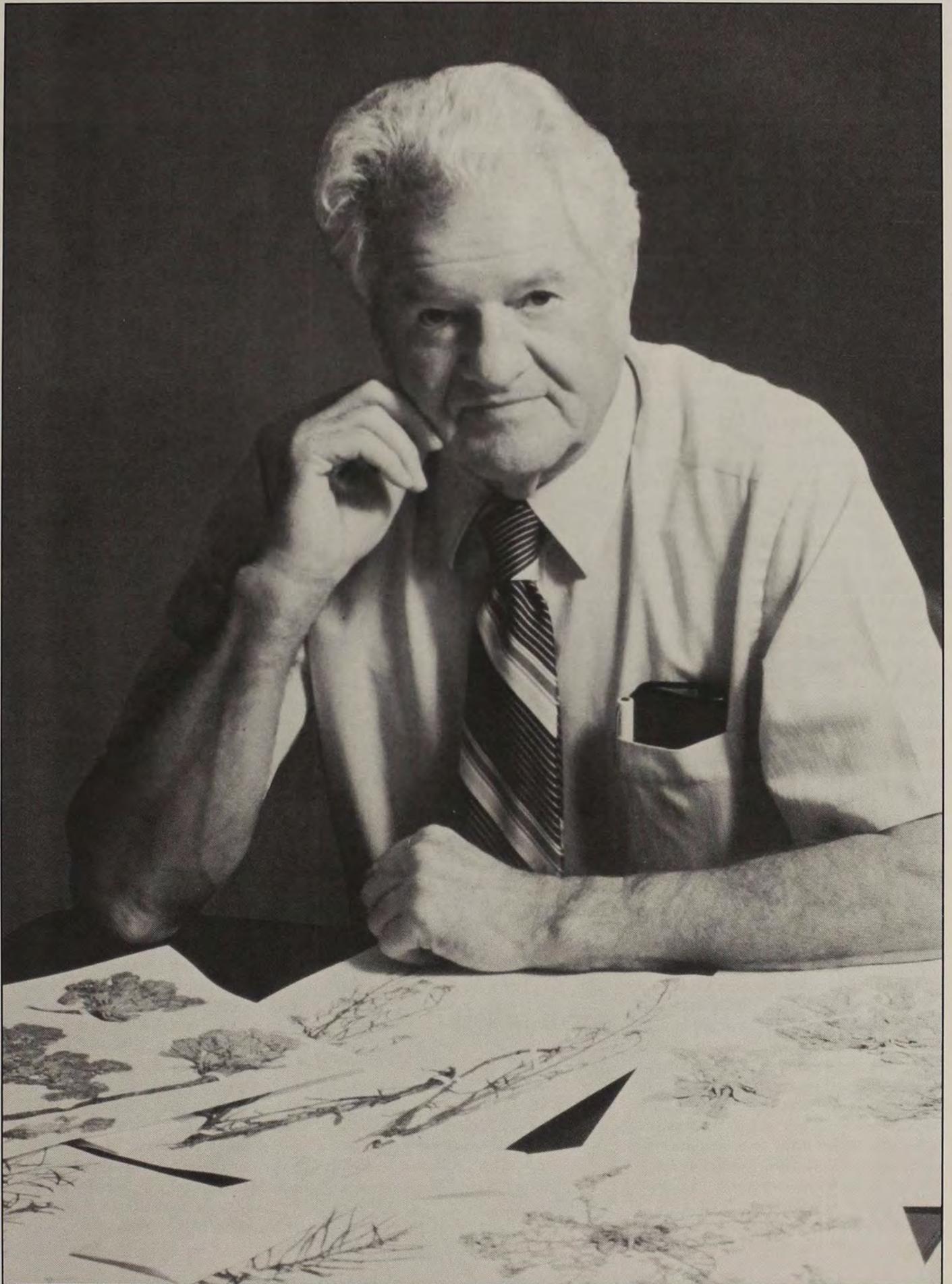
Despite the connotations of the word, “fieldwork” is not a freewheeling pastoral romp; if anything, it’s highly calculated work. Before each trip, Rollins prepares an inventory of plants to explore. (On his last journey, the list numbered three dozen species.) He then develops a schedule to time his travels with the floral conditions he wants to find. “One usually tries to have target places where there are interesting crucifers,” he says. “One plans the dating on the basis of material we have in the herbarium. We can see when it’s in flower or fruit; we can see localities.”

These locations are definitely not for the timid. Rollins explores remote, uninhabited regions—places where there are more rattlesnakes than people. Much of the terrain requires the use of four-wheel-drive vehicles; all of it requires gumption. Rollins, however, does not shy away from adventure; it is part of what one colleague terms his “western frontiersman feeling about the land.”

In his explorations, Rollins sets out with his wife Kate, who is his travel mate and collaborator. “We work as a team,” he says. “She gets as involved in the collecting and handling of the material as I do. And we really enjoy the field. There are quiet moments in the mountains and in the deserts. It’s so satisfying.”

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Rollins spends much of his time in his office at Harvard processing specimens from his plant-collecting expeditions.



# Preparing Herbarium Specimens— Tips From an Expert

**D**uring the 1970's, Reed Rollins began corresponding with a woman in Nevada who would send plant specimens for him to identify. The specimens, however, posed more than the usual challenge; fragmentary and poorly pressed, they were all but impossible to decipher. Over the years, Rollins coached his correspondent, suggesting methods for improving her specimens. Ultimately, his tutoring paid off. Not only did Rollins gain a valued correspondent, but the woman eventually found a crucifer species that was previously unknown. Had she discovered it years earlier, Rollins speculates, its identity would have remained obscure, since he would have been unable to identify it.

As this story attests, there are ways to prepare specimens that can simplify—or confound—identification. Too often, when amateurs send specimens for botanists to identify, they supply only scant evidence of their findings, taking snippets of plants and sketchy notes at the site. The result is a meager basis on which to build a case for identification. "The specimen should be as complete as possible," Rollins insists. "Depending on the family involved, this means flowers and fruits, in particular, and then the plant itself." Enough material should be collected to make duplicate specimens—one for identification, and another for one's own files.

At the site, one should also record any observable data that may not be apparent once the specimen is dried. In addition to the name of the plant (if known), the plant's size, flower color (which may fade) and locality are also important. The site should be clearly defined, and the terrain and proximity to the nearest town on a map should be noted. The collection date should also be noted, and a sequential number should be assigned to each specimen. While this information may seem of secondary importance, it is just as valuable as the specimen itself. "If the information is inadequate," Rollins says, "then you can't do very much with the specimen, or it just doesn't have any permanent value. Ultimately, you want to tie the specimen down with the added information."



**"The specimens should be as complete as possible. Depending on the family involved, this means flowers and fruits, in particular, and then the plant itself."**

Amateurs also sometimes falter in handling the plant material, by allowing specimens to become brittle and dry. Some people avert this problem by placing samples in plastic bags, which will retain moisture for a few hours until plants can be pressed. Rollins, however, prefers to place specimens in a press immediately upon collection when possible. The specimens are arranged in folded sheets of newsprint, as in a file. Individual plants are separated so that they press singly, not as a mass, and plants are carefully positioned in the press.

"The idea is to pull the moisture out of the plant as rapidly as possible," Rollins notes. Artificial heat, however, is unnecessary; the combination of sunlight, a tightly closed press and a daily change of blotters will dry the plants sufficiently. Drying time will vary from several hours to several days, depending on the species. Degree of dryness can be gauged by touch and by the absence of moisture on the sheets.

Amateurs often wish to produce a tidy, mounted display. However, for identification purposes, botanists generally prefer a more casual format. "You don't have to mount a specimen to send it off," Rollins says. "In fact, it's best not to." Unmounted specimens are easier to handle. Furthermore, each herbarium has its own mounting techniques. Instead of mounting the specimens, Rollins advises that each specimen be shipped in the same papers that were used for pressing. Alongside the specimen should be a label that contains the data recorded at the site. Although the specimen and the label lie unanchored between the sheets, they will not shift if properly packaged. Rollins recommends bundling the papers in four-inch stacks, covering them in cardboard, and tying them tightly.

Once the materials are ready for mailing, one needs only to find a botanist willing to look at them. Since plant identification is an unpaid, sometimes arduous task (the only "payment" is the specimen itself), many botanists confine their efforts to areas of professional interest. Some institutions can provide names of appropriate botanists for the materials in question. (For more information, see page 39.)



LEFT: Rollins examines crucifer specimens collected on a recent trip to the western United States. ABOVE: Harvard's greenhouse is home to hundreds of plants that Rollins has started from seed gathered in the wild.

In the field, the Rollinses work 10, sometimes even 12 hours a day. Part of their work entails on-site analysis—noting details of plants such as habit, flower color and stance of petals. These notes save details that are lost as the specimens naturally age, or when they are dried and flattened. Details lost when plant specimens are put in storage can also be reconstructed from notes. When the Rollinses find desirable plants, they place them between newspapers, and later, in wooden dryers. So productive was their last trip to the western states that the sheer weight of the samples required shipping the material home.

Back in Cambridge, the memory of exploring is fresh for Rollins. While he pores over his new specimens, his wife can be heard in an adjoining office typing entries in the field book. Explorations provide the raw data, which is the basis for research. Rollins cautions, however, “It’s what you do with it that really amounts to anything.”

Rollins is a census-taker of sorts—one who counts and classifies plants systematically. He studies the affinities between groups of plants, and their evolutionary patterns. That’s one reason he prefers to study wild plants. “In general,” he notes, “cultivated plants have such a checkered history you really can’t follow it easily.” By collecting seeds in the wild, then sowing

them in Harvard’s greenhouse, Rollins can trace a plant’s development. At times, he’s had up to 1,000 plants under experimentation in the greenhouse, all grown from seeds.

Specimens from the field present different opportunities. By cataloguing their physical traits, Rollins can pinpoint their identities. Often this is a simple, rote procedure. Sometimes, though, if a plant appears to be unknown, the identification process is more complex. Rollins may search the literature for clues, or dig out century-old specimens for comparison. The more cryptic cases end up in a cabinet with other “problems.”

