

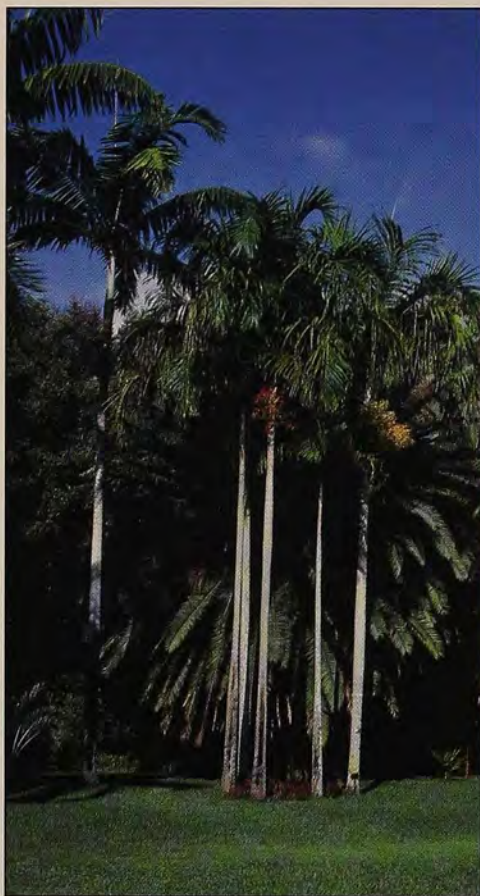
AMERICAN HORTICULTURIST

DECEMBER 1983



Members of the American Horticultural Society Will Gather in Miami from March 14-17, 1984 For the AHS Spring Symposium.

We Would Like You To Join Us.



Barbara W. Ellis

Leave winter woes behind and join us in Miami for our Spring Symposium. Tour Fairchild Tropical Garden, famous for its tropical flowering trees, palms and cycads, and stroll through Vizcaya, the Italian Renaissance palace of John Deering. Explore The Kampong, once the home of world-renowned plant explorer David Fairchild. Learn about tissue culture propagation at the Orchid Jungle, and visit wholesale and retail nurseries filled with exotic plants. Be sure to join us for a unique tropical experience—South Florida promises to be in the full bloom of spring.

For more information about the Spring Symposium, look in the January issue of *American Horticulturist* news or write to the Society's Education Department. You may also elect to extend your horticultural holiday by joining the Post Symposium Tour of gardens along Florida's west coast, the Everglades and EPCOT from March 18-26, 1984. Please join us!

ABOVE: Fairchild Tropical Garden is famous for its collection of palms as well as cycads, orchids, bromeliads and trees native to South Florida and the Bahamas. BELOW: Hibiscus 'Norma', growing in the hibiscus display garden at Fairchild.

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Bougainvillea and nasturtiums add beauty to a sitting area in Las Palmas Altas, a garden in Phoenix, Arizona. For more information about this remarkable desert garden, turn to page 28. Photograph by Tom Campbell, courtesy of *Phoenix Home/Garden* magazine.

President's Page	by Edward N. Dane	2
Strange Relatives: The Acanthus Family	by Jane Steffey	4
Book Reviews	by Gilbert S. Daniels	8
Improving American Gardens	by Frederick McGourty	10
Foliage Favorites	Text and Photography by Pamela Harper	15
Passionflowers	Text and Illustrations by Kathleen Crawford	18
The Glass Flowers	by Margaret Parke	22
Las Palmas Altas	by Maire Simington	28
Pronunciation Guide		32
Sources		34
Gardener's Marketplace		36
Seasonable Reminders: Deciduous Hollies	by Steve Bender	39
1983 Index		41
The Design Page: Garden Paths	Text and Photography by Margaret Hensel	44

ON THE COVER: Although this mountain laurel, *Kalmia latifolia*, looks freshly cut, it is actually a glass model crafted nearly 100 years ago. See page 22 for more information on the unique Ware Collection of Blaschka Glass Flowers housed at the Harvard Botanical Museum. Photograph courtesy of E. P. Dutton, Inc.



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PRESIDENT'S PAGE

Those of you who follow the events of your Society will recall that about a year ago the President's Page contained an announcement by Tom Richards of his resignation as Executive Director. It is with great pleasure that I can now tell you that his successor has been chosen and that by the time you receive this issue of *American Horticulturist*, our new Executive Director will be at River Farm.

He is Dr. Charles Albert Huckins, formerly Director of the Desert Botanical Garden in Phoenix, Arizona.

Born in Honolulu, Hawaii, Dr. Huckins received his Bachelor of Arts degree in Biology from Brown University in 1963. After a tour in the United States Marine Corps Reserve, he attended Cornell University, where he received his Master of Science degree in Horticulture in 1967. He completed his Ph.D. in Botany at Cornell in 1972.

While at Cornell, Dr. Huckins served as a Research Assistant and a Teaching Fellow, working in the University's herbarium and teaching classes in woody and herbaceous plant materials.

Following his doctoral studies, Dr. Huckins received the William Frederick Dreer Award from Cornell University and a grant from the Druce Fund of the University of Oxford, England to study and conduct research at major herbaria and arboreta in Europe and Central Asia.

Dr. Huckins joined the staff of the Missouri Botanical Garden in 1974 as Curator of Tropical Plants. While there, he oversaw all of the display greenhouse operations at the Garden, including those in the Climatron and the Desert House. He was also responsible for the design, development and operation of the Garden's new Mediterranean House.

In 1977 he was made Assistant Chief Horticulturist at the Missouri Botanical Garden and a year later was promoted to Chairman of the Department of Indoor Horticulture.

In 1979 Dr. Huckins accepted the position of Director of the Desert Botanical Garden, a 140-acre garden in Phoenix, Arizona devoted to the study, display and interpretation of plants native to desert regions of the world. During his four-year tenure, the garden was accredited by the

American Association of Museums and the American Association of Botanical Gardens and Arboreta. Other important accomplishments during his term as Director include the completion of a long-range plan for the development of the entire property, and the development of a computerized plant records system that keeps track of the more than 15,000 plants in the Garden.

Dr. Huckins has been a member of numerous organizations, including the American Association of Botanical Gardens and Arboreta, American Association of Museums, American Society for Horticultural Science, Arizona Native Plant Society, Cactus and Succulent Society of America, International Association for Plant Taxonomy, and the National Council for Therapy and Rehabilitation Through Horticulture. He has been a consultant for the New York City Department of Parks, the Clove Lakes Nursing Home on Staten Island (where he helped develop a horticultural therapy program) and the St. Louis Zoological Park. His articles and papers on a wide variety of horticultural topics have appeared in many publications.

Dr. Huckins is married to the former Mathilde Germaine Demisay, who has had a distinguished career in nursing administration, specializing in geriatric care. Together they enjoy gardening, traveling and water sports of all kinds.

The search for the most qualified candidate for the directorship of your Society by the Executive Committee and myself has been a very exciting and rewarding process: exciting, because we were able to enlist the support and assistance of so many people in kindred societies and groups; rewarding, because so many people reaffirmed to us the importance and significance of the Society in the world of horticulture and gardening.

The Committee and I set very high standards for the individual to fill this position. Foremost among the qualifications we sought were proven administrative ability, and a dedication to the expansion of the ideals of our Society among the people we serve. I believe that as you meet and come to know Dr. Huckins, you will agree that the Society is fortunate.

Edward N. Dane

—Edward N. Dane

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The Sonia Rose

BY JEANNE HOLGATE

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Here, the artist has captured a rose in the radiant blush of first bloom. With entrancing precision, the sculpture portrays every vein of each leaf, every curve of each petal—even the tiny thorns growing out of the stem. The colors are of a subtlety that rivals nature itself. And the composition is superbly united by the bell of fine porcelain, which is hand-embellished with *pure 24 karat gold*.

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STRANGE RELATIVES

THE ACANTHUS FAMILY



Hollen Johnson



Leon Nedbaek



Leon Nedbaek

For the indoor gardener the “royal family” of plants is the Acanthaceae. Superficially a motley cast of characters whose diversity of flowers and foliage often masks their kinship, the individual actors in this dramatic assemblage present a splendid and exciting horticultural show.

Members of this group of herbs and shrubs are found in the tropical regions of every continent. In temperate zones many members of the family are star performers indoors, in the greenhouse and in conservatories. Readers are undoubtedly already familiar with many common names associated with the family: shrimp plant, zebra plant, lollipop plant, pink polka-dot plant, firecracker flower, mosaic plant.

Although the plants in this family have many characteristics in common, according to *Hortus Third*, “classification has largely been based on such technical characters as anther shape and position and pollen surface, which exhibits a great variety of patterns.” As a result, some of the estimated 250 genera and 2,500 species are difficult to identify, a problem for which the family is well known.

Despite the difficulties in identifying family members, however, many features appear repeatedly in descriptions of the plants. For example, leaves are opposite

and simple. Flowers are borne commonly in a spike or cluster, accompanied by prominent bracts (modified leaves on the flower stalk). Bracts are often large and petal-like, enveloping the flower, and are sometimes brightly colored. Flowers are bisexual; four or five fused petals form a tubular or funnel-shaped blossom expanding to two lips or five lobes. Fruit is a two-celled capsule, sometimes opening explosively by means of a special ejection mechanism. In most species the seeds are borne on small, hooked stalks that aid in dispersal. Seed coats of some species are covered with hairs or scales that become sticky or slimy when they are wet.

The Acanthaceae family takes its name from the genus *Acanthus*, a Latin name based on the Greek word for thorn. *Acanthus* has held a privileged position in both the arts and ancient horticulture. One dictionary definition of the word *acanthus* is “an architectural ornament patterned after the leaves of the *acanthus*, used especially on capitals of Corinthian columns; a favorite decoration in classical sculpture.” According to legend, sculptural use of the leaf originated about 430 B.C., when a Greek sculptor, pleased with the natural form of the *acanthus* leaf, adopted it as a distinctive element in the decoration of temple columns. Virgil describes an *acanthus* design embroidered on the robe of Helen of Troy.

Gerard, in his *Herbal* (1597), classified this plant with thistles: “The matter of

thistles is divers. . . . One smooth, plaine, and without prickles, as the Thistle called Beares Breech, or *Acanthus sativus*, whereof there is another with prickles, which we make the wilde. . . .

“Beares breech of the garden hath broad leaves, smooth, somewhat blacke, gashed on both the edges, and set with many cuts and fine nickes; between which riseth up in the midst a big stalke bravely deckt with floures, set in order from the middle upward, of colour white, of form long, which are armed as it were with two catkins, one higher, another lower; after them grow forth the huskes, in which is found broad seed. . . .”

Gerard goes on to describe the wild species of *Acanthus*: “Of the Wilde Beares-breech, called *Acanthus sylvestris* . . . this thistle is in stalke, floures, colour of leaves and seed like the first kinde, having large leaves . . . but thickly dented or cloven and having many sharpe, large, white and hard prickles about the sides of the divisions and cuts, not very easie to be handled or touched without danger of the hand and fingers.

“The Ingravers of old time were wont to carve the leaves . . . in pillers, and other works and also upon the eares of pots; as among others Virgill testifieth in the third Eclog of his *Bucolicks*.”

Modern botanical descriptions of *Acanthus* provide a similar picture: most species are thistlelike, with large, ovate or oblong, spiny, toothed and lobed leaves; leaves

LEFT TO RIGHT: *Crossandra nilotica*, firecracker flower; *Justicia aurea*, formerly *Jacobinia aurea*; and *Pachystachys coccinea*, commonly called cardinal's-guard.

commonly form a rosette at the base of the plant; from their center arises an unbranched stalk bearing a long flowering spike.

Bear's-breech, which we know as *Acanthus mollis*, makes a handsome addition to the hardy border, with its bold basal leaves two feet in length and a foot wide, and its tall spike of white or lavender-to-purple flowers, with leaflike, spine-tipped bracts. The common name bear's-breech probably refers to the distinctly hairy upper sides of the leaves. Some 20 species of *Acanthus* are now recognized; this one is from the Mediterranean region. *Acanthus* is the hardest genus of the family. Frost kills the foliage, but the roots survive very low temperatures.

It is a constant challenge for gardeners to grow plants from other areas of the world in their gardens or greenhouses. Modern technology has enabled us to adopt

many of the tropical beauties among Acanthaceae and place them in center stage; for example, zebra plant (*Aphelandra*), *Fittonia*, *Crossandra*, shrimp plant (*Justicia brandegeana*) and black-eyed Susan vine (*Thunbergia alata*).

Front and center is the zebra plant, *Aphelandra squarrosa*, a robust, more or less succulent shrub from tropical America. Its several compact cultivars—'Brockfeld', 'Dania' and 'Louisae'—are especially fine, with terminal, four-sided spikes of bright yellow bracts tinged with red, from which yellow flowers emerge. Veins of the glossy, dark green leaves, accentuated by creamy yellow markings, give the zebra plant its special appeal as a foliage specimen after flowers have faded.

Crossandra, firecracker flower, serves as an example of the mechanism for ejecting seed. It is possible to hear the pods pop, dispersing the seed, and to find new plants

sprouting unexpectedly in nearby pots of other plants. *Crossandra infundibuliformis* has a four-sided, terminal flower spike, with bracts between which the flowers arise. The flower is tubular, its expanded tip splitting to form a five-lobed lip. This commonly available species with bright orange-yellow flowers is a free-flowering pot plant and gives superior bloom under artificial lights; in warm climates it serves as a good bedding plant. Other *Crossandra* species suitable for greenhouse growing are *C. nilotica*, a hairy plant with red and orange flowers, and *C. pungens*, with extremely dense spikes of yellow flowers and spiny bracts. *Crossandra* is a genus of about 50 species native to Africa and Arabia.