According to Rollins, processing the specimens from his latest trip will take a full month, working jointly with his wife. When the identifications are complete, he will trade specimens with other institutions, such as the Royal Botanic Gardens at Kew. “That way,” he says, “they have a representation of the flora of the western United States. They’re interested in comparing their plants with ours, and we’re interested in comparing ours with theirs.”

Although Rollins employs modern equipment in his research, he is, admittedly, an old-school botanist. “I still hark back to the idea of working with plants for their own sake,” he says, “not working with parts of them.” During his career,

Rollins has seen a major shift in botany, from the systematic approach that he uses, to a biochemical orientation. As in many of the sciences, the effect has been to refine the focus, to concentrate on the microscopic elements of plants rather than the entire organism. “The plant lover,” Rollins contends, “is not the kind of person who is going to feed barrels of plants into a blender, chop ’em up, and work out their biochemistry. It’s a different kind of interest.” Rollins favors a broader approach—one that combines both methods of study.

In addition to his research, fieldwork and sundry administrative duties, Rollins has also been involved in matters of botanical nomenclature. By all accounts, he has been instrumental in shaping the official code that is used to describe plants.

As with any language, the complexities of the botanical code are many and varied. Earlier in the century, for instance, the systems for naming plants in Europe and the United States differed. At times, the divergence caused botanists here and abroad to use two names for the same plant, each with a valid basis. Debates highlighted the controversy, but only the International Botanical Congress could finally resolve it. The Congress has been Rollins’s forum for many years; he has chaired the sessions on nomenclature in Leningrad, Seattle and Edinburgh, and has taken the podium himself. “He’s been ‘Mr. Nomenclature’ for a very long time,” says Richard Cowan. “He has always had a long view of nomenclature, looking at what the effects would be 10, 20, 50 years down the road.”

Not surprisingly, global debates about nomenclature can be highly technical; at times, they are heated. Even through stormy negotiations, Rollins has managed to elude controversy himself. Says Peter Raven, “He’s a real catalyst for progress and communication in the field.”

When Rollins is not attending to the serious business of science, he can be found working in his garden, an equally serious pursuit. Although his garden is located in Maine and his home is in Cambridge, he heads north to his country house whenever possible. “I do the vegetable gardening, and Kate does the flower gardening,” says Rollins. “We have a perennial border and an annual border.” What they also have is an inexhaustible zeal for plants. ❁

Joan Silverman is a journalist who has written extensively about horticultural subjects. Her work has appeared most recently in the *Chicago Tribune* and *Horticulture*.



# Season of Mists

TEXT AND PHOTOGRAPHY BY PAMELA HARPER

Labor Day has come and gone, stores display winter overcoats, Thanksgiving plans are being made, and the gardening sections of department stores are being emptied out to make way for Christmas toys. Someone points to the sky, and I look up wondering whether I'll see geese heading south, or Santa and his sleigh. Try to buy a wheelbarrow now, and the clerk looks at you as if to say, "What sort of weirdo is this?"

"Season of mists and mellow fruitfulness," wrote Keats about autumn in his native England. "This is the weather the shepherd shuns, and so do I," wrote British author Thomas Hardy, who painted a dismal picture of beech trees dripping "in drabs and duns" in the fall. "All is safely gathered in," sing congregations at harvest festivals throughout England. How different it is in

Virginia! With oppressive summer heat abated and the garden rain-refreshed, autumn is not a winding down; rather, it is our loveliest season, an Indian summer lasting through November and sometimes until Christmas.

It has meant learning new ways. I pick raspberries through October, but not by growing them the English way—cutting out old canes in autumn and tying in the new. Those I grow now, 'Heritage', are cut to the ground in early spring, start to fruit in late July, then fruit steadily until hard frost. This suits me better than a glut at strawberry time.

Endings and beginnings overlap. The yellow leaves of *Prunus mume*, Japanese apricot, cover the ground, and through them come the bright violet-purple flowers of *Crocus medius*, the best of the autumn-flowering crocuses I've grown in this climate—not frail, pale and rather sprawling like *C. speciosus*, but short



LEFT: Red maple and sweet gum leaves bring a touch of color to the surface of a woodland pool. ABOVE: The autumn foliage of shade-loving oakleaf hydrangea, *Hydrangea quercifolia*, is as welcome a sight as the shrub's spring-born clusters of white flowers.



ABOVE: The fiery orange-red of pyracantha berries is a well-known color of the season. RIGHT: Viburnum berries are also a common autumn sight.



and sturdy with corms that multiply fast and produce brilliant patches of color. Equally bright, sturdy, floriferous and vigorous is a little onion from Japan, *Allium thunbergii* 'Ozawa's Variety', with umbels of rosy purple on stiff, six-inch stalks. If you want to tone the color down, it has a white-flowered counterpart.

The leaves of toothwort, *Dentaria diphylla*, re-emerge as eagerly as if they heralded spring, not winter. So fresh and tender in appearance, yet so tough, the leaves will remain unblemished through our coldest days, rivaling pachysandra as a glossy-green ground cover for moisture-retentive soil, and spreading at about the same rate. The slender, horizontal tubers form dense, interlocking mats that keep out weeds even when the plants are dormant. In May there are clusters of four-petaled, white flowers on foot-high stems, then the plants go neatly dormant during the dog days of summer. I grow *D. diphylla* under the deciduous

viburnums, *Viburnum carlesii*, *V. × carlcephalum* and *V. × juddii*, which come into leaf and hide the bare ground when the toothwort is dormant.

Chrysanthemums are at their best in our sunny, usually dry autumns. For me, they spark a nostalgic train of thought. My father grew all kinds of plants, but it was to chrysanthemums that he gave his heart. Each autumn, large pots stood in rows along the scullery wall, each containing an exhibition chrysanthemum trained as a single stem, painstakingly disbudded to produce a single, giant flower. One rainy day my six-year-old brother applied himself to the task of removing each final, fat-with-promise bud. Seeing my mother trying to save him from imminent death diminished my enthusiasm for chrysanthemums, which in any case got bedraggled in the English autumn. This attitude changed when Harold Bawden sent me *Chrysanthemum*

'Mei Kyo'. Harold is the English author of two books that rank among the best: *Making a Shrub Garden* and *Woodland Plants and Sun Lovers*. When he says a plant is good, it's good, but would 'Mei Kyo' do as well in this very different climate? It does even better. The little immigrant survived the trauma of importation, and by mid-summer, meager bits of the plant could be doled out among friends. This kind of sharing is both a pleasure and insurance; if the plant dies, you know where to find it again. I needn't have worried. 'Mei Kyo' took to my sandy soil like a duck to water and is proving to be a wanderer; the problem will be less one of keeping it than of keeping it in check. Here is Harold's description: "It is only an 18-incher, sending up a thicket of stems which erupt into hundreds of glowing, rosy-pink, inch-wide pompoms in late September." Chrysanthemums don't set buds when the temperature is very high; for me, it flowers in October and November.

Two honeysuckles, *Lonicera sempervirens* and *L. heckrottii*, continue to bear a flower or two until the end of the year. Neither is fragrant. When I wrote before that *L. heckrottii* lacks fragrance, my comment brought a flurry of indignant rebuttals, one of them suggesting that here was yet another "research writer" who had never actually seen the plant (and who presumably photographed it with eyes closed!). Well, I've had to eat my words before, and no doubt shall again, but not this time. Further checking—verbal and olfactory—has led me to conclude that many of the plants being grown as *L. heckrottii* are really the fragrant *L. × americana*. Fragrant clones of *L. heckrottii* may exist, but my plants have no fragrance, nor did Rehder mention fragrance when describing the plant in his *Manual of Cultivated Trees and Shrubs*.

Most autumns, the twiggy branches of *Prunus* 'Hally Jolivette' are sprinkled with pearly-pink flowers that remind me of a ballet dancer's tutu. This, my favorite cherry, blooms profusely in April, before the leaves appear, but southerners get the bonus of a second, smaller autumn crop of blooms. A southern disadvantage is that, sooner or later, most cherries and plums die from borer damage unless regular preventive action is taken. *Magnolia virginiana* also often bears a fragrant, late-season flower or two. It is hardy to USDA Zone 5, but southerners can grow the evergreen form, *M. australis* var. *virginiana*. The cane-like stems of *Hibiscus coccineus*, turned scarlet by the first touch of frost, are an unexpected autumn bonus. This plant bears flowers—bright red and so much more graceful than the frisbee-like whoppers of the *H. moscheutos* hybrids—into October. Remarkably adaptable, *H. coccineus* tolerates soil that is either poor and dry or sopping wet.

Berrying shrubs need to be placed with care. There's nothing mellow about the orange-red berries of *pyracantha* when placed within the same sweep of the eye as the violet-purple-fruited *Callicarpa dichotoma*. This Oriental beautyberry produces masses of berries on arching branches. It is harder than *C. americana*, and more tolerant of drought and root competition. Sasanqua camellias flower from October on, and the pink ones clash with berries of every color except white. The East Coast hardiness limit of sasanquas has proved to be Norfolk, Virginia, with an average winter low of 10-20° F. The hardiness of these plants varies a little from one cultivar to another; however, although they may survive for several years a bit further north (as they did at the National Arboretum in Washington, D.C.), they are eventually killed by the cold. *Camellia japonica* is hardier.

So often we castigate a plant for failing to please, when the fault is our own for putting it in the wrong place. I planted purple-flowered *Rhododendron* 'P.J.M.' among pink-flowered

camellias and left it there for years, thinking unkind things but unwilling to do in such a sturdy plant. In a moment of inspiration it was moved, in full bloom, to keep company with *Corylopsis pauciflora*, buttercup winter hazel, which bears short chains of pale yellow flowers, and which, in my garden, is underplanted with ferns and creamy-yellow 'W. P. Milner' daffodils. This spring picture now gives me great satisfaction; if only 'P.J.M.' didn't flower again each autumn, clashing with its own partly orange leaves!