An appealing and modest member of the cast found on many living room tables and in many window gardens is *Fittonia*. An Andean genus of only two species, this plant was named after Elizabeth and Sarah



Fittonia versaffeltii var. *versaffeltii*, a commonly grown house plant that is native to Colombia and Peru. Its common names include mosaic plant, silver-net and silver-nerve.

Mary Fitton, the sisters who wrote *Conversations in Botany* (1817). Fittonias are hairy and low or creeping herbs, rooting at the joints. The white- or colored-vein patterns of the leaves account for the appellation "mosaic plant." Fittonias are choice foliage plants in the house or the greenhouse. Leaves produced on pot-grown plants are rather small. In warm climates, when plants are grown outdoors in shady or moist positions or in rockeries the leaves become much larger, and the plants send out long runners. In either case, the small, yellowish flowers are inconspicuous. The typical fittonia is *F. verschaffeltii* var. *verschaffeltii*. Its leaves are dark green veined with rosy red. *F. verschaffeltii* var. *argyroneura* has light green leaves veined in white. Both *F. verschaffeltii* var. *pearcei* and *F. gigantea* have leaves veined with carmine.

Polka-dot or measles plant, *Hypoestes phyllostachya*, is usable as a garden plant in temperate regions, but its tropical origin in South Africa, Madagascar and Southeast Asia necessitates confining it indoors in winter months. It is a perennial herb with a woody base, normally growing to three feet. Its thin, dark green leaves are speckled with pink or white dots. Lavender flowers produced singly in leaf axils are numerous and attractive indoors or out. If the plant is grown indoors under fluorescent light, frequent pinching and pruning will produce a nicely mounded, shrublike plant of moderate size.

About 300 species of Acanthaceae are now classified as *Justicia*. Included are plants long known as *Jacobinia* and *Beloperone*. (It's a difficult adjustment to call the shrimp plant *Justicia brandegeana* instead of *Beloperone guttata*.) This old favorite from Mexico, admired for its curving or drooping clusters of six-inch terminal spikes, is found on many summer porches and doorsteps or in the greenhouse. Downy bronze or rose-to-yellow bracts overlapping the white, red-spotted flowers suggest the curved tail of a shrimp. White shrimp plant, with white and green bracts, is *J. betonica*.

King's-crown, once known as *Jacobinia carnea*, is now *Justicia carnea*. With thin and velvety leaves, this vigorous branching plant produces a handsome, dense terminal crown consisting of prominent bracts sheltering rose-purple or pink flowers.

Mohintli, *Justicia spicigera* (formerly *Jacobinia mohintli*), produces leaves that, when placed in hot water, yield a bluing agent used to whiten clothes. Another name for this species is Mexican indigo, which is also the source of a blue dye.

Another family member with a prominent terminal spike is the golden yellow lollipop, *Pachystachys lutea*. Others among the six species of *Pachystachys* may have purple or red flowers, notably *P. coccinea*, cardinal's-guard. These are excellent pot plants; *P. coccinea* in particular is recommended by warm-climate growers for grouping in shady places outdoors.

One of the loveliest blues of the tropical garden is *Thunbergia grandiflora*, blue trumpet vine or skyflower. Skyflower is a vigorous vine that has become naturalized in many areas of the tropics. In cultivation it is commonly grown on arbors and porches, where it trails large, funnel-shaped flowers in drooping clusters. A cultivar, 'Alba', displays equally striking white blossoms.

Thunbergia is a genus of 100 or more species of erect or climbing herbs or shrubs. The vining types are especially popular ornamentals. Temperate zone gardeners have grown fond of *T. alata*, the black-eyed Susan vine. It is grown as an annual hanging basket plant indoors and out. Solitary tubular flowers on long stalks are produced in abundance, literally covering the plant and almost hiding the small, triangular leaves on winged stems. Flower colors may be creamy with a dark purple throat, white with a dark center, orange with a dark center, or pure white. Cultivars under various popular names are 'Alba', 'Bakeri' and 'Aurantiaca'.

Thunbergia coccinea bears drooping clusters of scarlet flowers with yellow throats. *T. erecta*, king's-mantle or bush clock vine, is a woody twiner or a shrub to six feet, draped with solitary, blue-purple flowers. *T. fragrans*, with two-inch white blossoms, is fragrant. Clock vine is a common name applied to several species; the vine twines in the direction of the hands of a clock.

To whet the appetite of indoor gardeners—or to meet the demands of the increasingly sophisticated—discerning plantmen are broadening the scope of available flowering tropical plants, including many in the acanthus family.

Asystasia gangetica is one that tempted me some years ago. After seeing it pictured in a book on tropical flowers, I located it by telephoning a southern rare-plant seedsman, who shipped cuttings to me. I grew it in the indoor light garden as a hanging basket plant, in the course of which I found that it roots readily from cuttings. Flowers growing up one side of the trailing stalk are small (about one inch), delicate, and pale lavender or yellowish. Where it grows outdoors in the tropics, it sometimes

climbs several feet high on fences and among taller plants, as I have seen it do along the borders of fields in Hawaii.

Enticing catalogues lead me to want to experiment next with Phillipine violet, *Barleria cristata*, which is commonly grown for hedges or borders in Hawaii. It is a hairy shrub with spiny bracts around white or purple flowers. Another apparently thorny species is "hophead," *B. lupulina*. Its inch-long, yellow flowers protrude from hoplike spikes on maroon stems, and the black-green foliage is appealing.

I once introduced the "royal family" of plants to a group of indoor light gardeners, who were intrigued by the specimen plants furnished by a local grower. *Peristrophe* and *Sanchezia* sold especially well. *Peristrophe* makes a beautiful basket plant, particularly *P. hyssopifolia* 'Aureo-variegata', which has variegated yellow and green leaves and is commonly called marbleleaf. Delicate, slender-tubed, rose or purple flowers in the leaf axils grace this species. *Sanchezia speciosa* (sometimes called *S. nobilis*) is considered an easy house plant to grow. Its handsome, glossy, tapering leaves are lemon- or mustard-veined and are a striking ornamental accompaniment to the bright yellow flower spikes.

In a show featuring Acanthaceae, the genus *Ruellia* cannot be omitted. As with other members of the family, sorting out the large number of ruellias is confusing. Some are tropical herbs and shrubs, while a few are native to broad areas of eastern and southern United States. Flowers are usually large and showy, their colors ranging from red, blue or purple to yellow or white. An oddity of ruellias is that some species also produce small flowers that are self-pollinated and never open. The seed coat of ruellias is mucilaginous (meaning glue-like) as well as hairy, two features that are characteristic of Acanthaceae. Ruellias are grown outdoors in frost-free areas and under glass elsewhere. Glossy or variegated foliage in addition to the flowers make some ruellias especially attractive pot plants.

As with royal families of history and legend, tracing the members of a plant family can be a fascinating pursuit. I'll stop here so that you can wander through a happy hunting-ground of plantmen's catalogues, looking for the chocolate plant, Brazilian red cloak, water wisteria, caricature plant, blue sage, *Hemigraphis*. . .

—Jane Steffey

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

BUY ANY OF THESE TITLES FOR 20% LESS THAN THE RETAIL PRICE!

HANDBOOK FOR FLOWER ARRANGERS, Phyllis Page. A practical book with arrangements for every season of the year: driftwood miniatures, Christmas, Japanese arrangements and even styles of another age! 123 photos in full color! 170 pp. *Hardcover* \$9.95 retail, \$7.95 to AHS members.

Three books are displayed. On the left is 'Handbook for Flower Arrangers' by Robert G. Hill, showing a vase of flowers. In the center is 'Gazebos and Gazing Boats' by Robert G. Hill, featuring a gazebo illustration. On the right is 'The Art of Floral Design' by Robert G. Hill, showing a floral arrangement.

A row of four gardening books. From left to right: 'PLANT PROPAGATION' by John H. Gregory, 'Scientific Greenhouse Gardening' by John H. Gregory, 'Growing plants without soil' by John H. Gregory, and 'How to start the Chinese way' by T. S. Lee. The books are shown at an angle, with their spines and front covers visible.

"HOW TO PAINT THE CHINESE WAY, Jean Long. With hundreds of illustrations (8 pages in full color), this basic introduction begins with the "Six Fundamentals" and then shows how to paint the traditional flowers and landscapes. "Certainly the best at its price." Library Journal. 128 pp. Paper \$7.50 retail, \$6.00 to AHS members.

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HORTICULTURAL EXPLORATIONS



The springtime offers horticultural delights to our American Horticultural Society members and friends on these exclusively designed trips. Local horticulturists accompany you. The arrangements are high quality with first-class hotels, most meals and tips included. Besides public and private gardens, visits to diversified nurseries are included.

JAPAN IN THE SPRING

(April 26–May 16) Visit the subtropical island of Kyushu with its dramatic volcanoes and famous parks, such as Iso with its magnificent landscape gardening. Visits to the temple gardens of Kyoto, beautiful Nikko, nurseries in Angyo, the bonsai village of Omiya, and Tokyo are also scheduled.

PACIFIC NORTHWEST (May)

A repeat of our very popular trip to Washington and Oregon, which begins in Seattle with private garden visits. See the University of Washington Arboretum, the Rhododendron Species Foundation, the beautiful Olympic Peninsula, the rose gardens of Portland, famous nurseries and spectacular Crater Lake.

Other horticultural explorations available in 1984 are:

Israel (March 7-20), Florida (March 18-20), Spring in the South (March 23-30), Spring and Fall England (May & September), Switzerland (June 5-18), Japan Cruise (July 19-Aug. 7), New Zealand (Oct. 21-Nov. 8), Autumn in the Orient (Nov. 1-21).

For any of these programs, please write for your free brochure to the Education Department, American Horticultural Society, Mt. Vernon, VA 22121. Or telephone 1-703-768-5700.

BOOK REVIEWS

WOODLAND PLANTS.

Heather and Robin Tanner. Schocken Books. New York, New York. 1982. (A limited edition of 1500 copies). 213 pages; hardcover, \$60.00. AHS discount price, \$49.50 including postage and handling.

Although all of the 69 species of woodland plants discussed in this British book are native to England, *Woodland Plants* may still be of interest to many American gardeners. For one thing, it is a beautiful book; each of the plants has been drawn from life by Robin Tanner, and the full-page pen and ink drawings would be suitable for framing if they weren't already so beautifully bound. The accompanying narratives, written by Heather Tanner, treat the natural history of each plant and include occasional historical comments as well. Delightful for reading and viewing, and an excellent book to consider as a present for a discerning gardener.

GARDEN WAY'S JOY OF GARDENING.

Dick Raymond. Garden Way Publishing. Charlotte, Vermont. 1983. 365 pages; softcover, \$14.95. AHS discount price, \$14.20 including postage and handling.

Based on a popular television series, this book clearly illustrates the author's "wide row" method of vegetable gardening. It is a how-to book for the gardener who raises his own food, and includes many colored photographs showing all the details of the author's techniques. There are lots of good ideas for the advanced gardener, as well as instructions for the beginner.

THE BEAUTIFUL FOOD GARDEN.

Kate Rogers Gessert. Van Nostrand Reinhold. New York, New York. 1983. 264 pages; hardcover, \$24.95. AHS discount price, \$20.70 including postage and handling.

This unusual gardening book suggests that edible plants need not be relegated to a separate "vegetable garden," but can instead be incorporated into any flower bed. Many common and not-so-common edible plants are discussed, with special attention to their decorative features, their edible use and value, and their cultural requirements.

A lengthy chapter on home landscape and garden design is worth the price of the entire book.

ROCK GARDENING

ROCK PLANTS FOR SMALL GARDENS.

Royton E. Heath. Collingridge Books. London, England. (3rd edition). 1982. 144 pages; hardcover, \$17.95. AHS discount price, \$15.90 including postage and handling.

COLLECTORS' ALPINES.

Royton E. Heath. Timber Press. Portland, Oregon. (2nd edition). 1983. 543 pages; hardcover, \$39.95. AHS discount price, \$35.50 including postage and handling.

ROCK GARDENING.

H. Lincoln Foster. Timber Press. Portland, Oregon. (Reprint edition). 1982. 466 pages; softcover, \$22.95. AHS discount price, \$21.00 including postage and handling.

Although these three books would appear to cover the same subject, in fact they do not. The first two books are British, and accordingly, almost all of the cultural information and plant lists are of use only to the knowledgeable gardener who can make the transition to American gardening conditions. *Rock Plants for Small Gardens* is specifically about trough or sink gardening, a method of growing alpine plants in large, shallow containers rather than directly in the soil of the garden. It is a gardening style usually reserved for the specialist collector, but one which is particularly applicable to the small urban garden. *Collectors' Alpines* devotes 170 pages to the general cultural needs of alpine plants and the special garden structures used for growing them. The remaining 360 pages are an encyclopedia of alpine plants and should be of infinite value to the rock garden enthusiast even if the plants are not grown in a special alpine house.

Finally, *Rock Gardening* is an American book that specifically covers the problems of growing alpine plants in the American garden. If you are a novice at rock gardening, then H. Lincoln Foster's book is

essential. If you are already an enthusiastic grower of alpine plants, you will want to read all three books.

THE GARDEN IN AUTUMN AND WINTER.

Raymond Foster. David and Charles, Inc. North Pomfret, Vermont. 1983. 232 pages; hardcover, \$24.95. AHS discount price, \$21.20 including postage and handling.