While Halloween ghosts and goblins are trick-or-treating, nature works her own wizardry, for it is at about this time that frost brings the leaves tumbling down. A neighbor's lawn is strewn each year with the yellow hearts of redbud leaves—autumn valentines. Another lawn becomes a Milky Way of *Liquidambar* stars. *Liquidambar* is such a pretty name and fluid on the tongue, while "sweetgum," the plant's common name, sounds like a toothpaste ad. The road where I live is rich in native trees, and along a woodland path a bright carpet is spread before my feet: red maple, dogwood and tupelo leaves, and the great, yellow, truncated leaves of tulip tree, cut in a "V" at the tip as if to prevent the edges from raveling.

With such splendor all around, a plant must offer more than bright autumn color to earn its place in the garden. One that does is coral-bark maple, *Acer palmatum* 'Senkaki', or 'Sangokaku', which is pretty every day of the year. Once the leaves of mine turned red, but they are usually banana-yellow. They soon drop, but the scarlet-barked branches are a cheerful sight all winter, equaling in brightness those of the red-twig dogwood, *Cornus alba* 'Sibirica'. 'Senkaki' makes a graceful large shrub or small tree and should not be heavily pruned. However, since young wood is the brightest red, you will want to encourage new growth by occasionally removing or cutting back an older branch or two. When shrubs and trees are grown for their colored leaves, back-lighting can be dramatic, but those grown for their bark must be sunlit from the front to be seen at their best.

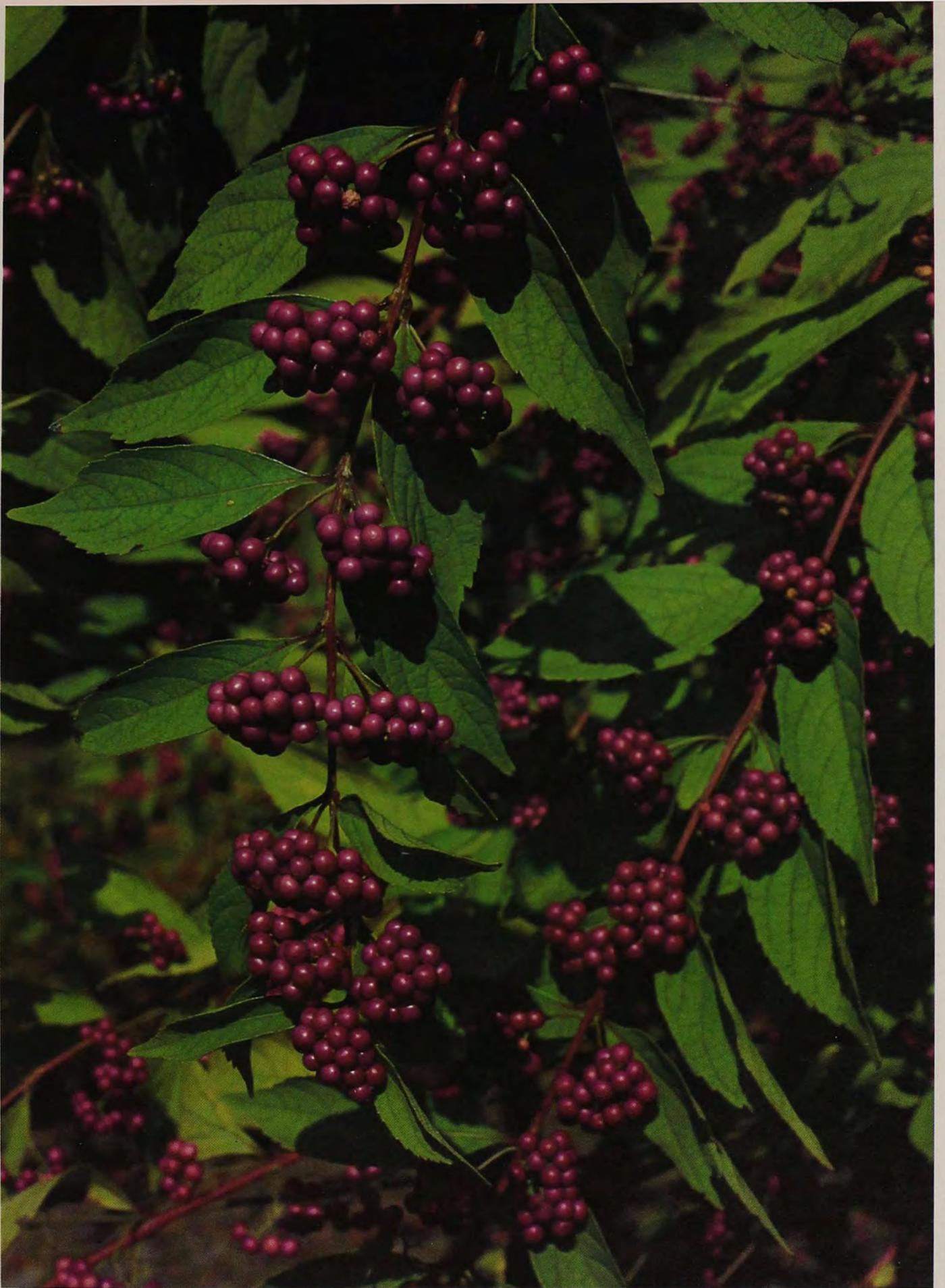
Several years ago, I grew the oak-leaved hydrangea, *Hydrangea quercifolia*, from seed. It has a lot to offer: bold leaves that turn crimson in autumn, peeling bark on its thicket of stems, great trusses of white bloom in late spring, freedom from pests and diseases, and a willingness to grow almost anywhere. I have two forms with double flowers: one has heads so heavy that they droop gracelessly under their own weight; the other, 'Snowflake', is exquisite, earning its name both for its delicacy and for its apparent color (on close inspection, the multiple bracts are a mixture of white and lime green). 'Snowflake' is being sold by southeastern nurseries and should soon be listed by mail-order companies.

*Franklinia alatamaha* is another multi-purpose tree, with striped bark, gold-stamened, white flowers, and leaves that turn scarlet in autumn. I lost mine to wilt disease, as so many gardeners do, but mourned it only briefly. Here, we can grow its evergreen counterpart, *Gordonia lasianthus*, which flowers in summer but often bears a few flowers in autumn, too.

The last months of the year are as busy as they are beautiful. This is our best planting and transplanting time. Leaf fall is slow and steady, and raking goes on all winter, though there is still a residue left to tidy up in spring. Autumn is also the time of the "thon," with children trickling down the drive seeking sponsors for read-a-thons, swim-a-thons, cycle-a-thons. . . . Next year I'm going to propose a rake-a-thon. ♣

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Pamela Harper is a frequent contributor to *American Horticulturist*. She is the owner of Harper Horticultural Slide Library in Seaford, Virginia.

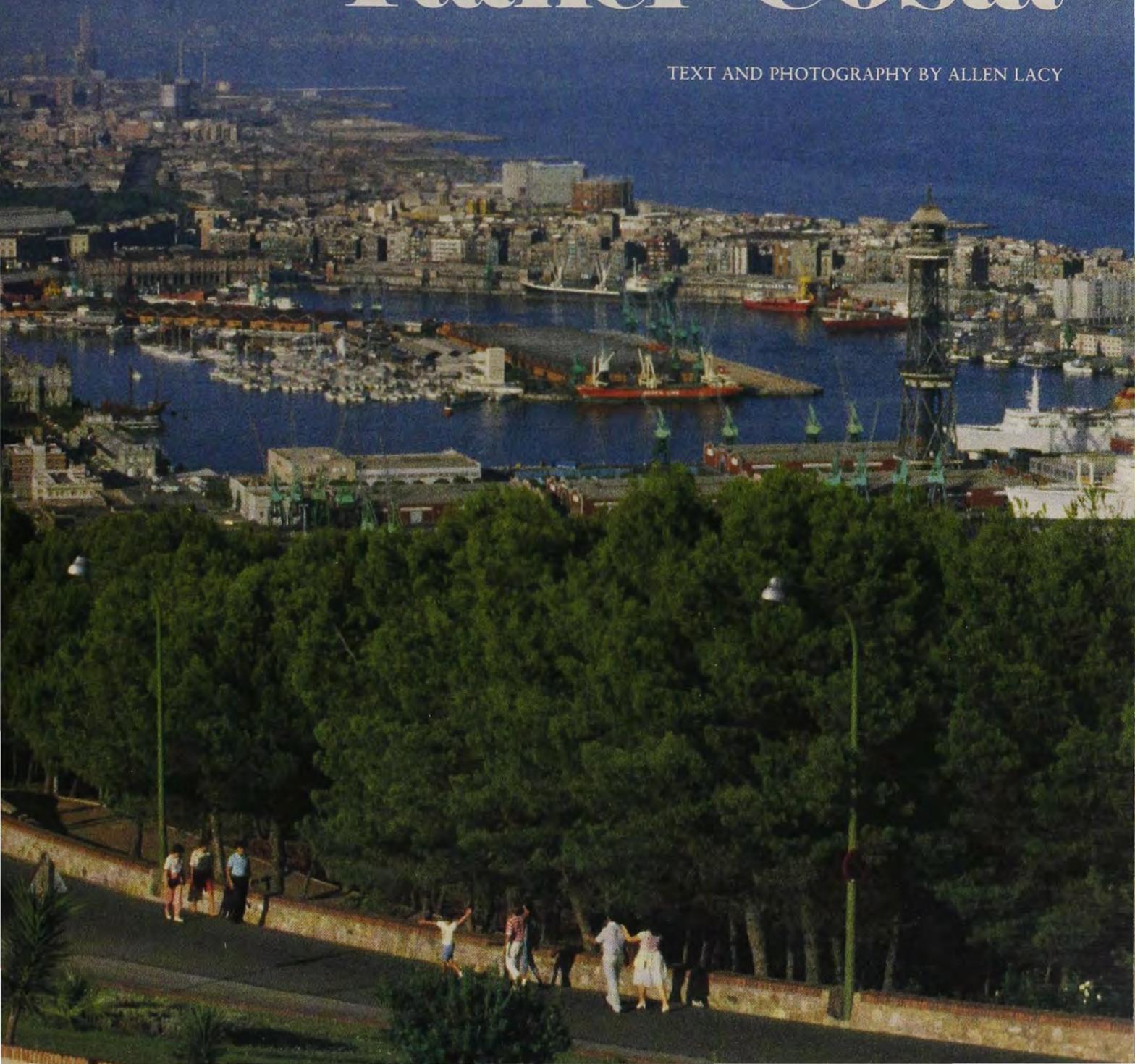


Oriental beautyberry, *Callicarpa dichotoma*, produces sprays of berries that persist through much of the winter. The plant must be placed carefully, for its violet-purple fruits clash with many other autumn hues, such as orange-red pyracantha.