The aim of this book is to extend the decorative season in the garden through the use of late fall and very early spring flowering plants as well as plants that remain ornamental throughout the winter. While the idea is very worthwhile and the suggestions are good, this is again a British book and gives no hint of true hardiness in the descriptions. In addition, most of the winter flowering suggestions are not very applicable to the United States. For the very experienced gardener this work may offer some new ideas, but for anyone else extreme caution is recommended.

LANDSCAPING

LANDSCAPE PLANTS FOR EASTERN NORTH AMERICA.

Harrison L. Flint. John Wiley & Sons. New York, New York. 1983. 677 pages; hardcover, \$59.95. AHS discount price, \$51.85 including postage and handling.

LANDSCAPE PLANNING FOR ENERGY CONSERVATION.

Gary O. Robinette and Charles McClemon. Van Nostrand Reinhold. New York, New York. 1983. 224 pages; hardcover, \$25.45. AHS discount price, \$21.00 including postage and handling.

Both books are intended to serve as texts for students of landscape architecture, but will also be of interest to any advanced gardener involved in a medium- to large-scale landscaping project.

Landscape Plants for Eastern North America deals with over 1,500 species suitable for growing in eastern North America, exclusive of the immediate Gulf Coast area and subtropical Florida. Excellent line drawings illustrate 500 primary species, clearly showing the scale and general habit of each plant both early in its life and at maturity. The author discusses seasonal interest, cultural requirements and problems related to each species, and provides descriptions of cultivars where applicable.

This is not only a textbook but a valuable reference work for anyone involved with landscape plants.

Landscape Planning for Energy Conservation provides a clear treatment of the effects that climate and surrounding terrain and vegetation have on man-made structures. Many examples are large-scale site plans beyond the scope of the individual gardener; yet many examples of single-family dwellings are also given. While not of direct use to most gardeners, the information in this book would be extremely useful to anyone building a new home.

—Gilbert S. Daniels

WHERE THE SKY BEGAN: LAND OF THE TALLGRASS PRAIRIE.

John Madison. Houghton-Mifflin Company, 1982. 329 pages; softcover, \$13.95. AHS discount price \$13.75 including postage and handling.

This book provides a framework for understanding one tragically rare endangered biome—the tallgrass prairie. The book is a fascinating account of how the prairies shaped, and were in turn modified by, our pioneer ancestors, and is also a story about how a natural order eventually came to be dominated by the imperatives of a new human order.

The reader learns about the geology, biota

and climate of this vast region where fire and invading woodland were once the only suppressors. The natural equilibrium was shattered by the sodbuster and his plow, and in recent years the bulldozer, clay tiles and chain saws have virtually killed the productive prairie slough and protective stands of trees. The aesthetic and wildlife costs have been high—unwarranted ditching, draining, scraping and damming with public funds have in many ways destroyed our ability to use and enjoy the land.

Madison discusses what can be done to encourage prairie restoration and provides “how-to” guidelines for developing a backyard tallgrass plot. The author pleads for the establishment of a Prairie National Park in the Flint Hills of Kansas and stresses the need for more government support. Conservation activities of private groups are also highlighted.

The future of the tallgrass prairie is a matter of concern for all generations; it is not just a matter to be dictated by short-term, local economic interests. This book provides both intellectual challenge and spiritual renewal for the dedicated environmentalist. —Jack DeForest, Ph.D.

Gilbert S. Daniels is the Immediate Past President of the American Horticultural Society. Jack DeForest, Ph.D., is a freelance economist living in Alexandria, Virginia.

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Improving American Gardens

BY FREDERICK MCGOURTY

Americans are strange people. We spend millions of dollars a year on mowers, vegetable seeds, fertilizers, pesticides, ingenious machines to do in weeds, and countless other pieces of horticultural paraphernalia, but we are not really gardeners in the full sense of the word. True, a number of us have mastered the technique, some would say art, of growing good tomato plants, in fact, to the point that in most parts of the country the word garden strictly refers to rectangular plots filled with vegetables arranged in tidy rows like soldiers at attention. Yet the growing of ornamental plants (as if all plants are not ornamental), much less their placement in relation to each other, is seen as quite another question. Such matters are consigned to what is imprecisely and often disdainfully referred to as the flower border, which as far as most of us are concerned, is tended by little ladies in clean denim who make dead floral arrangements and belong to the Beige Thumb Garden Club. According to this all-too-common image of gardening in America, real American men don't grow flowers, except perhaps dahlias or chrysanthemums with blooms the size of dinner plates.

Sadly lacking in our American view is the awareness that is in the placement, selection and combination of ornamental plants where the art of gardening lies. Not only are we unwilling to invest our time, energy and money in ornamental plants, but we also seem to lack the patience to select, study and experiment with them. If America is ever going to develop a strong horticultural tradition, it is to this aspect of gardening that we must turn our attention.

Visitors from overseas are sometimes disappointed with the gardens, public or private, they find in America. The parks in major cities of the East, designed for a more genteel century, are now one step removed from a jungle. In the Midwest

and West, where there is more of a sense of order, if not law, parks are repositories for Victorian bedding schemes that have not improved with the years. Parks department landscapers are so fond of blood-red amaranthus and orange cockscomb that they sometimes skip the traditional buffer of grey-leaved plants such as dusty miller. A riot of color, indeed. An unkind visitor might muse that the American sense of violence extends even to the garden.

One only hopes that the wanderer from abroad—and the American bent on learning more about American gardening—would include Golden Gate Park's 70-acre Strybing Arboretum in San Francisco and New York City's Wave Hill on his itinerary. The first is a big but tasteful mixture of both cool- and mild-climate plants, with false cypresses from Alaska growing near eucalyptus trees from Australia. Plants thrive in the San Francisco climate, and it seems they can't be killed there even with a pickaxe. The thoughtful arrangement of plants at the Arboretum is the West Coast's most effective public advertisement for horticulture.

Wave Hill has a handsome setting on a bluff overlooking the Hudson River in the northern reaches of New York City. This relatively small public garden (28 acres) is a treasure-trove of unusual plants artfully placed or allowed to roam with slight abandon. There are lovely combinations that change from year to year. One of them that is fairly constant consists of variegated liriope planted with maroon-leaved ajuga in a shaded area. This presents a flowering effect all summer long when viewed from a distance. Another combination I admired once at Wave Hill was a green-and-cream-leaved ajuga as a ground cover under a dome-shaped dwarf Japanese holly, *Ilex crenata* 'Helleri'. The latter is a fine plant that unfortunately has been overused in contemporary suburban plantings. Its foliage is somber green most of the year and

needs contrast with something of lighter appearance, such as the variegated ajuga.

Gardens such as Strybing and Wave Hill, it seems to me, teach good design more effectively than do most botanic gardens and university arboreta, where the emphasis, more often than not, is on "collections." I have always been a bit suspicious of this term, because an assemblage of plants does not necessarily make a garden. This is as true in the public sphere as in the private. Alas, my own travels have included too many institution-run gardens that bear closer resemblance to rustic fields with randomly planted saplings hidden in the grass than to horticultural showcases.

Still, such displays are tremendously useful, provided the home gardener uses them wisely. They restore the perspective that can be distorted by a winter-long reading of nursery catalogues with their glowing, exaggerated descriptions of plants. If a tree or shrub happens to be a real canine of the plant world, the traits are apt to show up in the rigorous arena of the low-maintenance arboretum.

Some diamonds-in-the-rough survive in such gardens, too: the silverbell trees (*Halesia carolina*), lace-bark pines (*Pinus bungeana*) and monarch birches (*Betula maximowicziana*) that many people know only from descriptions in books. Occasionally, there is the fine touch as well, by accident or design: double file viburnums (*Viburnum plicatum* var. *tomentosum*) planted at the bottom of a hill so the visitor can better appreciate the upright flower clusters on horizontal branches; Japanese styrax (*Styrax japonicus*) on a knoll above a path so the bell-shaped flowers are seen from beneath; silver linden (*Tilia tomentosa*) growing at the edge of an open meadow so the wind exposes the glistening white undersides of the leaves.

Specialized areas within the larger framework of botanic gardens can, of course, be useful to the home gardener.



Barbara Gibson

So where does a new gardener turn to see examples of good design? . . . Often it is by chance, driving on an unfamiliar road. . . . Every once in awhile gems occur, even in front yards, and one must guard against driving off the road. There should be a horticultural no-fault clause.

The Synoptic Garden at Planting Fields Arboretum, Oyster Bay, New York is a substantial grouping of shrubs arranged more or less alphabetically. It is a surprisingly winning combination, and the visitor is able to quickly pick out woody plants he has read about in books or catalogues. Ideas on rock gardens are to be found by the score in the New York Botanical Garden's rock garden. Similarly, gardeners interested in Japanese gardens can benefit from a close look at the hill-and-pond garden at Brooklyn Botanic Garden. As for cacti and other succulents, the finest large-scale arrangement in the country is at Huntington Botanical Gardens in San Marino, California. Plenty of other institutional gardens offer other special themes.

Other People's Gardens

So where does a new gardener turn to see examples of good design? A few landscape architects engage in it, and every so often a mall or office building has plantings that haven't come out of the dull evergreen mold of juniper, Japanese holly and mugo pine—or their mild-climate variations of pittosporum, photinia and podocarpus with a slather of mondo grass. Washington, D.C. is a joy to visit these days because of the imaginative plantings of Wolfgang Oehme and Jim Van Sweden, who have used ornamental grasses extensively and the more rugged sorts of herbaceous perennials such as *Sedum* 'Autumn Joy' or 'Indian Chief' to alleviate the cold pomposity of government buildings. It is nice to see some landscape architects interested in plants again instead of decks and other structures.

Basically, though, the new gardener must look to other home gardens if he wants to find refreshing examples of how to use plants. One is apt to learn far more this way than through the infrequently published, usually mediocre books on garden

design that have appeared in the last 25 years. Goodness knows, there are plenty of disasters on the home garden scene, but at least here there is a better chance of finding imaginative use, exuberance, love, care, and sometimes just plain good design, which is not to be taken for granted anywhere. It helps to be a bit uninhibited, for gardening is a creative art, not a bureaucratic one.

How does one find such gardens? Often it is by chance, driving to work in the morning on an unfamiliar road and spotting an unusually attractive combination of shrubs or of textures. The combination of bold and refined foliage, light and dark, pleasing floral forms—this is what gardening is all about. It is matchmaking, as Vita Sackville-West once described it. There is seldom the danger of a bad automobile accident while driving this way, but every once in awhile gems occur, even in front yards, and one must guard against driving off the road. There should be a horticultural no-fault clause.

How else does one see private gardens of distinction? One good way is to take advantage of the tours associated with the various regional and national meetings of the American Horticultural Society and the American Rock Garden Society. I have seen some lovely, memorable gardens this way and have often come home chock-full of ideas to put to work in my own garden. There is no copyright on garden schemes or plant combinations. Initially, if you are unsure of your design abilities (and what creative person isn't?), it's hardly a felony to selectively crib. After awhile, you will gain confidence and begin to experiment. Yes, there will be a few failures along the path—that is what compost heaps are for. In our own way we can all be Rembrandts in the garden.

Try to travel, some years even in the high gardening season when you should be home dividing bee balm and pinching chrysan-

themums. Your plants will survive inattention for a few weeks, and if they don't, why bother to grow them? Apart from the pleasurable task of pursuing beauty, it is important to see other gardens at their peak, not only to get ideas for your own but to have an idea of how yours stands.

The English Fix

Look at the world's great gardens with your own in mind. Don't come home with the notion of recreating Sissinghurst or Hidcote in your back yard, but from each fine garden you see there will likely be some ideas that apply to your own. A good notebook is one of the horticulturist's best tools, for memories are short and true beauty can temporarily blind. Analyze why particular garden arrangements and plant combinations work and others don't. Even in very good gardens there are effects that don't come off, and it is important not to have your judgment obscured because you have heard of a famous garden since childhood. Save the reverence for later. You are not a Moslem going to Mecca.

I am an Anglophile, and with years of experience I have even learned to drink tepid ale, eat bubble and squeak, and bear left at the roundabouts with my eyes wide open. But one of the barriers to the development of thriving American horticulture, it seems to me, is Anglomania. One expects this sort of Union Jack world view in Auckland, Victoria and Cape Town, but it is quite prevalent in the nicer neighborhoods of Shaker Heights, Santa Barbara and Wilmington, too. At garden club meetings the learned speaker usually speaks in worshipful tones about the patron saint of English herbaceous borders, Gertrude Jekyll (usually mispronounced as Jek-kel, as in Dr. Jekyll and Mr. Hyde, instead of Jee-kyl—but this does not matter much unless the club happens to have a Gertrude Jekyll Study Group that has really looked into such things). I confess that in my career as a nurseryman the clincher for the sale of a certain violet to a certain kind of customer is the remark that it happened to be Vita Sackville-West's favorite.

What does matter is for Americans not to follow too literally the plant recommendations, planting times and other pronouncements found in English gardening books, whether they are written by outstanding horticulturists or second-raters. (A curious notion exists here in the former colonies that there is no such thing as a second-rate English horticulturist.) The



Barbara Gibson

recommendations in these books are as misleading as a fun-house mirror, for the greater part of England has a winter climate like that of Norfolk, Virginia (U.S.D. A. Zone 8), where one may see an occasional palm. The cool English summers, on the other hand, are matched in the United States only by a few coastal areas in the Northeast and Northwest. Also, rainfall in England is spread more evenly throughout the year than in the States, though London receives less annual precipitation than New York.

Basically, England is a dandy place to garden, and a wide range of plants can be grown there that won't live for long in most parts of America, except along the Pacific Coast. Pity the innocent Illinois gardener who dreams of growing shrub veronicas (*Hebe*) from New Zealand because of the glowing descriptions of them in English gardening books, which, as often as not, may refer to them as perfectly hardy. Yes, but where? It is better to pay attention to the principles of gardening mentioned in English books than to the plants they recommend.

Books from Overseas

Do Americans read English gardening books? It would seem so, for more than half of the gardening books I received for

review as an editor were imports, nearly all from England. Economics, that is, the cost of color plates and editing, makes it more enticing for the American publisher to distribute an English gardening book than to do their own with an American author. It is a rather small matter to print an extra few thousand copies of the English book for the American market.

A recent refinement has been the so-called international edition, to be sold in England and here. Virtually all of them emanate from England. I have worked on several of these editions myself but do not think that the genre succeeds as a rule. The United States happens to be a huge country with a very large variety of climates. It is hard enough to write a national gardening book, but it is exceedingly difficult, perhaps impossible, to do an international one with much meaning. But does it matter? Most such books are coffee-table volumes, not meant to be read, with pretty color pictures and nice to give Aunt Abigail at Christmas.

Yes, it does matter. There will be no distinctive new American horticultural literature until gardeners here begin to see through the imports. To the uninitiated, writing may seem a romantic, remunerative craft. The former is sometimes true; the latter is not. Probably fewer than a

dozen garden writers in America make a decent go of it, and not many of these drive Bentleys.

Rather few who wrote about plants in past years did well either, but the country had more *good* garden writers a generation ago, when the breed really gardened: Montague Free, Norman Taylor, Ralph Bailey, the Rockwells, the Nehrlings, the Wisters. They were gardeners first, writers second. Thinking of a slightly earlier time, we probably won't see the likes again of Liberty Hyde Bailey—it is almost forgotten that there was a superb group of plantmen who worked with him to produce the most eminently useful gardening publication of the century, the massive *Standard Cyclopedia of Horticulture*.

One of the saddest moments I have experienced was at a meeting of the Garden Writers Association, where a well-established scribe undiplomatically asked what a certain plant was, and it turned out to be a snapdragon. It is perhaps to his credit that he asked, but you wonder what actual gardening he does, not to mention what sort of information he passes along to readers. So we have many "researched" accounts today, to put it gently—California writers who have not been east of Lake Tahoe writing cultural recommendations for blueberries in Maine; New Yorkers who

truly believe that the southern boundary of the United States is Staten Island, telling Southerners that Japanese honeysuckle is an attractive, easy-to-grow vine.

The more money from mega-corporations that flows into horticulture (and in case you haven't noticed, there has been a considerable amount of late), the worse this situation is apt to become. Standardization is desirable for profit margins, but it is not necessarily good for gardens. One hopes that the modest increase in regional gardening books in the last several years is not just a death-bed reaction to this growing standardization.

Specialists, Buffs and Freaks

But enough nostalgia. Today is the age of the specialist. There are hosta growers, hemerocallis buffs, iris freaks. They certainly are growers, but are they gardeners? Some are, but the monotony of huge numbers of just one kind of plant suggests a nursery, not a garden. In Kansas one tires even of wheat seen against the horizon. Yes, it is beautiful in its own way, but enough is enough. It is diversity of form that makes a garden.

There are many attractive new cultivars, thanks to the specialist. Some 980 "new" daylily cultivars were registered in one recent year by the American Hemerocallis Society alone. But what thought has gone into their garden uses or to determining which ones are, in fact, good garden plants? And no one seems to ask if there is a need for new ones. The name game has made a mockery of the cultivar concept and can lead to horticultural confusion. Pity the new gardener who gets caught up in it, particularly if he has the notion that a \$25 plant is better *per se* than a \$5 one. Not surprisingly, many nurserymen have learned the marketing principle, that is, if there is difficulty selling a plant for \$5, the price should be raised to \$10, not dropped to \$2.50.

The idea of planned obsolescence has also trickled down into horticulture. Who on earth, or at least on American soil, would like to have "obsolete" cultivars of peonies, daylilies and hostas that will go on living in the garden without disturbance for another 25 or 50 years? Certainly not the nursery industry, though there may be a few mossbacks among older gardeners. Exciting things are happening with each of these plant groups, but it doesn't mean we should all run home and redo the garden. All too often there is no garden to

redo, and the new gardener is almost at a loss deciding which cultivars to begin with, despite the existence of plant society lists of favorites and some "test" gardens for particular groups. Time, perhaps, will sort out the rash of new cultivars.

Nurserymen and Architects

I recently asked a friend who is a respected nurseryman what he thought would be central to the improvement of American gardening. He quickly replied that there could be no strong American horticulture without a strong nursery industry. He is a mild, courteous man who has received awards from a number of groups, and the bitterness of his tone took me aback, although the essence of his remarks came as no surprise. Physical labor, he remarked, is something Americans consider vulgar. It is all right to jog or play tennis, but if the labor has a purpose other than slimming the waistline or cleaning cholesterol from the arteries, it is demeaning. More of an irritant to my friend, however, is that people regard the growing of plants as something not to be taken seriously. The friendly nurseryman is always there if you want free advice on anything from termite control to growing bigger salvia. And it's perfectly all right to use as much of his time as you see fit, even at the peak of his spring season, while you go and buy your annuals at a benefit given by the church bazaar. A common notion is that one is a nurseryman for the pleasure of it, and that is the real recompense.

Contrary to what the reader may think, I do have a few friends who are landscape architects. They grit their teeth when I tell them I am writing a new article, and a few months after publication we are on speaking terms again. My quarrel is not with them as much as it is with the dreary monotony of plants used in contemporary landscaping. Opportunities have been lost, and the plantings around a senior citizens' development in New Jersey aren't much different from those surrounding a McDonald's in Seattle or a savings and loan association in Little Rock.

I asked my architect friends what they felt should be done to improve gardens. One response, of course, was to hire more landscape architects. Another, which I found more interesting, was for Americans to learn patience. Impatience is even more a part of our lifestyle than the microwave oven (whose invention, incidentally, emanates from it). We have instant mashed

potatoes, aluminum siding that can hide a ramshackle house immediately and planes that can get us from Washington to Paris in several hours if we want to get away from it all quickly.

We are used to quick results, so why not instant gardens? I know what the architects are talking about. They are dealing with people who often have been quite successful in another field, one where time is of the essence and where most things can be subservient to the clock, if not the stopwatch. But if the concept of instant gratification is misapplied in the garden it can wreak havoc: the nine *Pieris* planted side by side where five would be better; the fast-growing trees planted, though nearly all of that ilk are trashy, weak-wooded and short-lived; the sparse, first-year perennial border that the homeowner fills in with the gaudiest annuals he can obtain because his architect seems so unconcerned with the fleeting nature of life. The architect does what he can, but it is disturbing to hear the cry of a thirty-year-old, "I'll be old and gray before that tree does anything." Architects have a lot of Type A clients, and a certain number of these won't make their way to retirement, so maybe it's best to bend a bit and give partial gratification, while explaining that it will be necessary to return in a couple of years to clear the jungle. Solace for the architect is to cry all the way to the bank.

One spring awhile ago I designed and installed several perennial borders for a well-to-do client. They were of considerable length, and I was relieved that for their future care a paid gardener would be in attendance. I set the plants a bit closer than I would in my own garden, knowing that the owner wanted quick results, but I didn't plant them so close as to make the plan self-defeating in two years' time. The borders were coming along quite well, with 'Pacific Giant' delphiniums and black snakeroot (*Cimicifuga*) two feet tall by early May, before much growth had really occurred. To my surprise the owner called one day and said, "But I really wanted an *English* border with plants six feet tall in the back." I replied, "Madam, I am giving you something more important—an American garden." 🍷

Frederick McGourty is a designer of perennial gardens, nurseryman and lecturer. He served as editor of the Brooklyn Botanic Gardens Handbook series for fourteen years and is now owner of Hillside Gardens in Norfolk, Connecticut.

Foliage Favorites

TEXT AND PHOTOGRAPHY BY PAMELA HARPER



Yucca filamentosa 'Bright Edge'.

Few plants are in flower for longer than two months, and two weeks is nearer the mark for most. Foliage plants earn their place for half the year, and a few the whole year long. Many also have beautiful flowers. What more could one ask? Perhaps that they are of easy culture and don't fall prey to the many ills our gardens are heir to. That's a tall order, but one that's met by plants sold (probably incorrectly) as *Yucca filamentosa*, or Adam's needle. *Y. filamentosa* has tough, untearable, swordlike leaves that form stout, trunkless clumps less than three feet high. A white pencilling edges each leaf, and this peels back at intervals into

silken, threadlike curls or filaments—hence the name *filamentosa*.

My collected plant bears its creamy, waxen bells at the tip of a stout stalk towering to nine feet. However, most plants sold as *Y. filamentosa* have softer, non-impaling leaves, less showy filaments, and flower spikes less than four feet high, including three cultivars called 'Golden Sword', 'Bright Edge' and 'Starburst'. 'Golden Sword' has leaves striped and striated primrose yellow, with the broader yellow stripes towards the middle of the leaf. 'Bright Edge' has the colors reversed. 'Starburst', also called 'Variegata', has rosettes of shorter, broader leaves—more

daggers than swords—each broadly edged with pale cream flushed with pink. This one—a New Zealand introduction I think—may be less hardy than the others; it has not yet flowered for me.

Yuccas need sun and don't object to dry, infertile soil. *Y. filamentosa* is U.S.D.A. Zone 5 hardy, and the leaves of 'Golden Sword' or 'Bright Edge' spiking through the snow are a cheery sight on a January day. Plant goldthread cypress, *Chamaecyparis pisifera* 'Filifera Aurea' or the smaller 'Golden Mop', within the same sweep of the eye, and you'll have forsythia gaiety through the winter months.

Pulmonaria 'Mrs. Moon' begins its six-to 10-month sojourn (varying with the climate) in earliest spring—by the weather, not the calendar, which in Zone 8 means late February or March. Stems clad in grey-mottled, pixie-eared leaves bear a long succession of coral pink flowers fading to blue before shriveling neatly away, leaving the spray of mixed pink and blue unmarred by dead heads. Each three-quarter-inch corolla, champagne glass shaped with a scalloped rim, is clasped in a calyx glittering with silken hairs. A basal rosette of foot-long, mottled leaves follows the flowers and remains ornamental until the advent of really cold weather; in Zone 8 it is more or less evergreen but shabby for a month or two preceding flowering time.

Physicians once believed that a plant's appearance held clues to its medicinal properties, the so-called "doctrine of signatures." Curative qualities were ascribed to lungwort because of its blotched leaves, which were thought to resemble diseased lungs. But not all lungworts are spotted. Some, such as *P. angustifolia*, with blue flowers, and *P. montana* (formerly *P. rubra*), with shrimp pink flowers, have plain green leaves. So does a plant with creamy yellow, tubular flowers marketed as "*pulmonaria lutea*" (which isn't a lungwort at all but a comfrey, *Symphytum* sp.). Two handsome kinds to watch out for (neither of which are yet readily available) are *P. saccharata* 'Argentea', with silvery white leaves, and *P. longifolia*, with lance-shaped, grey-spotted leaves.

Experienced gardeners come to recognize clues to cultivation, among them that grey- and hairy-leaved plants are adapted to sunny sites. With lungworts, which are drought- but not sun-resistant plants, this is misleading; they will grow in quite dry shade, but the leaves wilt if hot sun strikes them, even when the soil is amply moist.

If you like yellow variegated aucubas, then you'll probably also appreciate *Ligularia tussilaginea* 'Aureo-maculata', or



Pulmonaria 'Mrs. Moon'.



Hosta sieboldiana 'Frances Williams'.
RIGHT: *Athyrium goeringianum* 'Pictum'.

leopard plant, which sells on sight to flower arrangers. Each large, glossy-green, rounded leaf is coin-dotted bright yellow. The prettiest patch I've seen was in dappled shade combined with blue bugleweed.

Hostas go dormant in autumn and re-emerge quite late in spring. Make virtue out of necessity by underplanting them with early daffodils. No genus is richer in handsome foliage plants, and the United States now leads the field in the introduction of new cultivars. The old *Hosta undulata*—for years the best seller—remains one of the most distinct, each curly, pointed leaf liberally spread with butter yellow. To maintain its variegation, lift big clumps and discard those portions showing too much green. Another old-timer, *H. sieboldiana* 'Elegans' (also called Blue Giant), yields few divisions and has been in short supply. However, modern propagating

techniques are changing that, and there'll be enough of its great, quilted, glaucous leaves for everyone. Make the leaf less blue, add a yellow edge, and you'll have 'Frances Williams', voted number one in a Hosta Society poll. *H. undulata* has graceful stems of lavender flowers; *H. sieboldiana*, chunkier spikes of white satin bells.

Hostas can endure a lot, but do best in partial shade and a soil rich and moist but not sodden—just the conditions enjoyed by slugs. Hostas, slugs' favorite dish on a smorgasbord of plants, too often end up as full of holes as Swiss cheese. Over the years I've tested many suggested remedies—each progressively less gentle than the last—from pleading with them to go away, to spreading sand or ashes around (supposedly painful to their soft bellies), to leaving saucers of beer for them to die happily in, to the night hunt with flashlight and jar of salted water. I suggest routinely applying commercial bait to plants that are proven magnets to slugs.