# Montjuich and the Garden of Father Costa

TEXT AND PHOTOGRAPHY BY ALLEN LACY



**O**f all the earth's gardens, surely one of the strangest in beauty is the one known in the Catalan language as the Jardí Mossen Costa i Llobera—the Garden of Father Costa i Llobera, a nineteenth-century Roman Catholic theologian who wrote lyric poetry about nature in his native Mallorcan dialect. The garden named in his honor perches precariously on the steep eastern slope of Montjuich, a mountain overlooking Barcelona and its busy harbor.

For the busloads of Danish and German and French tourists who are deposited there briefly, Montjuich is pretty much synonymous with El Pueblo Español, a complex of monumental buildings put up for the ill-fated Barcelona International Exhibition of 1929. The basic premise of El Pueblo Español was that the architectural styles of every region of Spain should be reproduced on one site so that visitors could have the feeling of being in Old Castile one moment and Asturias the next. Although the place can claim some historical significance as a forerunner of Disneyland and the other theme parks that have sprouted like mung beans in the past few decades, it's a gigantic bore—perfectly dead, except for the tourists who rush from one small shop to another before it's time to crawl back on the bus, clutching their purchases of such authentic Iberian handicrafts as samurai swords and straw baskets made in the People's Republic of China.

The natives of Barcelona shun this hokey imitation of a Spanish town, but not Montjuich itself, a mountain quite close to the center of the city that offers many wooing attractions, including a fortified castle at the top (best reached by cable car); an amusement park with an outside concert hall, where Julio Iglesias plays to packed crowds whenever he is in town; an inexplicable Indonesian restaurant; museums devoted to the religious art of medieval Catalonia and to the works of the twentieth-century artist Joan Miró; and several notable gardens.

In a way, all of Montjuich is a garden. Oleanders, hibiscus and bright beds of annuals line the broad and winding roads that climb its slopes, and handsome sycamore and eucalyptus trees shade the many park benches, where people can read or admire the stunning view of the city or stretch out for a siesta. But Montjuich also contains several individual gardens with their own identities.

Besides a somewhat forlorn and tatty botanical garden and the Maragall Garden (whose chief distinction is the officious,



finger-wagging guard stationed outside its high wrought-iron gate to turn people aside, except during the brief visiting hours on Sundays), there's the splendid Jardí Mossen Cinto—Father Jacinto's Garden, which is much loved and much visited by Barcelonans, with excellent reason.

The sloping, emerald lawns of Father Jacinto's Garden are perfectly manicured. The enormous, irregularly shaped beds of bronze- or green-leaved cannas in full bloom that lie in the light shade of cork oaks and olive trees take on an awesome radiance in the slanting, golden light of late afternoon. Near the garden's entrance, the huge, creamy blossoms of a row of *Magnolia grandiflora* pervade the air with their delicious lemony fragrance. And the sight and sound of water rushing down one side of the steeply terraced terrain—from an

informal pond at the top, down through a series of formal rectangular pools to a fountain at the bottom—are enough to give anyone an overpowering sense of well-being and the urge to linger for many an hour.

People throng Father Jacinto's Garden from earliest morning to late at night. Children run and laugh and play catch. Pairs of nuns stroll the walkways, talking softly. Young mothers push their infants in strollers. Lovers walk slowly, holding hands, pausing occasionally to enjoy the fragrance of jasmines or to admire the handsome plantings of calla lilies, gardenias, bird-of-paradise, and blue lilies-of-the-Nile. And an almost unending procession of newlyweds comes by car, right from their nuptial masses and still in their wedding clothes, to have their pictures taken next to the weeping willows near the fountain



PRECEDING PAGES:  
The view from Montjuich, the mountain overlooking the bustling Spanish city of Barcelona and its Mediterranean harbor. TOP LEFT: A sweeping bed of cannas greets visitors to Father Jacinto's Garden, a popular and much-visited garden on Montjuich. BOTTOM LEFT: *Aeonium arboreum*, a species of succulent native to Morocco and the Canary Islands, bears odd, flattened rosettes of foliage atop its fleshy stems. This deep-purple-foliaged cultivar is 'Schwarzkopf'. LEFT: A group of *Furcraea bedinghausii* overlooks the cable car tower on the edge of Barcelona's harbor. *Furcraea* is an agave family member from Mexico.

or in front of the glowing beds of cannas.

I have no idea who Father Jacinto was, but the garden named in his honor is clearly a very popular place, even though the tourist buses don't stop there. But almost nobody comes to Father Costa i Llobera's Garden, less than half a mile away. I can't explain this fact. By any reckoning, it would be a prime contender for a spot on any list of the world's 10 best gardens; but during two weeks in Barcelona I visited it seven or eight times, and there were never more than two or three other visitors. Twice I had the place entirely to myself, except for the presence of the guard, whose job must make him one of the loneliest men in Spain.

I stumbled on Father Costa's Garden completely by accident, which is the only way anyone is likely to find it. It went unmentioned in all the tourist guides. The

kiosks on the Ramblas, the crowded boulevard leading from the elegant Plaza de Catalunya down to the city's seedier districts by the waterfront, didn't sell post cards showing it off. Nor were there photographs of its attractions in the glossy picture book hawked at every newsstand and available in four languages—*Todo Barcelona*, *Tout Barcelona*, *Ganz Barcelona* and *All Barcelona*. I had to tell cab drivers how to get there, and the desk clerk at my hotel, a lifelong native of the city and otherwise a treasure-trove of information about where to go and what to see, knew nothing about the good father's garden.

I found it after taking a cable car from the harbor to the landing station halfway up Montjuich. My plan had been to turn right, towards the Miro museum, but a

powerful thirst drove me left instead, for a cold bottle of mineral water at a sidewalk cafe a few hundred feet away. Just beyond the cafe I found a faded sign announcing that I was at the entrance of a public garden devoted primarily to a collection of plants from regions of the world where winters are warm and annual rainfall is scanty. Here one would find gazanias blooming from March through June, mesembrythemums in April and May, yuccas and cacti from mid-summer to early fall, and aloes from December until May. The sign didn't enlighten me about the garden's history or explain why the garden was named for the poetry-writing clergyman, but it did explain that bloom is continuous throughout the year, except for November, when all the plants go into a brief period of dormancy.

One look down the steep wooden staircase that led into the garden, and I was thunderstruck by its drama and beauty. I couldn't estimate its size, partly because of the tricky terrain, and partly because I'm poor at such calculations. Fifty acres might be a reasonable guess. Below me, a series of long, very broad gravel paths lined with date palms and palmettos—their course occasionally cut by stone stair steps serving as shortcuts from one level to the next—crisscrossed the precipitous mountainside.

Since I garden on a patch of land as flat as a tortilla, I get depressed whenever I read that any garden worthy of the name must have a vista and several changes of elevation. But Father Costa's Garden convinced me that these claims are absolutely correct. Here was vista with a vengeance and change of elevation in spades.

Sharp, almost vertical cliffs smothered in crimson and dark purple bougainvillea loomed high above to the west. Several hundred feet below, the garden ended at a highway separating it from the blue waters of the Mediterranean and from Barcelona's harbor, dominated by tall grain elevators and long warehouses, and bustling with merchant ships and huge cranes for loading and unloading containerized freight. From my mountainside vantage point, I could hear all the sounds of the harbor: the bells of a tugboat; the long, low whistle of a passenger ship preparing to embark; and the clatter of the cranes as they moved ponderously along their steel tracks to deposit cargo in the holds of the waiting merchant vessels. This busy maritime setting at one of the commercial crossroads of the world seemed perfect for a garden of this sort—a cosmopolitan collection of hundreds of species of plants gathered from all the dry regions of the earth, including Mexico and the American Southwest, Central and South America, southern Africa, Australia and the Canary Islands.

The view was breathtaking, but as I walked down the staircase I forgot all about it, for the plant life in the garden captured my entire attention. Little signs here and there admonished people to "Respect These Plants." A better admonition would have been to marvel at them, to stand astonished before these fantastical forms and shapes. Here were plants—all belonging to several unrelated families—that had originated in different spots around the world where survival requires that moisture be stored during a brief rainy period and then conserved over many months of parching drought.



ABOVE: A statue of a weaver using a simple hand loom sits atop one of the harbor overlooks. RIGHT: The cactus garden, which includes barrel cactus (*Echinocactus grusonii*) and a collection of columnar cacti from South America, has a unique sculptural quality.

Everything in this garden caught my eye, and I was delighted to find that neat labels identified every plant by scientific name and place of origin. I was fascinated by a dense planting of an odd plant from the Canary Islands, *Aeonium arboreum*, 'Schwarzkopf', whose thick and fleshy stem tips bore flattened rosettes of leaves so dark a purple that they looked black. I gawked when a side path led me past a thicket of candelabrum-branched *Euphorbia lactea* into a forest of the Mexican cactus *Cephalocereus polylophus* (formerly *Neobuxbaumia polylopha*). Each cactus was a single green column 25 feet tall and covered with neon-red buds and waxy flowers much visited by ants. I was amused by a specimen of *Harrisia tortuosa* (formerly *Eriocereus tortuosus*), a sprawling and languid native of Argentina that seemed to resemble a green octopus with spines and plum-red fruit. I was not so amused by the cactus that attacked me when I pushed it aside with my foot to read the label identifying it as *Cylindropuntia rosea*. It is now classified as *Opuntia rosea*, and commonly and very appropriately known in English as the jumping cholla. Its three-inch, glistening and silvery spines were very beautiful, but they also penetrated shoe leather with no trouble at all, to my sharp and sudden discomfort.