It is an interesting phenomenon that Oriental species of a plant tend to be more ornamental than their European or North American counterparts. And so it is with ferns. In the genus *Athyrium*, no other can hold a candle to *A. goeringianum* 'Pictum', the Japanese painted-fern. The purple stem of each broad-based, tapering frond is feathered with silver-sheened, purple-veined leaflets. Painted-fern is easy to grow in the eastern United States but temperamental in England. It obviously prefers sunny summers to overcast ones, as its grey foliage suggests, but it does need protection from scorching afternoon sun. It is drought tolerant if it can root deeply, but needs frequent watering if it must compete with surface-rooting trees. In my own garden it grows at the foot of a large camellia, facing east, and is underplanted with snowdrops. The only snag with such doubling up is that both are disturbed when one must be divided, but neither the fern nor the snowdrops need dividing very often.

The word pictum, meaning painted, is a name encountered again with *Arum italicum* 'Pictum'. This Jack-in-the-pulpit relative is sometimes sparing with its hooded flowers and stocky, late-summer spikes of scarlet berries. However, the handsome leaves more than make up for this and are doubly welcome because they appear in autumn. It is Zone 7 hardy, and though the leaves bow low in obeisance to frost, they stand up as proudly as before once the weather warms. A ribbon of green—so dark it approaches black—frames a wavy, spear-shaped leaf checkered in dark green, silver and cream. Part shade is needed,



and given moist, rich soil, the tuberous roots spread fast enough that leaves can be spared for the covetous hands of flower arrangers. If growing *A. italicum* from seed, don't be disgruntled by the plain green leaves of seedlings; while the ugly ducklings may turn out to be swans when fully fledged, seed sources aren't always reliable. If third-year plants are still green, toss them out and try again. *A. italicum* 'Marmoratum' isn't nearly as handsome (the larger leaves are only faintly marbled grey) and is also more vulnerable to frost.

If your garden is too cold for painted-*arum*, or if you lack the rich, moist soil, don't feel deprived—*Cyclamen hederifolium* is hardier (U.S.D.A. Zone 6). In fact, few plants better tolerate dry, root-filled shade than this plant, which is often sold as *C. neapolitanum*. Furthermore, none has lovelier leaves, intricately patterned in greens and greys, and arriving in autumn to carpet the ground into summer. The word *hederifolium* means ivy-leaved, but there are ivies and ivies. For ivy buffs, the one *C. hederifolium* most resembles in size, shape and patterning is *Hedera nepalensis* 'Marbled Dragon'. *Cyclamen hederifolium*'s leaves are preceded, in about September, by a profusion of miniature florist's cyclamen in pink or white. Plant the tubers shallowly, and be sure you put them the right way up; they root from the sides, not the bottom (which is usually smooth and rounded), any protuberances coming from the top. Once established, there will be seedlings by the hundreds, and these will flower the third (sometimes the second) year.

Southern wild ginger, *Asarum virginicum* (formerly *Hexastylis virginica*), has leaves that are of similar texture and coloring to those of ivy-leaved cyclamen, but are heart-shaped instead of angular, a bit larger, and held in clumps instead of a flat carpet. Wild gingers tolerate dry shade but prefer a deeper, moister soil. The flowers, resembling little olive jars, would be nothing to write home about even if they weren't tucked out of sight under the leaves. However, in the Southeast the leaves give year-round beauty, getting progressively less evergreen towards their U.S.D.A. Zone 6 hardiness limit.

There are so many plants for shade: *Alchemilla mollis*, valued for the way dewdrops and rain spangle the folds of the rounded leaves; the 'Burgundy Glow' bugleweed in beet red, cream and green; variegated Solomon's seal . . . but let's move out into the sun.

Who hasn't admired the velvety clumps of mullein or flannel weed (*Verbascum thapsus*) gone wild in the meadows and often self-seeded into gardens? *Salvia argentea* has bigger, more silkily silver, cotton-coated rosettes. It is a hardy perennial but usually short-lived, being vulnerable not so much to cold as to sodden summers and soggy winter soils. Branched stems of white or pale pink flowers tower over the leaves in early summer, looking very much like clary sage, *Salvia sclarea*. I've read that clumps live longer if flowers are removed, but if started early indoors, *S. argentea* grows fast enough to be worthwhile as an annual. Try it with curly-leaved purple perilla, *Perilla frutescens* 'Crispa', for contrast.

For more finely wrought silveriness, buy the artemisia sold as *Artemisia versicolor* (meaning variously colored), a name both incorrect and absurd for this curly, front-of-the-border perennial resembling a huddle of silver wire netting. It is either *A. splendens* or one of its kith and kin, but you probably won't find it under that name.

Prickles notwithstanding, thistles have their protagonists. You'll find the Scotch thistle, *Onopordum acanthium*, in some of the finest gardens. The bull thistle, *Cirsium vulgare*, is also sometimes called Scotch thistle; this, too, is a handsome plant but very invasive. *Onopordum acanthium* self-seeds abundantly, but most of the seedlings come up quite close to the parent plant. It is biennial or monocarpic (dying after flowering). In spring the clumps of palest grey leaves have the sheen of fine satin. In the second year, candelabras of winged, spiny stems and typical purple thistle flowers are sculpturesque against the sky. For a somewhat similar effect, the cardoon, *Cynara cardunculus*, might be preferred where it is hardy (Zone 9), especially by those who favor edible ornamentals. Cardoons resemble artichokes, but the edible part is the leaf stalk. This makes a colossal clump (about six feet square) of arching, grey-green, incised and spiny leaves, and is best grown by itself as a specimen plant, not mixed into a border.

Either you like variegated foliage, or you don't. Even if you don't, you'll probably like the forms of *Iris pallida* 'Dalmatica' (which itself has better foliage than most modern hybrid bearded irises) called 'Aurea-variegata' (sometimes sold as 'Zebra') and 'Argenteo-variegata'. The first is striped yellow, the second striped white. The pale blue flowers can't compete in beauty with modern kinds, but the flowers are there for a week or two, and the leaves, throughout the growing season.

Finally, I recommend *Houttuynia cordata* 'Variegata', with the warning that in the moist, humus-rich soil it likes, it is invasive. So striking a plant has to be forgiven this fault, and giving away chunks to its admirers (nearly everyone who sees it) keeps it in check. Each leaf is patterned in green, yellow and bright pink, which alone would be enough, but it also bears dainty, four-petaled, waxy white flowers in late spring on stems approaching two feet in height. My plants prefer light shade, but where summers are not as long and hot, it does well in full sun. ☛

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Passionflowers

TEXT AND ILLUSTRATIONS BY KATHLEEN CRAWFORD



Passiflora caerulea, blue passionflower.

Passionflowers are among the most interesting—not to mention unique and extraordinary—of all plants. They are also easy to grow in warm situations, as well as easy to start from cuttings or seed.

Often called passion vines, most of the 400 or so species are climbers, though the genus *Passiflora* also contains a few shrubs and trees. Most members of the genus are native to the Americas, although a few exceptions are found in Asia and Australia. They climb by means of tendrils in the leaf axils, and the flower peduncles are also axillary. The fruit—yellow, red, orange or purple—is edible in most species and is commonly sold in tropical American markets. Because of its widespread popularity, the fruit is frequently transported long distances to market. Some species of passionflowers have narcotic and sedative properties, and the stems and leaves are often dried for use in folk medicine.

There is interesting variation from one species to another. Leaves may be ovate, entire or two-winged. Most garden varieties have palmately lobed leaves that are smooth-edged or serrate, and shiny or velvety. The stems may be angled or round. The elaborate floral structures include large, striking coronas of filaments that fill the center of the flat flowers; or, in some instances the corona may be inconspicuous in the company of colorful petals. The corona may consist of one circle of filaments or a series of several circles.

Butterflies of the *Heliconiidae* family only lay their eggs on passion vines. In Florida the zebra butterfly, *Heliconius charitonius*, is often seen around these vines, its black and yellow stripes

making it alternately conspicuous and invisible as it shows brightly or merges with bars of sunlight and shadow. In other areas of the country where passionflowers grow, the decorative Gulf fritillary butterfly, *Dione vanillae*, flutters around the colorful vines. Occasionally the caterpillars are numerous enough to be pests; however, they are usually harmless and inconspicuous, and one notices only the lovely orange butterflies with metallic, silvery reverses on their wings.

Probably the hardest passionflower is the herbaceous *Passiflora lutea*, with its small, three-quarter-inch flowers. It grows wild from Florida, north to Pennsylvania and west to Illinois.

Much more decorative, and hardy as far north as New Jersey, is the "maypop," *P. incarnata*. It is a rampant vine with pretty, two-inch flowers

with decorative coronas, followed by two-inch, yellow fruit.

An old garden favorite is *P. caerulea* or blue passionflower, a native of Argentina and Brazil. It is hardy in the Southeast, in southern California and in parts of the British Isles. Leaves, which are divided into five or seven lobes, are glabrous. Flowers are flat with short tubes and have greenish white petals and sepals. The beautiful and intricate floral center consists of the stalk of stigmas and stamens, and the wonderful surrounding corona of multiple blue-purple and white filaments. *P. caerulea* is a moderately sized vine, somewhat lacy, but durable and drought resistant. There are various cultivars and hybrids; one is 'Constance Elliott', which has ivory white petals.

Pink and blue passionflower,

P. X alatoaerulea, called *Passiflora pfordtii* by some nurseries, is a hybrid whose seed parent is *P. alata* by pollen of *P. caerulea*. Leaves are three-lobed, like *P. alata*. The flowers are large and exceptionally lovely, with striking, multiple purple and white coronas. Petals are pink. Occasionally a flower of this hybrid will have six petals and six sepals, instead of the usual five each with which most passionflowers come equipped. Some of the flowers are fragrant, like parent *P. alata*, while others are not. This lovely vine seldom sets seed, but it is easy to grow from cuttings about 10 inches long, taken nearly any time of the year and rooted in sand. *P. X alatoaerulea* is a garden favorite and the passionflower that is most frequently sold at nurseries. Its flowers have been used in the manufacture of perfumes. It is free-flowering, with flat, short-tubed flowers opening every day all summer, and with a scattering of flowers at other times of the year as well. This hybrid grows 12 to 15 feet tall or more but is not rampant. The stems are angled.

P. mollissima, commonly called pink passionflower, is one of several pink species. It is the most common of all passionflowers, and is among the most satisfactory and durable. Widespread in its Andean homeland, this lovely vine grows to altitudes of 12,000 feet and will withstand several degrees of frost. It is a large vine with beautiful, long-tubed flowers that hang down in rich profusion. Coronas are small, but the light pink flowers look beautiful against the rich green leaves, which are serrate, three-lobed, and vary in size from rather small near the branch tips to as long as eight inches. Flowers, on hanging peduncles and often in axillary



Passiflora manicata, commonly called red passionflower.

pairs, are followed by fruit that is egg-shaped and silvery green turning to pale orange.

P. mollissima produces abundant edible fruit in California as well as in the tropics. In South America the fruit is made into a drink called *karuba*; in Australia, where it is raised commercially, it is called banana passion fruit.

Hawaiians, too, think it has a banana flavor and call it banana *lilikoi*. *P. mollissima* is naturalized in several places outside South America, including Hawaii, where it grows profusely in the cool, foggy, tree-fern forest on the slopes of the great volcanoes.

P. peduncularis flowers are like those of *P. mollissima*, except that they have short tubes and are pure white.

P. manicata, red passionflower, is splendidly bright and free flowering. It is the red species most often seen in California. Easy to grow from cuttings, it makes a large vine of richly shining, green, three-lobed leaves, against which the bright red or coral red flowers stand out in brilliant profusion. The short-tubed flowers are centered with small but striking coronas of short, purple filaments, plus some greenish filaments within the tube. Usually found draping garden walls and climbing trees, this vine is still rather unusual, even though it has been grown in gardens for many years. It is a native of Colombia, Venezuela, Ecuador and Peru. Fruit is a yellow-green, with seeds in pulp, like other passionflowers.

There are also several other splendid, red-flowering passion vines: *P. coccinea*, found in Florida and Louisiana; *P. jamesonii*, long-tubed, like *P. mollissima*; *P. X exoniensis*, which is a hybrid of *P. antioquiensis* and *P. mollissima*; and *P. vitifolia* and *P. antioquiensis* (formerly *P. van-volxemii*), having bright red flowers with short tubes.

P. foetida, dawn passionflower, has a wide distribution in South America



Passiflora mollissima, pink passionflower.

and can even be found along the shores of the Galapagos Islands. Other common names include running pop, love-in-a-mist and wild water lemon. It is naturalized in black lava rocks in Hawaii and forms a small, light vine. The leaves are said to emit an unpleasant smell when crushed. The flowers are delicately exquisite creations, with fringy, lavender and white corona rays in several series that nearly conceal the white and lavender petals. These lovely flowers must be enjoyed in the morning hours, as the flowers close again before noon unless it is overcast or rainy. Buds, flowers and fruit are enfolded in bracts finely lacinated like green lace. Poha jam is made from the red fruit. (*Poha* is Hawaiian for

any fruit that has "squeeze-out" seeds.)

Noteworthy among the many other passionflowers is *P. quadrangularis*, which has curiously twisted and curled, purple corona filaments and red petals. Its very large, eight-to-twelve-inch yellow fruit—the *granadilla*—is very popular in Mexico and Central America. Almost as popular is *P. edulis*, which has purple fruit. Both of these rather tender vines are raised commercially as far away from their South American homeland as Australia.

P. laurifolia has oval, entire leaves and yellow fruit about the size and color of a lemon. Because it is rather watery and insipid compared to a lemon, it is called water lemon in

Jamaica and other West Indian islands. The flowers of *P. laurifolia* have petals that are white marked with red, and a corona of three series of filaments that are purple and white.

We have raised passionflowers in California—in both our first garden, which is 38 years old, and our new, five-year-old garden—for many years, and we have found that they are durable, easy to grow and easy to propagate. We discovered, for example, that 10-inch cuttings can be rooted in sharp sand, out-of-doors, in gallon cans. They respond well to some water in California's dry summer, but well-established, large vines of *P. caerulea*, *P. mollissima* and *P. manicata* can get by with little or no water all summer, if necessary. Unfortunately, gophers have a passion for passionflowers, so keep a sharp lookout for those pests, or plant your passion vines in large pots.

Growing the vines in large pots with supporting trellises can be a splendid answer to raising passionflowers in colder climates; not only are the pots decorative, but the passionflowers can be summered out-of-doors, and the vines can be pruned back to a reasonable size for bringing inside when the weather turns cold. The plants will bloom profusely during the late summer and early fall, and will appreciate a rest from October until December or January. Keep plants in full sun, but slowly diminish watering and do not fertilize. The soil should be kept on the dry side, but should never be allowed to dry out completely. When signs of growth become evident in the early spring, repot if necessary and resume watering. An early spring pruning will also help force branching and encourage more blooms. ☉

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Passiflora foetida, commonly called running pop, love-in-a-mist or wild water lemon.

The Glass Flowers

BY MARGARET PARKE



The Blaschka glass flowers are so lifelike, it is difficult to distinguish the live specimen from the glass model. ABOVE: Meadow lily, *Lilium canadense*, photographed in the wild. RIGHT: The lily's glass counterpart, housed in Harvard's Botanical Museum.

Margaret Parke

On a blustery spring day, after checking the vegetable and flower seedlings growing in boxes on my windowsills, I put away watering cans and fish emulsion, and started out on a pilgrimage. Mecca, in this case, was the Ware Collection of Blaschka Glass Flowers at Harvard's Botanical Museum.

Driving northward along the back roads (which seemed more harmonious with the spirit of my mission than turnpikes), I searched for signs of the wildflowers that would shortly deck roadsides, meadows and woodlands. It was still too early, and only evergreen trees, deciduous bare branches and melting, dirty snowdrifts—winter's remnants—spotted the countryside.

Once inside the red brick museum building on Oxford Street in Cambridge that houses the glass flowers, the season advanced miraculously. If, as some say, the Garden of Eden is irrevocably lost to modern society, here was a paradise of eternal spring and endless summer where plants bloomed, insects pollinated and fruit hung heavy on the bough day and night, regardless of the weather.

Old-fashioned cherry wood cases held starflowers, violets, rue anemones, lady's slippers, asters—all the flowers of one's childhood—and many others, including orchids, hibiscus and cacti. One case held a breathtaking marsh marigold, *Caltha palustris*, its yellow petals glistening as if they had just been sprayed by some rushing brook. The delicate white flower of another favorite, bloodroot or *Sanguinaria canadensis*, was embraced by its single, lobed leaf. It was easy to imagine that it had just been transplanted from a shady glen.

No two people who come to see the glass flowers (about 200,000 come each year) carry away the same impression. Yet whether one is a plant lover, an art fancier, a student or a tourist, he or she is sure to enjoy the collection. Not only are the glass plant models unique, they are also beautifully formed and impeccably accurate. Scientists have described them as a marvel of science in art, and a marvel of art in science. The epithet has stuck.

How did this remarkable collection of





Courtesy E. P. Dutton, Inc.

nearly 4,000 plant models come to be? Who were the gifted craftsmen who fashioned each model by hand? What were the glass-modeling methods they used?

In the late 1880's Professor George Lincoln Goodale, founder and first director of Harvard's Botanical Museum, was searching for an appropriate botanical display for his new museum. He wanted a permanent exhibit, one that would have academic value and still show the beauty and vitality of the plant kingdom. Several models of sea animals made of glass had been acquired by another of Harvard's museums for its zoological display. When Goodale saw them, he was impressed and decided to visit their creators—Leopold

A glass model of *Echinocereus engelmannii* looks just like a cactus growing in the wild. The models were removed from their museum cases for these stunning photographs.

Blaschka and his son, Rudolf—at their home in Hosterwitz, near Dresden, Germany.

The Blaschkas' home, which contained the glassworking studio of the two men, was a substantial building of wood and stone construction, typical of German country houses. At the time of Goodale's visit, the Blaschkas were working on models of marine invertebrates for museums throughout Europe, and Goodale could now view a larger sampling of their work. In particular, he noticed a vase on the mantle holding some stunning, lifelike orchids that Leopold had made years earlier for his wife. Before Goodale left, he convinced the Blaschkas to make sample plant specimens in glass, and to ship them to him at Cambridge.

When the glass models arrived some months later, they were shattered—damaged by customs officials who had in-

spected the shipment and had then nailed the case shut. Even so, the broken pieces were astonishing, and Goodale knew that he had taken the right tack. He was able to obtain financial support for his project from Mrs. Elizabeth C. Ware and her daughter, Mary Lee Ware. Mrs. Ware later formally presented the collection to Harvard as a memorial to her late husband, Dr. Charles Eliot Ware, a Bostonian doctor and a Harvard alumnus.

As it turned out, the collaboration between Harvard and the Blaschkas was to last for 50 years. Although the elder Blaschka died in 1895, Rudolf continued work on the collection until, his energy expended, he retired at the age of 80 in 1936. He died two years later without ever having seen his life's work assembled in Cambridge.

When Leopold was alive, he and his son worked long hours at their craft, bringing to it the dedicated passion of religious zealots. They lavished superb skill, patience and devotion on each leaf, stem, petal and fruit of the thousands of plant models they created. They were constantly experimenting with different types of glass, each time selecting the one whose qualities best suited the particular plant model they were portraying—a cactus with spines to be spun of glass, or a mountain laurel, *Kalmia latifolia*, with leathery leaves to be shaped from heavier glass. They pulled and worked the molten glass with simple tools—ordinary pincers and tweezers—into the desired shape. Whalebones, quills and fine brushes were used to create details, such as cobweb veins on leaves, or nectar guidelines on petals.

At first, Rudolf, who accomplished most of the color work, used a process known as "cold painting"; that is, a paint consisting of gum or glue or both, plus mineral pigments, was applied for the colored parts. After his father's death, however, Rudolf devised a different technique: tinted, powdered glass was brushed on, then annealed to the base coat under high heat for a more satisfactory and permanent finish. The annealing process was used to preserve the color and form of the models.

During the 41 years in which Rudolf worked alone, he was under constant pressure due to the phenomenal amount of work required to complete each six-month consignment. Professor Goodale and Miss Ware often suggested that he take on an assistant. But Rudolf, whose family tradition of glassworking could be traced back to the 15th century, would say, "If you will send me someone who has generations of artists in glass behind him, who will

begin at the age of ten and work ten hours a day for 10 years, then I could begin to teach him." Unfortunately, the Blaschka glassworking tradition abruptly came to an end when Rudolf, who was childless, died in 1938.

The Ware Collection as a whole provides an excellent overview of the plant sciences and has proven remarkably accurate in botanical detail. The models' accuracy was put to a test early on by Walter Deane, president of the New England Botanical Club from 1908 to 1911, who examined 16 specimens from the collection under a magnifying lens and compared them with his own herbarium specimens. In every instance the glass models copied the exact details of the original live plants.

After a rigid inspection of *Aralia spinosa* (commonly called devil's-walking stick or angelica tree), Deane said, "In this cluster, with flowers so small that I counted of buds, blossoms and developing fruit from 2,500 to 3,000. Yet every flower has its five petals, and five alternating stamens with long filaments." Deane found the under parts of the flower clusters to be equally as accurate. He concluded that the botanical accuracy of the complex inflorescences and even their degree of pubescence were almost beyond belief. Deane's conclusion is not surprising, considering that the two Blaschkas had both a sound training in and knowledge of the natural sciences; Rudolf was an expert in mid-European flora and Baltic fauna, while Leopold was the founder of the art of representing natural history subjects in glass.

Richard Evans Schultes, present director of the Botanical Museum, could be cast as the archetypical botanist. A world authority on hallucinogenic plants, Schultes spent 12 years in the Amazon jungles studying plants before coming to his present post at Harvard in 1953. He has been lecturing ever since, and shows paternal concern for his students as well as for the glass flowers. Schultes feels it is fitting that the "quintessential" botanical teaching tool is located at Harvard, where botany was first taught on a college level in this country.

"We don't have sumptuous greenhouses where our students can study plants," he said. "But we have a grand compensation for this—the glass flowers. Here students can find representatives of the entire plant

The showy blossoms of *Iris versicolor* look remarkably real rendered in glass. The book *The Glass Flowers at Harvard*, described in the Sources section on page 34, provides a complete story and description of these spectacular models.

Courtesy E. P. Dutton, Inc.



kingdom in bloom at one time and under one roof. Even in greenhouses plants are usually in bloom for only a short period."

According to Schultes, Harvard's Arnold Arboretum has a greenhouse, but most of the work is done outside. Reflecting on the high heating costs involved in running today's greenhouses, he noted that perhaps it is just as well that the botany department does not have fancy greenhouses to maintain.

The glass specimens in the Ware Collection run the gamut of the plant kingdom. Represented are 164 families and 780 species of temperate and tropical flora native to North America. Each life-size model is surrounded by satellite models that reveal various plant parts, greatly enlarged for easy study. Usually a cross section of the plant's ovary is shown. The plant specimens are arranged in an orderly fashion, from primitive plants to the more advanced families, to demonstrate the path of evolution.

One can see nature's plan unfold by following the sequence of the exhibit, beginning with the primitive nonflowering plants, the cryptogams. Among the first plants to appear on the earth over three billion years ago, cryptogams include algae, fungi, liverworts, mosses and ferns.

Tucked into the cryptogam section is a special exhibit showing the fascinating life cycles of these primitive plants. Visitors, for example, can view the life cycle of a fern, consisting of two generations: a free-living, sexually independent, gametophyte generation, which develops after the ripe spore falls to the ground; and a sporophyte generation, which is the adult fern as we know it. To aid us along this complicated road, the Blaschkas have rendered a glass model of a spiral sperm cell, magnified 2,000 times, so that we can see the minute hairs that the cell uses to lash itself through the water to the archegonium of a neighboring prothallus.

The next step along the evolutionary path in this glass herbarium is the gymnosperm collection, represented by such plants as pine, hemlock, spruce and juniper. The graceful ginkgo tree, with its fan-shaped, emerald green leaves, occupies a prominent showcase in this section.

The angiosperms, the next group of plants in the Ware Collection, are comprised of about 250,000 species. The two great groups of angiosperms—the monocotyledons (for example, grasses, lilies and or-

chids) and the dicotyledons (including delphiniums, lupines, cacti, and coffee and tea plants)—are represented here.

The orchids, the most advanced of the monocotyledons in the evolutionary sense, make up the largest family in the plant kingdom, with about 30,000 species. Of the glass flower orchids, showy lady's-slipper, *Cypripedium reginae*, is the Blaschka jewel that attracts the crowds.

An overwhelming 200,000 species of plants comprise the dicotyledon division. The daisy family, Compositae, is the most advanced evolutionary group of plants yet to appear on earth. A bank of cases against the wall in this section contains dahlias, goldenrod, asters, marigolds, cosmos and lettuce.

Up to this point, a peripatetic tour of the Ware Collection has introduced us to those plants that have been most important in terms of providing food, clothing and shelter for civilizations throughout history. In addition to these riches, there are visual studies of other biological phenomena.

A special display of 64 glass models centers on fungal diseases that attack fruits of the Rosaceae family—apples, pears, peaches and strawberries, in particular. Brown rot and apple scab are shown in various stages of development on the fruit. The fruit forms are marvelous and represent a departure from the glassworking techniques used by the Blaschkas for their other models; some of the large, heavy fruit is made of blown glass, reinforced and strengthened with wire.

According to Schultes, the most popular exhibit demonstrates the sundry means of pollination. Rudolf Blaschka worked on these models from 1924 until he retired in 1936. During this time his scientific and glass-modeling talents were at their best. We are treated to the antics of bees with pollen grains stuck to their heads, backs and legs, sipping nectar from sweet violets (*Viola odorata*), Scotch broom (*Cytisus scoparius*), scarlet runner (*Phaseolus coccineus*, formerly *P. multiflorus*) and red larkspur (*Delphinium nudicaule*). An evening butterfly (*Zygaena*) places its proboscis into a disk floret of a bachelor's-button (*Centaurea cyanus*), exposing the immature stigma covered with pollen.

Here, too, is a visual "quick study" of the spectacular symbiotic relationship between *Yucca filamentosa* and the pronuba moth, captured in glass. This yucca can only be fertilized by the pronuba, which, in turn, needs the plant to complete its own life cycle.

Amidst the delights of this glass garden

paradise, a note of alarm has been sounded recently. Some of the glass flowers will soon be 100 years old, and with the aging process have come problems. Sadly, Rudolf Blaschka was mistaken when he thought that the annealing process would make the glass models last forever, barring any sort of violence. Many models have been slowly, but irreversibly, deteriorating. The surface colored glass is pulling away from the base glass and, in some cases, pulling the underlying glass with it. It was not until 100 models were removed from their cases to be photographed recently that the pervasiveness of the condition was noticed.

As one moves through the exhibit area, crumbled glass can be seen in some of the showcases, lying on the mounting boards where it has fallen. There are also broken leaves and other damaged flower parts. Such sights are distressing, and it is easy to understand how Professor Goodale must have felt on that day long ago when he received the first deliveries from the Blaschkas and opened a box of broken glass.