Atop one of several overlooks with a view of the harbor and the sea, and surrounded by a planting of lavender in full bloom, was a statue of a young woman weaving on a simple hand loom. But it

seemed superfluous, for almost everything growing in Father Costa's garden had a bold and dramatic sculptural quality: the groves of saguaros; the creamy spikes of yucca blossoms on well-branched trees 30 feet high; the succulent hedges of jade plants in full bloom; the high flower stalks of century plants rising like marks of punctuation along the tiers of pathways.

For sheer fantasy, I took my hat off to something I encountered for the first time in this garden on a mountainside: a plant called *Furcraea bedinghausii*. This native of Mexico looked like it might have evolved in another galaxy or been dreamed up by Hieronymus Bosch for his *Garden of Earthly Delights*. An absolutely singular plant, it stood 35 feet tall, with a palm-like lower trunk, a band of dead leaves girdling its middle like a hula skirt, and a lime-green inflorescence topping it off. A most peculiar thing somewhat resembling the framework of a half-opened umbrella, it was quite striking even here among many other striking plants in this most striking of gardens. I have a hunch that if someone were to set this plant down on the corner of 42nd Street and Fifth Avenue in Manhattan, it would cause many a car wreck, and possibly even bring about gridlock.

I returned many times to Father Costa's Garden, observing the wonderful changes in the light as the sun made its way across the sky until disappearing behind the tall cliffs above. I went once at night, when it took on an entirely different, almost unearthly aspect under the floodlights illuminating it. I seldom saw another human soul, although higher on Montjuich the Garden of Father Jacinto was crowded with nighttime visitors, and the distant sounds from the amusement park's calliopes filled the air.

I've been back from Spain over a year now, but that garden's strange beauty still haunts me. And it remains quite mysterious. None of the experts on garden history I've checked with knows anything about it, nor do those who specialize in cacti and similar plants. An inquiry made to the Spanish Embassy in Washington came to nothing. I'm wondering: the Spanish tourist authorities urge us all to come see the gardens of the Alhambra in Granada, but why haven't they told us about the remarkable gardens on Montjuich, especially Father Costa i Llobera's? ☪

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Allen Lacy, a professor of philosophy at Stockton State College in New Jersey, contributes regularly to the gardening column of *The Wall Street Journal*. He is the author of *Home Ground: A Gardener's Miscellany*.





**T**he leaves come tumbling down—red, brown, deep maroon, beige, yellow. . . . What to do with them all? A non-gardening friend of ours who lives on a windy site has a simple solution: he cuts the lawn quite short in mid-October, and the leaves scuttle over it in the autumnal winds, settling around shrubs and stone walls at the edge. On Saturday our friend can go for long walks in the woods. He is even able to read the Sunday *New York Times* on Sunday. Such are the perks of the non-gardener.

Gardeners are different. For one thing, they are usually masochistic. Who else would turn over soil to plant peas on a soupy, late-March day when frost is still pozing out of the ground? Or wear nets on their heads in May as a black-fly deterrent, and hunch over delphinium seedlings that will, in any case, rot before summer comes? Or, with ice clinging to shovel or pick, excavate holes in early December for the Asiatic lilies that just arrived from a mail-order nursery in a balmy land? True gardeners really need to have their heads examined.

Forget all you have read about gardening being a gentle art; it most decidedly is not, at least not at this time of year, when trees start to undress, and the gardener's

sense of tidiness compels him to clean up. We convince ourselves that the fallen leaves are nature's bounty for the garden of a future year. If spirits flag during the cleanup, catch phrases of the 1980's, such as "recycle," "green manure" or "organic gold," can bolster them. Although there is some truth to the notion that fallen leaves are valuable, the fervor of the gardener's belief increases in relation to the soreness of his or her back.

I live in New England, and our fore-runners here were Puritans. Northern autumns, except for their Kodachrome beauty, were made for such hard-working people.

There are tools and machines to decrease or increase—mostly increase—the gardener's sense of masochism. Masochism is, of course, related to sadism, which is a characteristic of many garden-implementation manufacturers. One of the most sardonic implements I can think of is a cheap rake. If you are a gardener, you know the sort very well, and your garage or barn may be half full of them from years past, as is ours. Usually one of the bamboo tines breaks during the first leaf-raking bout, and by the second round the flimsy wire coils start to uncoil: Round three brings a declaration of "no contest."

There may be a rationale to cheap rakes, because they enable the gardener to pause periodically and reflect on the benefits of leaf-gathering. If a sense of comfort begins to settle in, the true gardener will postpone leaf-raking for a windy day. A soggy day is also perfect for the dyed-in-the-wool gardener-masochist. Fortunately for the gardener, autumn days are frequently both windy and soggy.

The true gardener loves to dabble with machines, all of which supposedly reduce labor. Goodness knows how many leaf blowers and shredders grace the garages of the North, gathering dust for 49 of the 52 weeks of the year. These machines inevitably fail to start when suddenly called

# DOWN WITH LEAVES

upon one frigid autumn morn when the dirty deed can no longer be postponed. You belatedly learn that the worn-out blades came from a firm in Kansas that went out of business two years ago.

Leaf shredders merit a special word of praise; Lucifer must have had something to do with their creation. The gardener has a tacit understanding with these machines: shredders agree to provide beautiful, fluffy little bits of foliage that make low-cost mulch for next spring's flower borders, or magnificent weed-free compost by late summer; in return, the gardener agrees to a certain amount of labor. Fair enough? Shredders are, in fact, easy to operate if you have played fullback for the Los Angeles Rams. If you are in shape, shredder-starting is a great sport. The shredder's cute little hoppers, three feet or so high, just gobble up the leaves you feed them between stoops to the ground. It sure beats pushups! A few sticks and stones do wonders for discombobulating a shredder, and the noise that results can be heard in the next county.

Leaf blowers are special machines, too. The masochist-gardener rates their effectiveness by their decibel level, not by their ability to move leaves. Ear plugs are frowned upon, of course. In some neighborhoods, there is a regular competition each Saturday during autumn to determine which brand of blower is the noisiest. The most admired model can outperform an old Harley-Davidson with muffler problems.

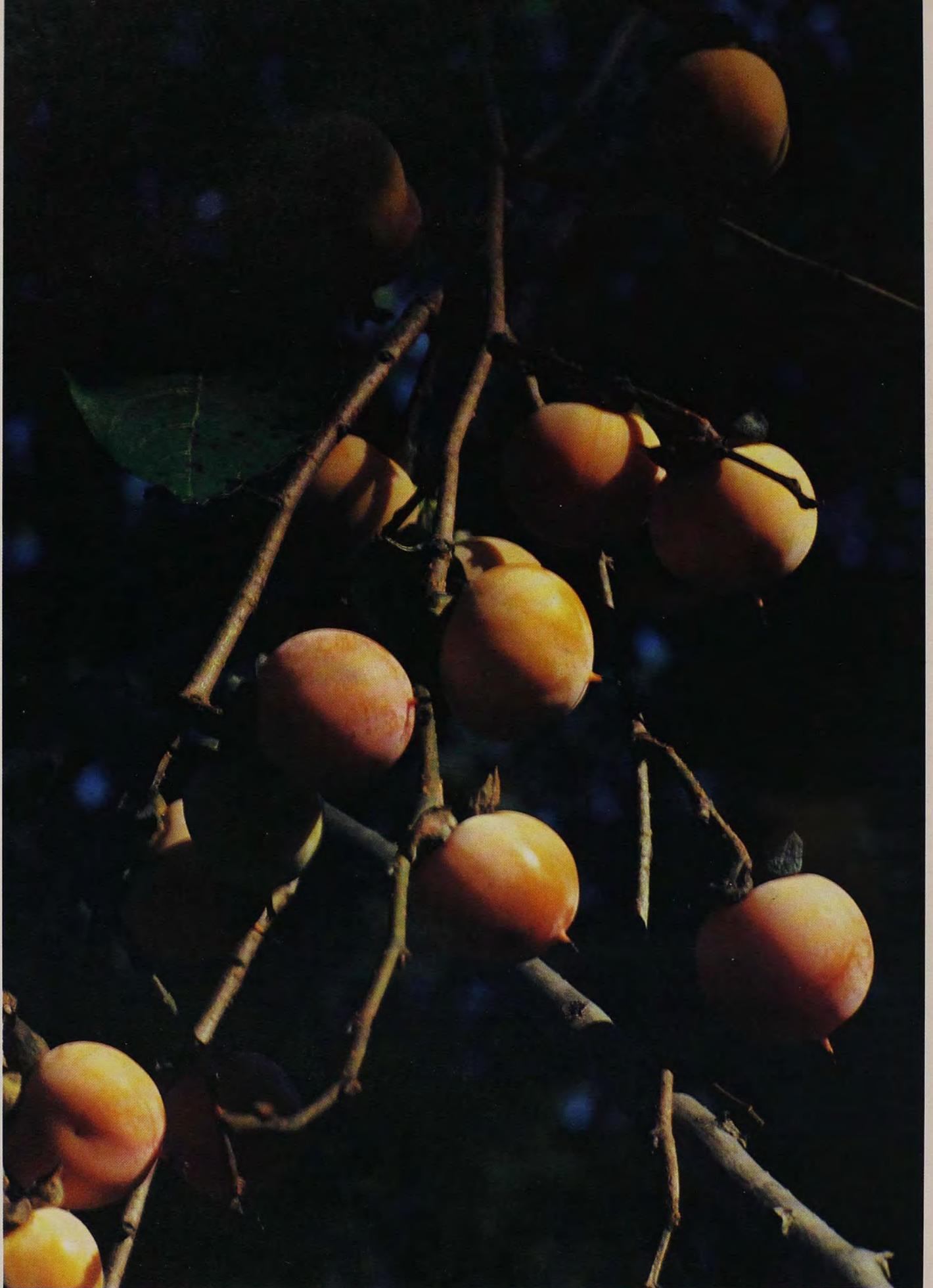
If a gardener owns a low-volume blower, he or she can compensate by operating it early in the day. A neighbor of ours has

perfected the technique by commencing his activities occasionally at six o'clock on a Sunday morning. It is invariably after we have had a late night. He is the envy of early birds, namely blue jays, not to mention the Harley-Davidson crowd.