Experts say the deterioration of the models is due to fluctuating humidity (especially lowering humidity), which causes the surface colored glass to contract and separate from the glass underneath. Installation of an air conditioning system, they claim, would do much toward stabilizing the humidity and preventing further damage. Schultes has discovered that this would entail other expensive construction as well, not only for efficiency, but to ensure that the old museum building complies with fire laws. The collection also needs to be cleaned, as dust that has accumulated over the years has now left a thin, greasy film on the glass flowers, dulling their luster. Furthermore, new, airtight, well-lighted cases are needed to keep the collection in good condition.

So far there has been no money available for these purposes. Fund-raising efforts, including an exhibit of 22 models at Steuben Gallery in New York City in 1976, are still under way. Ironically, the glass flowers—the "flowers that never fade"—have become an endangered species.

Near the turnstile on the way out, a graceful branch of apple blossoms—still in the freshness of bloom—tempts one to linger in the glass garden, to ruminate on the passage of time and beauty. ■

Margaret Parke is a free-lance writer and photographer whose articles have appeared in *Organic Gardening* and *Westchester* magazines as well as the *New York Times*.

A Blaschka model of pitcher plant (*Nepenthes sanguinea*) exhibits amazing botanical detail, from the hairy wings of the pouch to the long tendrils that aid the plant in climbing.





Las Palmas Altas

BY MAIRE SIMINGTON

*... a happy rural seat of various view:
Groves whose rich Trees wept odorous Gums and Balm,
Others whose fruit burnisht with Golden Rind
Hung available. . . .*

*—John Milton
Paradise Lost*

In *Paradise Lost*, John Milton described the Garden of Eden as a place that had a “palmy hillock” and “flow’rs of all hue.” This lush, pastoral garden was cooled by gentle breezes and filled with lilting bird song.

It’s a setting which, transposed into present time, would aptly describe Las Palmas Altas, a three-and-a-half-acre desert oasis nestled into the cactus-studded, rock-strewn side of Camelback Mountain in Phoenix, Arizona. This modern-day Garden of Eden was conceived more than 20 years ago by the late John Holmes Rhuart and his sister and brother-in-law, Nancy and Joseph Shirley, to surround their comfortable home on the mountainside.

“We envisioned the garden as a quiet and separate enclave that could exist as a world of its own,” explained John Rhuart, a retired bank executive and self-taught



FAR LEFT: A sitting area in the lower garden surrounded by bougainvillea and nasturtiums. TOP LEFT: Partially shaded by palms, the swimming pool glistens in the Arizona sun. Mosaics on the bottom of the pool give the illusion of swimming fish. LEFT: Tall palm trees tower over the garden and home, which were named after them. ABOVE: Buttercups, *Ranunculus* sp., deck paths and walkways throughout Las Palmas Altas.

horticulturist. "I also wanted a tropical garden where I could grow orchid trees (*Bauhinia* sp.), bougainvillea and *Jacaranda* trees. To accomplish this, we had to provide an area that was as frost-free as possible." High shade as well as frost protection are provided by tall palms, olive and eucalyptus trees, oleander and arbovitae.

Rhuart was a collector of plants and landscaping ideas from the many spectacular gardens he and his family visited throughout the world. In addition to tropical plants, Rhuart collected exotic specimens from South Africa, Italy, Australia, South America and even humid New Zealand. Today, Las Palmas Altas is a showcase of tropical plants interspersed with semi-tropical and arid-region vegetation demonstrating the compatibility of flora from many regions.

Because he was so fond of the terracing he had seen in the magnificent gardens of South Africa, Rhuart decided to incorporate this type of design into his own landscaping theme. The rocks used in the garden were hauled in as the mountain road that now winds around the home was chiseled into existence. Other rocks were used to contain the soil and prevent it from sliding down the steep grade as part of the mountain was scooped out to build the home.

Winding walkways surrounded by rocks were painstakingly placed as the terraced garden was being built. Today the yard has some 50 winding terraces spaced at irregular intervals, like the contours of a piece of crushed newspaper. Partly because of this unevenness—and partly because the head gardener, Joe Flores (who has been with the family for more than a quarter of

a century), prefers to water flowers individually—a drip irrigation system has not been installed. All plants are still hand watered.

While the terracing project was impressive in scope, the most herculean task was transplanting 36 mature palms from the old Rhuart childhood home some 15 miles away. Rhuart and the Shirleys were so fond of the tall palms that they named their new homestead, Las Palmas Altas, after them.

The palms, each weighing several tons and many over 60 years old at the time, were brought in two at a time on long, flatbed trucks. All but one survived the move, which even the modest Rhuart admitted "was one of the most difficult tasks I've undertaken." In total, it took about four years to complete the terracing and transplanting.

Other mementos of the childhood home



were incorporated in the landscaping at Mrs. Shirley's request, including a massive, white cement fence (dismantled into sections and then reassembled piece by piece), a hitching post and a lattice-covered tea-house.

From the street, which winds around above the house, the view down into Las Palmas Altas looks like a jungle valley where verdant growth and tall trees hug a steeply cut wedge of earth. At almost any time, the otherwise tranquil rhythm of rustling leaves is punctuated by the thrashing of quail, the soft cooing of mourning doves and the high-pitched chirping of sparrows.

The terraces marking the entrance to this desert Eden are filled with hundreds of saucer-shaped buttercups (*Ranunculus* sp.) and iridescent, jewel-toned anemones. The Persian or turban buttercup, (*R. asia-*



TOP: Statice and buttercups thrive in the sandy, porous soil of this desert garden. ABOVE LEFT: A blossom from an orchid tree, *Bauhinia* sp. ABOVE RIGHT: Nasturtiums figure in the plantings throughout Las Palmas Altas. BOTTOM LEFT: Desert spoon, *Dasylirion wheeleri*—also commonly called bear grass or spoon flower—is native to west Texas and Arizona. BOTTOM RIGHT: A nasturtium peeks from between the leaves of *Agave americana*, commonly called century plant or American aloe. Tom Campbell's photographs courtesy of Phoenix Home/Garden.

ticus), two species from New Zealand (*R. buechananii* and *R. lyallii*) and the 'Tecolote Giant' strain thrive in the sandy, porous soil of Las Palmas Altas. Each spring the single- and double-flowered, multi-hued flowers burst forth from the parched earth to splash bright color over the rough, muted brown beds.

Planted among the 3,000 buttercups are 1,500 anemones, including the semi-double 'St. Brigid' and 'De Caen' as well as its mixed strain 'Creagh Castle'. Providing further floral interest are velvety, sky blue Dutch iris, as well as bright, purple-eyed, trailing African daisies (*Osteospermum fruticosum*) and various colorful annuals, such as petunias, statice, alyssum and stock.

The colorful display flows from the entry garden to the adjacent main rose garden, to the east of the house. Although the two gardens are separate, the sweep of blossoms gives a unified look to the front of Las Palmas Altas.

Moving from the riot of spring and summer color, the visitor is soothed by masses of greenery surrounding the entrance to the home. A large schefflera and a gracefully weeping queen palm (*Arecastrum australe*) drape the entryway as Algerian ivy (*Hedera canariensis*) clings to its walls. The calming, green foliage provides a smooth transition to the subtle surprises that are to be found in the large garden to the rear of the home. As in Eden, there are plants and views to delight the senses at every turn.

One of the first surprises occurs along the walkway to the back porch. Here, many kinds of vegetation provide a dense ground cover: wild violets with their deep green, heart-shaped leaves; purple-heart (*Setcreasea pallida* 'Purple Heart'); English ivy; and inch plants (*Fittonia* sp.). A few patches of 'White Emperor' tulips grace the walkway in spring. Toward late spring an acanthus (or bear's-breech) blooms, its jagged, jade green leaves spreading like a flounced skirt around its purple-tinged flower spike.

These plants thrive outdoors even in Arizona's intense summer heat and sunshine, because they are protected and shaded by sweeps of magenta-colored bougainvillea vines. This is one plant that has been liberally sprinkled throughout the landscape. From any vantage point in the garden one or more of these vines hang lazily, framing the view with their colorful, tissue paper-like bracts.

To the rear is a densely-shaped yet airy patio. Star jasmine and the feathery, two-tone foliage of heavenly bamboo (*Nandina domestica*) cloak the patio posts. Large pots of geraniums (both Martha Wash-

ingtons and the 'Sunbelt' cultivars), cascading petunias, amaryllis and *Clivia* add color to the pastoral setting. An unexpected surprise is the collection of potted succulents that thrives alongside more tropical plants.

The view from the patio to the garden below is always lovely. During the spring it is even more magnificent, when thousands of richly hued yellow, red and orange, crinkle-petaled nasturtiums spill over the rocks and dirt path walkways. There are also mounds of lavender lantana and clumps of rose-colored verbena that cling to the hillside.

It is this view, which resembles a Monet painting, that is said to have inspired part of the restoration of Monet's Garden at Giverny on the Seine. Mrs. Gerald van der Kemp, who was commissioned to restore the garden, was impressed by the large number of nasturtiums at Las Palmas Altas. She used these flowers liberally in the newly completed Monet garden there.

The path winding down from the patio to the garden and pool is lined with plants of unusual texture and form. To one side is a bed of almost surrealistic-looking kalanchoes, an organ-pipe cactus (*Lemaireocereus thurberi*) and a desert spoon (*Dasylirion wheeleri*). Planted amongst these are yellow bird of paradise (*Caesalpinia gilliesii*) as well as mesquite and palo verde trees. Night-blooming cereus snakes its way through several of these trees in search of support.

Rhuart always loved cacti and succulents. Although a few fine specimens are scattered throughout Las Palmas Altas, he directed much of his energy with these plants toward improving the collection of the nearby Desert Botanical Garden, which he helped found in 1935.

Rhuart also donated many rare flower seeds to the Garden. However, to delight the discerning viewer, he planted a few unusual South African natives in his own yard as well. On close observation, one can find cape daisy or monarch-of-the-velt (*Venidium fastuosum*), *Ixia* and *Watsonia* (commonly called corn lily and bugle lily, respectively), and orange and yellow *Sparaxis tricolor*.

Passing many of these specimens, the path eventually meanders down to the swimming pool. Even here surprises await the unsuspecting visitor. Under the glimmer of the water surface, red and yellow mosaics give the illusion of fish flitting their tails as they swim along the sides of the pool.

Tucked between the pool and the side rose garden is the lattice teahouse. It is

covered by a sprawling, yellow Lady Bank's rose, *Rosa banksiae*, and partially shaded by a Western catalpa, *Catalpa speciosa*. The enclosure houses a lily pond, where glistening orange and pinto goldfish dart from underneath one waxy lily pad to the next. On occasion, a racoon ambles down from the mountainside to play bandit, skillfully scooping its prey from the pond.

The path continues to wind through high, shaded areas, where it feels cool even in Phoenix's 110-degree summer heat. Bees and hummingbirds seem to be in perpetual motion here, drawing nectar from aloe vera (*A. barbadensis*) blossoms and fairy-duster, (*Calliandra eriophylla*). Further along the path, Mexican honeysuckle, *Justicia ghiesbreghtiana*, and chuparosa, *J. californica*, are also frequented by these airborne creatures. Among the birds' favorite plants are several mature black mission fig trees, date palms and apricot trees, the fruit of which they begin to poke at as it becomes sweet and succulent.

As the path winds back up to the front of the house, it passes other desert natives such as desert willow, *Chilopsis linearis*, and *Lysiloma thornberi*, commonly called fern of the desert, although it is actually a member of the pea family. It also passes by one of the family's prized specimens, an *Alyogyne huegelii* from Australia. A member of the mallow family, this shrub has large, lavender blossoms that resemble those of the hibiscus.

Past the entryway, the path leads to a stone and boulder stepway to the adjacent main rose garden, which is marked by a variegated oleander. It is here that most of the more than 100 roses are planted. Rhuart treated them—many with such respected names as 'Tropicana', 'Command Performance', 'Song of Paris' and 'Allspice'—as old friends.

At one end of the garden is an old cottonwood stump that has been decoratively covered with turquoise blue copper rocks from Oracle, Arizona. Framing a wall to the south of the rose garden is a wisteria and an exquisite orange trumpet vine, *Campsis radicans*.

Noting the remarkable feat of combining so many diverse plant forms and landscape styles, one of Rhuart's friends called the style of the garden one of "studied carelessness." The effect is calming, an Eden in the desert. "I have melded together many plants to create this garden," Rhuart explained, "and now I share it with others who are gardeners at heart." 🍀

Maire Simington is a free-lance writer and the Garden Editor for *Phoenix Home/Garden*.

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".