Then there is the compost heap. Whether you blow and shred leaves, or just lug them all by burlap carrier, the compost heap is always on the most inconvenient spot on your land—usually on the other side of a stone wall—so that the bundles need to be lugged over hill and dale. Leaves have a distressing way of compacting over winter, much like boiled beef that shrinks in the cooking pot, and the gardener must make a formidable pile if he wants a solid return. To fulfill the masochistic urge, the gardener can try to use the method described in gardening books, that is, the compost sandwich: for every 15 inches of leaves, add several inches of soil and a light scattering of dolomitic limestone; every couple of layers add two or three handfuls of lawn fertilizer, whose high nitrogen content will hasten decomposition. The following summer, the true gardener will spend one or two weekends (normally the hottest of the year) turning the heap.

Thank goodness my wife and I do not live in California, where we would feel obliged to garden year round. On to the *Sunday Times!* ☛

Frederick McGourty and his wife, Mary Ann, own Hillside Gardens in Connecticut.



*Diospyros virginiana*

Pamela Harper

# October is Persimmon Month

BY ADELAIDE C. RACKEMANN

As depressing as the end of summer may be, my spirits soar by mid-October. Unbelievably blue skies, crisp days, brilliant autumn foliage and purple New England asters are an unbeatable combination. When you add the vision of a persimmon tree—with small golden-orange fruits dangling from thin, bare branches—against a vibrant sky, October becomes absolute perfection.

The great thing about a persimmon tree is that it is simply *there* if you are lucky enough (as we are) to have an old house where native plants have grown undisturbed for over a century. I am speaking of *Diospyros virginiana*, our common persimmon and a member of the ebony family, which includes 300 species. While both *D. kaki* and *D. virginiana* are grown for their fruits, only the former is grown commercially. (Cultivars of *D. kaki*—the Japanese or Oriental persimmon—are grown in USDA Zone 8, particularly in California, Florida and Texas, but also in parts of Georgia and states bordering the Gulf of Mexico.)

The common persimmon, named *Diospyros virginiana* by Linnaeus, has other quaint names: possumwood; possum apple, date plum, and sometimes just simon. A native of the eastern United States, persimmon is found in fields from Connecticut south, and as far west as Missouri. It may have escaped the fate of so many native trees simply because it is not a timber tree. While the wood is sometimes used to make shuttles, golf club heads and shoe lasts, the tree is not widely grown commercially.

In fact, persimmon is probably not a tree you would grow as a specimen or even add to your orchard. Truly a wild tree, it is simply a treasure to be enjoyed where it is found. It may be cultivated, and if grown from seed (which you could certainly try after eating the ripe fruit), the best and probably easiest way is simply to stratify the ripe seed for three months at 40° F. You could, of course, try to transplant a very small tree, before the long taproot is fully developed. This is not easy, since there are few lateral or fibrous roots. The determined commercial propagator whip-grafts just below the soil surface, using

one- or two-year-old seedlings, or waits until summer and practices shield budding, with long, heavy buds. My own propagating has been accidental; seeds from fallen fruits have simply germinated and developed into trees.

---

## Persimmon Pudding

Persimmon pulp, 2 cups  
Flour, 2 cups  
Sugar, 2 cups  
Buttermilk, 2 cups  
Baking powder, 1 teaspoon  
Cinnamon, 1 teaspoon  
Eggs, 3

Mix everything together. Spread in shallow, oblong cake pan and cook in slow oven, 325° F, until top is slightly brown.

From *Culinary Treasures* by Adelaide C. Rackemann (League of Women Voters of Baltimore County, 1975)

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All my common persimmons grow inconspicuously among oaks, locusts and blue spruce trees. They are in a slightly elevated location. Although better soil produces better fruit, persimmons are not particular. *Diospyros virginiana* is supposed to grow better in moist soil, too, but is also found in dry situations. (*D. kaki* is better adapted to intermediate soils, but you aren't apt to find it growing in the wild.)

Like most trees, persimmon needs good drainage. Beyond that, its needs are simple. Basically, persimmon is a hard, disease-resistant tree, though it is sometimes attacked by the persimmon borer, burrowing in the lower stem and roots. Bark beetles may attack weak trees. I have never seen any insect damage in my own persimmons. Well established, they seem to thrive from one year to the next, growing slowly.

One of my trees is about 50 feet high—considered the maximum height for this species. The diameter of the trunk is less than a foot, and most persimmons do not exceed one foot in diameter. The branches of this species are slender and slightly pendulous. Only the bark is arresting, with its deeply cut, small, regular blocks. The eas-

iest way to identify the tree, in the absence of fruit, is by its bark.

The leaves are simple, not toothed, and alternate. The flowers appear in May, and male and female flowers are usually borne on separate plants. Male flowers tend to be somewhat whiter and somewhat smaller than female flowers, which are creamy yellow. Trees of this genus are polygamodioecious; that is, they are essentially dioecious (male and female flowers are borne on separate plants), but some bisexual flowers are also present on some plants.

I must confess: I scarcely notice the persimmon except when the fruits appear. The fruit is a juicy berry with an enlarged calyx at the base. It becomes noticeable in the early fall, first as a greenish-yellow globe. Gradually, it ripens to become the spectacular orb that provides food for birds, deer, raccoons, opossums and even dogs. It must be fully ripe before a person can eat it. Green fruit puckers one's mouth, but once the small, orange fruit is slightly creased and soft to the touch, it may be safely devoured. Since so many other creatures like persimmons, it is often hard to find the ripe fruit.

The branches are usually so high off the ground it is nearly impossible to reach them. I use a long pole to knock off the fruits. More often, I get down on my hands and knees, and scramble among the fallen leaves for the dropped fruit. This is best done after a light frost and a high wind, and before the deer and raccoons arrive on the scene.

Unfortunately, each fruit is only about an inch and a half wide and contains large, smooth, black seeds—usually five of them in the common persimmon, and as many as 10 in other species. Still, the fruit is well worth the effort. Persimmons have a pulpy consistency but a sweet flavor, with a slight astringency. Nothing else tastes remotely like a persimmon.

One of nature's real treats, both to look at and to eat, persimmons are a fruit to look forward to with the coming of October.

---

Adelaide C. Rackemann is active in the Horticultural Society of Maryland and works as a volunteer at Cylburn Nature Center and Wildflower Preserve in Baltimore, Maryland.

# Pronunciation Guide

The accent, or emphasis, falls on the syllable that appears in capital letters. The vowels that you see standing alone are pronounced as follows:  
 i—short sound; sounds like i in “hit”  
 o—long sound; sounds like o in “snow”  
 a—long sound; sounds like a in “hay”

*Acer palmatum* AY-ser pal-MAY-tum  
*Aeonium arboreum*  
 ee-O-nee-um ar-BOR-ee-um  
*Alchemilla vulgaris*  
 al-che-MILL-ah vul-GAY-riss  
*Allium thunbergii*  
 AL-ee-um thun-BERG-ee-eye  
*Alnus* AL-nus  
*Asarum europaeum*  
 as-AR-um your-o-PEE-um  
*Atropa belladonna*  
 ah-TRO-pah bell-ah-DON-ah  
*Bixa orellana* BIX-ah or-el-LAN-ah  
*Brunmansia suaveolens*  
 brewg-MAN-see-ah swav-ee-O-lenz  
*B. × insignis* b. in-SIG-nis  
*B. versicolor* b. ver-si-KOL-or  
*Brunfelsia hopeana*  
 brun-FELL-see-ah hope-ee-AN-ah  
*B. jamesonii* b. james-SON-ee-eye

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*B. uniflora* b. you-ni-FLOR-ah  
*Callicarpa americana*  
 kall-i-KAR-pa a-mer-i-KAN-ah  
*C. dichotoma* c. di-KO-to-mah  
*Camellia japonica*  
 ka-MEAL-ya ja-PON-i-ka  
*Canna bidentata*  
 KAN-ah bi-den-TAY-ta  
*C. edulis* c. ED-yew-liss  
*C. × generalis* c. jen-er-AL-iss  
*C. gigantea* c. ji-GAN-tee-ah  
*C. glauca* c. GLAW-ka  
*C. indica* c. IN-di-ka  
*C. latifolia* c. lat-i-FOL-ee-ah  
*C. × orchoides* c. or-kee-o-EYE-deez  
*C. speciosa* c. spee-see-O-sa  
*Cephalocereus polylophus*  
 SEPH-al-o-CER-ee-us pol-LIL-ah-phus  
*Cestrum aurantiacum*  
 SESS-trum aw-ran-TY-ah-kum  
*C. diurnum* c. dy-UR-num  
*C. elegans* c. EL-e-ganz  
*C. nocturnum* c. nock-TURN-um  
*Chrysanthemum* kris-AN-tha-mum  
*Clethra acuminata*  
 KLETH-ra ah-kew-min-AY-ta  
*C. alnifolia* c. all-ni-FOL-ee-ah  
*C. arborea* c. ar-BOR-ee-ah  
*C. barbinervis* c. barb-in-ER-vis  
*C. delavayi* c. de-LAV-ay-eye  
*C. fargesii* c. far-JESS-ee-eye  
*Cornus alba* KOR-nus AL-ba  
*Corylopsis pauciflora*  
 kor-ee-LOP-sis paw-ci-FLOR-ah  
*Crocus medius* CROW-cuss ME-de-us  
*C. speciosus* c. spee-see-OH-sus  
*Cylindropuntia rosea*  
 cy-LIND-ro-PUN-tee-ah ROSE-ee-ah  
*Datura chlorantha*  
 day-TOUR-ah klor-AN-tha  
*D. metel* d. MET-el  
*D. stramonium* d. stra-MOAN-ee-um  
*Dentaria diphylla*  
 den-TAR-ee-ah di-FILL-ah  
*Diospyros kaki* di-os-PY-ros KA-kee  
*D. lotus* d. LOW-tus  
*D. virginiana* d. vir-jin-ee-AY-na  
*Echinocactus grusonii*  
 ee-kon-oh-KAK-tus gru-SON-ee-eye  
*Eriocereus tortuosus*  
 ear-ee-o-CER-ee-us tor-too-O-sus  
*Euphorbia lactea*  
 yew-FOR-bee-ah LACK-tee-ah  
*Franklinia alatamaha*  
 frank-LIN-ee-ah ah-la-ta-MA-ha  
*Furcraea bedinghausii*  
 fur-CRAY-ee-ah bed-ing-HOW-see-eye

*Gordonia lasianthus*  
 gor-DOE-nee-ah lay-zee-AN-thus  
*Harrisia tortuosa*  
 har-RISS-ee-ah tor-too-O-sah  
*Hibiscus coccineus*  
 hy-BISS-kuss kok-SIN-ee-us  
*H. moscheutos* h. mo-SKU-tos  
*Hydrangea quercifolia*  
 hy-DRAN-gee-ah quer-si-FO-lee-ah  
*Hyoscyamus niger*  
 hi-o-CY-ay-mus NY-jer  
*Illicium anisatum*  
 il-LISS-ee-um an-is-AY-tum  
*I. floridanum* i. flo-rid-AN-um  
*I. verum* i. VER-um  
*Iris sibirica* EYE-riss sy-BEER-i-ka  
*Jasminum* jazz-MY-num  
*Leitneria floridana*  
 let-NER-ee-ah flor-i-DAY-na  
*Lesquerella* les-ker-EL-la  
*Liquidambar* liquid-AM-bar  
*Lonicera × americana*  
 lo-NISS-er-ah a-mer-i-KAN-ah  
*L. heckrottii* l. heck-ROT-tee-eye  
*L. sempervirens* l. sem-per-VEER-enz  
*Lycopersicon esculentum*  
 ly-ko-PER-si-kon ess-kew-LENT-um  
*L. lycopersicum* l. ly-ko-PER-si-kum  
*Magnolia australis* var. *virginiana*  
 mag-NOL-ya os-TRAIL-is ver-jin-ee-AY-na  
*M. grandiflora*  
 m. grand-i-FLOR-ah  
*M. virginiana* m. ver-jin-ee-AY-na  
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 man-dra-GOR-ah o-fiss-i-NAIR-um  
*Neobuxbaumia polylopha*  
 neo-bux-BAU-mee-ah pol-LIL-oh-fah  
*Nicotiana tabacum*  
 ni-ko-ti-AY-na ta-BACK-um  
*Opuntia* o-PUN-tee-ah  
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 pimp-in-ELL-ah AN-iss-um  
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*Rhododendron* ro-do-DEN-dron  
*Salvia officinalis*  
 SAL-vee-ah o-fiss-i-NAL-iss  
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*S. nitida* s. NIT-ed-ah  
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 so-LAN-um too-bur-O-sum  
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 tee-ah-RELL-ah cor-di-FO-lee-ah  
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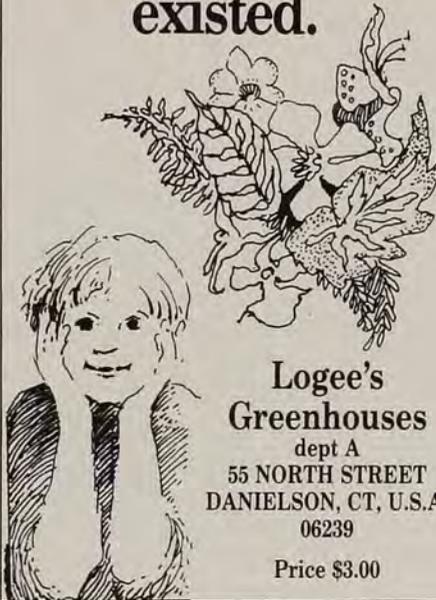
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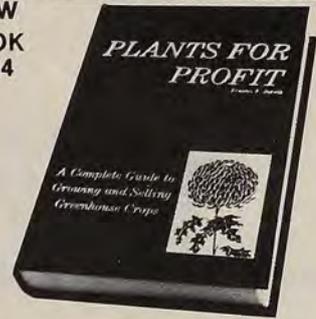
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# Strangely Few Relatives

The different sizes of plant families are a study in contrasts. Some families, such as Euphorbiaceae and Rubiaceae, are composed of vast assemblages of genera and species, while other families are very small and may contain only a single genus.

Botanists have grouped plants according to certain shared characteristics of flower, fruit and leaf, and have organized them in a system that reflects their relationships in hierarchical sequence. Each family is divided into various genera, and each genus is, in turn, divided into various species. When a group of plants is so distinctive in flower, fruit and leaf that it is unlike any other group of plants, it may be classified in a family all its own. Such one-genus, or monogeneric, families are the subject of this column.

Of the five families discussed in this column, all are monogeneric; two are rare examples of monotypic genera, that is, genera composed of only one species. Bixaceae, whose sole member is *Bixa orellana*, is a tropical American native and the source of a dye. Leitneriaceae, another curious genus native to North America, also has only one species—*Leitneria floridana*. The three families with only one genus but many species are Clethraceae, a family whose members are grown for their fragrant flowers; Illiciaceae, a family with Asian and American members, and the source of a spice and an oil; and Cannaceae, a family from the tropics and subtropics that has been extensively hybridized for our gardens.

## Bixaceae

*Bixa orellana*, commonly called annatto or lipstick tree, is the sole member of both its family and its genus. *Bixa* is a modification of the South American name for the genus. The plant's common names refer to properties of the fruit. Commercially important as a dye plant, it is native to tropical America and has become naturalized in the Old World tropics.

*B. orellana* is an evergreen shrub or small tree that reaches about 20 feet in height. Its simple, alternate leaves are palmately veined. Both leaves and stems contain red



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sap. Bees are attracted to the erect terminal clusters of two-inch-wide, rose-pink-to-white flowers resembling wild roses. The tree is grown as an ornamental in South Florida, and both flowers and fruit are attractive. Fruit clusters, either fresh or dried, can be used in flower arrangements. The lipstick tree is suitable for gardens in frost-free climates only.

*Bixa* bears large clusters of red or reddish-brown capsules at the ends of its branches. When the capsules split, they release seeds that have a thin, waxy, bright red covering, called an aril. In parts of Latin America, the seeds are ground and used as a spice. The aril is the source of the red-orange dye for which the plant is grown. This covering is scraped off the seeds and made into a nearly tasteless paste called annatto. Indians of tropical America use annatto as a major source of red body paint and cloth dye, as well as an insect repellent.

Today, the fruit of *Bixa* is collected on a large scale for dye production, and *B. orellana* is commercially cultivated in the tropics and subtropics. For many years, however, the dairy industry provided almost the only market for *Bixa*. Dairy men used annatto to add color to butter and cheese. (Some readers may recall the days when colorless margarine was sold in a



Raymond J. Rogers

LEFT: *Bixa orellana*, annatto or lipstick tree. ABOVE: *Clethra alnifolia* 'Rosea'. RIGHT: A colorful *Canna* hybrid.

plastic bag, along with a small, red capsule containing annatto; the capsule, broken by hand, released the colorant to make the low-priced spread resemble butter.)

## Clethraceae

Members of the genus *Clethra*, consisting of some 30 or 40 species, are evergreen or deciduous shrubs and small trees native to North America, eastern Asia and Madeira. The majority of the species attain only large shrub size. They bear alternate, simple leaves. The fragrant flowers are bisexual and regular, with five sepals, five petals and 10 stamens. They are white or, rarely, pink, and are borne in terminal racemes or panicles. The fruit is a three-valved capsule. Yellow-to-orange fall foliage color is characteristic. The name *Clethra* is derived from the Greek word for alder, which the foliage of some species is said to resemble; however, clethras are not at all related to true alders, which are members of the genus *Alnus*.

*C. alnifolia* is a clump-forming, deciduous, 10-foot shrub that is hardy from USDA Zone 5 southward. Commonly called summer-sweet or sweet pepperbush, it spreads by underground stems, eventually forming a thicket. It is found in swamps and moist woodlands; in cultivation, it has



Block's

proved to be well adapted to planting near the sea.

*C. alnifolia* produces spires of small, bell-like, white flowers that stand erect on new growth of the season. A cultivated form, 'Rosea', bears pink flowers. If the flowers of summer-sweet were wholly green, they would still be cherished for their fragrance and their late-season flowering. They perfume the late-summer and autumn air in the same fashion that black locust, Japanese honeysuckle and mock orange do earlier in the year.

*C. acuminata*, another American native in the family, comes from the southeastern and southern states and, therefore, is less hardy than summer-sweet. Although its summer-blooming flowers are less handsome than those of summer-sweet, its yellow-to-orange fall foliage and very attractive cinnamon-brown bark make it a valued ornamental.

Some Asian species of Clethraceae in cultivation are *C. barbinervis*, *C. delavayi*, and *C. fargesii*, all of which are summer-blooming and fragrant, and hardy in USDA Zones 5 to 7.

*C. arborea*, lily-of-the-valley tree, is an evergreen from Madeira. It grows larger than other *Clethra* species and may become a multi-stemmed, 25-foot tree. In summer, the tree is a cascade of fragrant, white, bell-like flowers in terminal, drooping clusters that are six inches long. Hardy in USDA Zone 9, it is used as an ornamental in California.

## Illiciaceae

*Illicium* is the single genus of the family Illiciaceae, which is composed of about 40 species of shrubs and small trees native to the West Indies, North America, Japan, China, Korea and Southeast Asia. Thick, leathery, evergreen leaves give off an aroma closely resembling that of the herb anise, *Pimpinella anisum*. The name *Illicium* is derived from the Latin word for allure-ment. White, yellowish or purple flowers, which are usually solitary, are borne in the axil between leaf and stem. The seeds are produced in a star-shaped wheel that contains anywhere from several to many one-

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## STRANGE RELATIVES

seeded pods. Illiciums are attractive for planting in mild climates and can be about as hardy as camellias.

*I. anisatum*, Chinese or Japanese anise, is a 25-foot tree whose leaves emit an anise aroma when crushed. Its fragrant flowers are white to yellow. Cut branches are commonly found in decorations at Buddhist temple graves in Japan; the bark is burned as incense. The seeds of this species contain a poisonous alkaloid.

*I. floridanum*, purple anise, displays its two-inch, purple, many-petaled flowers in wet woodlands from Florida to Louisiana.

*I. verum*, star anise, is a slow-growing tree from southeastern China and north-eastern Vietnam. Its globose blossoms open white and turn pink, then purple, as they mature. The fruit, dried before it ripens, is the source of a culinary spice and of an essential oil, anethol. (The leaves also yield this oil.) The anise essence is used for flavoring liqueurs, cordials, syrup, candy, perfume and medicine. Star anise is an important ingredient in "five-spice essence," a popular Chinese seasoning powder. The star-shaped fruits can be bought in Chinese markets for use in recipes calling for this spice alone.

## Leitneriaceae

The corkwood family, Leitneriaceae, consists of a single genus with a single species, *Leitneria floridana*. Florida corkwood is a native American plant found growing in swampy regions from Florida and Georgia, westward to southern Missouri and Texas. Sometimes tree-like, sometimes shrubby, it produces erect, gray catkins before the leaves appear. The plant is dioecious; that is, male and female flowers are borne on separate plants. Each female catkin bears from one to four fruits, which look like small, leathery plums.

The genus name commemorates Dr. E. F. Leitner, a German naturalist killed in the Seminole War in 1838. The common name alludes to properties of the wood, which is the lightest of any North American plant and weighs less than cork. The wood is used extensively for floats and stoppers. Florida corkwood is not an ornamental plant; however, because of its taxonomic interest, it is cultivated in some botanical collections.

## Cannaceae

Many readers undoubtedly remember collecting Indian-shot from summer gardens.

Those hard, round pellets are the seeds of *Canna*, members of the single genus of the family Cannaceae. The species *C. indica* has long been known as Indian-shot; it has been said that natives of the West Indies used the seeds as projectiles. The stature and striking green foliage of *C. indica* have made it a long-time favorite as a garden bedding plant.

There are about 60 species of *Canna*, all originating in tropical America. The first attempts to use cannas as bedding plants were made in 1846, when the French consular agent in Chile brought a collection home to his garden near Paris. He was so successful with these plants that he began to hybridize the species, and thus laid the foundation for the splendid hybrids we now know. The species have been hybridized so extensively by horticulturists that now the garden canna is identified as *C. × generalis*. Another product of hybridization is the orchid canna, *C. × orchiodes*, whose very large flowers are distinguished by recurved petals.

All canna family members have swollen, tuberous rhizomes. These creeping, underground stems send up aerial stems bearing large, broad leaves with a distinct midrib; the leaf stalk sheathes the stem. The conspicuous canna flowers in terminal clusters are very irregular in structure. They are bisexual; there are three greenish sepals and three petals resembling sepals. Nearly all the flower color comes from colored, petal-like, sterile stamens (staminodes) that are much enlarged and in two whorls; the inner whorl consists of one or two staminodes and one free, petal-like, fertile stamen. The style, too, is petal-like. Fruit is a three-valved capsule containing many seeds.

Most canna species are more or less terrestrial, but *C. glauca* requires or prefers growing with its roots submerged in water. In a hybridizing program begun at Longwood Gardens in 1969, *C. glauca*, which was collected in Brazil, was crossed with some of the common, showy-flowered, terrestrial hybrids. Flowers of *C. glauca* are small and pale yellow. The crosses produced seedlings from which four aquatic cultivars (one each of red, yellow, orange and pink) were selected and named. They can now be seen in display pools at Longwood Gardens, and have been shared with other gardens and nurseries. The special cultural requirements of these tropical plants limit their general garden use. However, in frost-free areas they can live in outdoor pools year round. Horticulturists

at Longwood Gardens are now attempting to develop smaller garden types and, possibly, some cultivars suitable for pot culture for patio gardens.

*Canna* is a genus not only of splendid garden plants; it also contains plants of economic importance. For example, *C. edulis* is the source of a starch known as Queensland arrowroot. It is grown as a food crop in the Pacific areas and in parts of Asia, and on a commercial scale in Australia. The starch is easily digested and, therefore, suitable for invalid and infant diets. The thick, branching rhizomes of some other species, such as *C. bidentata*, are sometimes used as emergency foods, while those of *C. latifolia* (formerly *C. gigantea*) and *C. speciosa* yield extracts with medicinal properties.

Cannas have lush green or bronze foliage that grows to a height of four feet or more and is topped with large red or yellow flowers. The foliage once made cannas a favorite in huge, circular beds centered in expansive private lawns or in comparable displays in public parks. Then, for some years, cannas fell into disfavor. Henry Mitchell in *The Essential Earthman* writes: "The canna got such a bad reputation from its mistaken and trite use in Victorian gardens that it has never quite recovered the favor that its majesty entitles it to. . . . Yet the canna surpasses all other common plants in the tropical luxuriance of its broadened sword-like leaves." Recently, cannas' popularity has been on the increase, thanks to the multitude of stunning red, orange, yellow and multi-colored flowers, and handsome, stately, bronze, green or variegated foliage of new hybrids. The huge flowers are a far cry from the small, red blossoms of *C. indica*, but the Indian-shot seed can still be collected from them. Nurseries and specialists now offer long lists of named varieties of these striking hybrids.

The size of these five unique families—Bixaceae, Leitneriaceae, Clethraceae, Illiaceae and Cannaceae—belies their aesthetic and economic importance. Not only do their members provide us with fragrant flowers and ornamental beauty, but they are the source of many familiar products, including spices, oils and dyes. The contributions of these small families, with their "strangely few relatives," are surprisingly many. ☉

—Jane Steffey

Jane Steffey recently retired as the Society's Horticultural Advisor. She is now an active AHS volunteer and serves as Editorial Advisor to *American Horticulturist*.

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# Garden Edgings

**L**ines are forever being drawn in a garden: beelines between house and garage; great, sweeping curves between shrub borders, lawns and flower beds; and divisions between formal and informal plantings. These garden edgings—as revealing as the lines in a person's face—tell us as much about a gardener's character and style of gardening as do the plants he or she chooses.

For some gardeners, the line between a stone path and a woodland hillside of ferns and wild plants is a place of gentle co-existence, where plants and grasses self-seed, and leaves are left where they fall. For others, an edging is a hard line, both in style and approach; brick or metal strips sunk into the ground become vigilant defenders against encroaching weeds.

Regardless of a gardener's stylistic idiosyncrasies, however, the selection of edging material will influence the mood and character of garden areas. A corrugated metal strip sunk into the ground or an assiduously weeded strip of bare ground or gravel is, undeniably, a utilitarian barrier against weeds. But a mass of billowing *Alchemilla vulgaris* between herbaceous border and stone path can give a garden a sense of stylistic unity, and, once established, can be so dense that it is practically impervious to weeds. In one country-style garden, *A. vulgaris* drifts onto the path and flowers concurrently with the border's bearded iris as if it were part of the border. On the path's other side, clumps of *Alchemilla* not only fill what might have been an awkward gap between stone wall and walk, but also provide a strong sense of symmetry.



ABOVE: Stone edging, wall, steps and path unite the upper and lower portions of a New England garden. RIGHT: *Alchemilla vulgaris* serves as an edging and fills the gap between a stone path and a herbaceous perennial border.

On the other hand, a kitchen garden can be designed for the eye as well as the palate. One such garden I know is laid out with parterres of silver-foliaged *Salvia officinalis*, which is juxtaposed with the blue-green foliage of cabbages and broccoli. Squares of feathery carrot foliage are outlined by double lines of the dusty-green, crinkled leaves of kale. The brick or stone paths are edged with various culinary thymes; thus, the edgings become a harmonious blend of utility and aesthetics.

In another example of garden edgings, the lines between garden and natural surroundings are finely and beautifully drawn. Here, in the shade of a New England hillside, native *Trillium grandiflorum* and *Tiarella cordifolia* are major plantings in several beds, and they are also used as edgings. In this case, the forms and growth of these plants influence the shape of the paths.

In this same garden, *Asarum europaeum* and *T. grandiflorum* edge stone steps. While this species of *Asarum* is not native to New England, its glossy leaves make an elegant edging in combination with *T. grandiflorum*; the duo is in total keeping with the

woodland character of the garden. Although *A. europaeum* is appropriate in a woodland setting, it is so versatile that it is equally effective in formal settings. Planted as an edging along brick-edged perennial borders, this plant is quietly magnificent in the company of *Iris sibirica* and *Viola cornuta*.

A strong sense of stylistic unity is created in another New England garden by using the same type of stones in walls, paths and edgings. Here, the lower annual beds are outlined with irregularly shaped stones set on end, while the up-

per shrub and herbaceous borders are edged with straighter, more continuous lines of the same stone. The result is a successful division between two distinctly different borders. The roughly shaped stone edgings of the lower border are a dramatic break from the smoothness of the lawn. At the same time, the stone continues the line created by the lowest step while lifting the eye up to the upper border. At the edge of the upper border, the continuous line of stone is a simple repetition of the wall below and the higher stone wall behind.

These lines of stone fend off encroaching grass and prevent plants from spreading and flopping onto paths. Of equal importance, however, is the visual unity the stones give this garden. What might have been a confusion of levels and directions looks, with skillful manipulation, like a natural outgrowth of the surrounding woods and hillsides. ☉

—Margaret Hensel

Margaret Hensel is a writer and landscape designer living in western Massachusetts.





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