Acanthus mollis ah-CAN-thus MOLL-iss
A. sativus a. sa-TEE-vus
A. sylvestris a. sil-VES-triss
Agave americana
ah-GAV-ee a-mer-i-KAN-ah
Alchemilla mollis
al-che-MILL-ah MOLL-iss
Aloe barbadensis
AL-oh-ee bar-ba-DEN-sis
Alyogyne huegelii
al-yo-JYNE-nee who-GEL-ee-eye
Aphelandra squarrosa
aff-el-LAND-ra squar-ROS-ah
Aralia spinosa ah-RAIL-ya spin-OSS-ah
Arecastrum australe
are-ee-CAST-rum aw-STRAL/STRAIL-ee
Artemisia splendens
ar-tem-EES-ee-ah SPLEN-denz
A. versicolor a. verse-i-COL-or
Arum italicum AIR-um i-TAL-i-cum
Asarum virginicum
as-AR-um ver-JIN-i-kum
Asystasia gangetica
ass-i-TAY-see-ah gan-JET-i-ka
Athyrium goeringianum
ah-THIGH-ree-um gair-rinj-ee-AY-num

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Barleria cristata
bar-LER-ee-ah kris-TAY-ta
B. lupulina b. lew-pew-LY-na
Bauhinia bough-HIN-ee-ah
Beloperone guttata
bell-o-per-O-nee goo-TAY-ta
Betula maximowicziana
BET-yew-la max-i-mo-wicks-ee-AY-na
Caesalpinia gilliesii
see-sal-PIN-ee-ah GILL-eez-ee-eye
Calliandra eriophylla
cal-i-AND-ra era-o-PHYL-la
Caltha palustris CAL-tha pah-LUSS-tris
Campsis radicans CAMP-sis RAD-i-kanz
Catalpa speciosa
ka-TAL-pa spee-see-O-sa
Centaurea cyanus
cen-TAW-ree-ah sy-AN-us
Chamaecyparis pisifera
kam-ee-SIP-er-us pi-SIFF-er-ah
Chilopsis linearis
kill-OP-sis lin-ee-AY-riss
Cimicifuga sim-i-si-FOO-ga
Cirsium vulgare
SIR-see-um vul-GARE-ee
Crossandra infundibuliformis
cross-AND-ra in-FUN-di-bule-i-FORM-iss
C. nilotica c. ni-LOT-i-ca
C. pungens c. PUN-jinz
Cyclamen hederifolium
SYKE-la-men/SICK-la-men
head-er-i-FOL-ee-um
C. neapolitanum
c. nee-ah-poll-ah-TAY-num
Cynara cardunculus
sigh-NAR-ah car-DUNK-u-lus
Cypridedium reginae
sip-ri-PEE-dee-um REJ-in-ee
Cytisus scoparius
si-TEE-sus sko-PAIR-ee-us
Dasyliion wheeleri
dasa-LEER-ee-on WHEEL-er-eye
Delphinium nudicaule
del-FIN-ee-um new-di-CALL-ee
Echinocereus engelmannii
eh-kah-no-SARE-ee-us ENG-el-mon-ee-eye
Fittonia gigantea
fit-TONE-ee-ah ji-GAN-tee-ah
F. verschaffeltii var. *argyroneura*
f. ver-SHAFF-elt-ee-eye are-jeer-o-NEW-ra
F. verschaffeltii var. *pearcei*
f. ver-SHAFF-elt-ee-eye PEARCE-eye
Halesia carolina
HALES-ee-ah ca-ro-LY-na
Hebe HEE-bee
Hedera canariensis
HEAD-er-ah canary-EN-sis
H. nepalensis h. nepal-EN-sis
Hemigraphis hem-i-GRAPH-iss
Hexastylis virginica
hexa-STY-liss vir-GIN-i-ka

Hosta sieboldiana
HOSS-ta see-bold-ee-AY-na
H. undulata h. un-dew-LAY-ta
Houttuynia cordata
who-TY-nee-ah cor-DOT-ah
Hypoestes phyllostachya
hy-po-PES-tees phy-lo-STAKE-ah
Ilex crenata EYE-lex kren-AY-ta
I. decidua i. de-CID-you-ah
I. laevigata i. lee-vi-GAY-ta
I. serrata i. ser-A-ta
I. verticillata i. ver-tis-ill-AY-ta
Iris pallida EYE-ris PAL-id-ah
I. versicolor i. ver-si-KOL-or
Ixia ICKS-ee-ah
Jacaranda jack-ah-RAN-da
Jacobinia carnea
jay-co-BIN-ee-ah CAR-nee-ah
J. mohintli j. mo-HINTEL-eye
Justicia betonica
jus-TICK-ee-ah/jus-TEES-ee-ah bet-ON-i-ca
J. brandegeana j. bran-DEJ-ee-ay-na
J. californica j. kal-i-FORN-i-ka
J. carnea j. CAR-nee-ah
J. ghiesbreghtiana j. gees-BRET-ee-ah-na
J. spicigera j. spiss-i-JEER-ah
Kalmia latifolia
CALM-ee-ah lat-i-FOL-ee-ah
Lemaireocereus thurberi
lee-mair-ee-o-SEAR-ee-us THUR-ber-eye
Ligularia tussilaginea
lig-u-LAIR-ee-ah tuss-i-la-GIN-ee-ah
Lilium canadense
LIL-ee-um can-ah-DEN-see
Lysiloma thornberi
lie-sih-LOAM-ah THORN-ber-eye
Nandina domestica
nan-DEE-na dough-MES-ti-ca
Nepenthes sanguinea
ne-PENTH-theez san- GWIN-ee-ah
Onopordum acanthium
on-o-POR-dum ah-CAN-thee-um
Osteospermum fruticosum
oss-tee-o-SPERM-mum fru-ti-KO-sum
Pachystachys coccinea
pak-i-STACK-us cock-SIN-ee-ah
P. lutea p. LOO-tee-ah
Passiflora alata pass-i-FLOR-ah al-AY-ta
P. X alataocerulea
p. ah-la-toe-see-RULE-ee-ah
P. antioquiensis p. an-tee-qui-EN-sis
P. caerulea p. see-REW-lee-ah
P. coccinea p. cock-SIN-ee-ah
P. edulis p. ED-yew-liss
P. X exoniensis p. exon-ee-EN-sis
P. foetida p. FEE-tid-ah
P. incarnata p. in-car-NAT-ah
P. jamesonii p. JAMES-son-ee-eye
P. laurifolia p. laur-i-FOL-ee-ah
P. lutea p. LOO-tee-ah
P. manicata p. man-i-CAYT-ah

P. mollissima p. moll-ISS-i-ma
P. peduncularis
 p. ped-unk-you-LAIR-iss
P. quadrangularis
 p. quad-rang-you-LAIR-iss
P. van-volxemii
 p. van-vol-EX-ee-mee-eye
P. vitifolia p. vit-i-FOL-ee-ah
Perilla frutescens
 pear-ILL-ah fru-TESS-enz
Peristrophe byssopifolia
 pera-STROPH-ee hiss-op-i-FO-lee-ah
Phaseolus coccineus
 phase-ee-O-lus kok-SIN-ee-us
P. multiflorus p. mul-ti-FLOR-uss
Pinus bungeana
 PY-nus bun-jee-A-na
Pulmonaria angustifolia
 pull-mon-AIR-ee-ah AN-guss-ti-FO-lee-ah
P. longifolia p. lonj-i-FO-lee-ah
P. montana p. mon-TAN-ah
P. rubra p. REW-bra
P. saccharata p. sack-ar-AY-ta
Ranunculus asiaticus
 ra-NUN-kew-lus ays-ee-AT-i-kuss
R. buchananii
 r. bu-KAN-an-ee-eye
R. lyallii r. lie-ALL-ee-eye
Rosa banksiae RO-za BANK-see-ee
Ruellia rue-ELL-ee-ah
Salvia argentea
 SAL-vee-ah ar-JEN-te-ah
S. sclarea s. SCLAIR-ee-ah
Sanchezia nobilis
 san-CHEZ-ee-ah NO-bil-iss
S. speciosa s. spee-see-O-sa
Sanguinaria canadensis
 sang-gwin-AY-ri-ah can-ah-DEN-sis
Sedum SEE-dum
Setcreasea pallida
 set-CREE-see-ah PAL-id-ah
Sparaxis tricolor
 spar-AX-iss TRY-col-or
Styrax japonicus
 STY-rax ja-PON-i-kus
Symphytum sim-PHY-tum
Thunbergia alata
 thun-BERGE-ee-ah al-AY-ta
T. coccinea t. cock-SIN-ee-ah
T. erecta t. ee-REC-ta
T. fragrans t. FRAY-grenz
T. grandiflora t. grand-i-FLOR-ah
Tilia tomentosa
 TILL-ee-ah toe-men-TOE-sa
Venidium fastuosum
 ven-ID-ee-um fast-ooH-O-sum
Verbascum thapsus
 ver-BASS-kum THAP-sus
Viburnum plicatum var. *tomentosum*
 vy-BUR-num ply-KAY-tum
 toe-men-TOE-sum
Viola odorata
 vy-O-la/vee-O-la o-door-AY-ta
Watsonia wat-SON-ee-ah
Yucca filamentosa
 YUCK-ah fill-ah-men-TOE-sa

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THE ACANTHUS FAMILY

Members of the Acanthus family mentioned in this month's "Strange Relatives" are available from the following nurseries.

Plants

Country Hills Greenhouse, Route 2, Corning, OH 43730, catalogue \$2.50, has an extensive list of Acanthus family members, including 13 of the 14 species mentioned in the article.

Kartz Greenhouses, Inc., 1408 Sunset Drive, Vista, CA 92083, catalogue \$1.00, lists *Justicia* and seven species and cultivars of *Thunbergia*.

Logee's Greenhouses, 55 North Street, Danielson, CT 06239, catalogue \$2.50.

Seed

J. L. Hudson, Seedsman, P.O. Box 1058, Redwood City, CA 94064, catalogue \$1.00.

Thompson and Morgan, P.O. Box 100, Farmingdale, NJ 07727, catalogue free.

DECIDUOUS HOLLIES

Deciduous hollies should be available from well-stocked nurseries and garden centers in most parts of the country where they can be planted. They are also available from the following mail order sources.

Plants

Louisiana Nursery, Route 7, Box 43, Opelousas, LA 70570, catalogue \$1.00.

Winterthur Plant Shop, Winterthur Museum and Gardens, Winterthur, DE 19753, catalogue free.

Seed

J. L. Hudson, Seedsman, P.O. Box 1058, Redwood City, CA 94064, catalogue \$1.00.

F. W. Schumacher Co., 36 Spring Hill Road, Sandwich, MA 02563, catalogue free.

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The following companies offer excellent selections of the plants mentioned in Pamela Harper's article.

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Busse Gardens, 635 East 7th Street, Route 2, Box 13, Cokatom, MN 55321, catalogue \$1.00.

Garden Place, 6780 Heisley Road, Mentor, OH 44060, catalogue free.

Louisiana Nursery, Route 7, Box 43, Opelousas, LA 70570, catalogue \$1.00.

Wayside Gardens, Hodges, SC 29695, catalogue \$1.00.

White Flower Farm, Litchfield, CT 06759, catalogue \$5.00.

Seed

Thompson and Morgan, P.O. Box 100, Farmingdale, NJ 07727, catalogue free.

Cyclamen hederifolium (formerly *C. nepalensis*) is available from Nichols Herb and Rare Seeds, 1190 North Pacific Highway, Albany, OR 97321, catalogue free, and Siskiyou Rare Plant Nursery, 2825 Cummings Road, Medford, OR 97501, catalogue \$1.50.

Asarum virginicum (formerly *Hexastylis virginica*) is available from Woodlanders, Inc., 1128 Colleton Avenue, Aiken, SC 29801, catalogue \$2.00.

GLASS FLOWERS

The Botanical Museum of Harvard University, which houses the Glass Flowers collection, is located on Oxford Street in Cambridge, Massachusetts. It is open to the public every day of the year except New Year's, July Fourth, Thanksgiving and Christmas. Hours are Monday through Saturday, 9:00 a.m. to 4:30 p.m. Sunday hours are 1:00 to 4:30 p.m. General admission to the University Museum (including "Glass Flowers") is \$1.50 for adults, \$.50 for children. Admission is free to all on Mondays.

THE GLASS FLOWERS AT HARVARD

Richard Evans Schultes & William A. Davis
Photographs by Hilde Berger



The stunning photographs of the glass flower models accompanying Margaret Parke's article are just a small sample of those found in *The Glass Flowers at Harvard*, a recently published book on the collection, written by Richard Schultes, Director of the Botanical Museum, and

William Davis, Keeper of Scientific Exhibits. Over 80 of the fragile models from the Ware Collection were carefully removed from their cases and photographed for the book. The result is a spectacular display of full-color photographs of these lifelike models. The photographs are arranged by families, and each is accompanied by a description of the plant. The book also includes a history of the collection.

The Glass Flowers at Harvard, which retails for \$15.95, is available at a special discount price of \$14.95 (including postage and handling) to AHS members. To order a copy write Deborah Harpster in care of the Society.

IMPROVING AMERICAN GARDENS

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Huntington Botanical Gardens, 1151 Oxford Road, San Marino, CA 91108, (213) 792-6141.

Wave Hill, 675 West 252nd Street, Bronx, NY 10471, (212) 549-2055.

Planting Fields Arboretum, Planting Fields Road, Oyster Bay, NY 11771, (516) 922-9200.

Brooklyn Botanical Gardens, 1000 Washington Avenue, Brooklyn, NY 11225, (212) 622-4433.

The New York Botanical Garden, Bronx, NY 10458, (212) 220-8700.

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Kartuz Greenhouses, Inc., 1408 Sunset Drive, Vista, CA 92083, catalogue \$1.00.

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J. L. Hudson, Seedsman, P.O. Box 1058, Redwood City, CA 94064, catalogue \$1.00.

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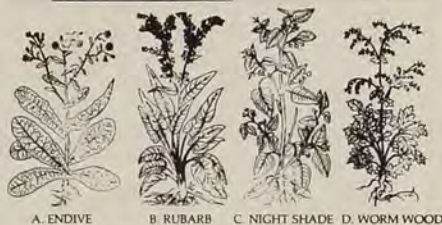
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Her face drew into an expression of utter disgust. "Deciduous hollies?" she inquired reproachfully. "Now why would anybody want to grow such an ugly plant?"

I replied that the fall and winter displays of the red berries of many deciduous hollies are a great ornamental asset.

"One grows holly for foliage in winter, not berries," she stated firmly.

Well, each person has a right to an opinion, and even Mrs. Meserve will admit that she is more opinionated than most. But then again, so am I. And while I acknowledge Mrs. Meserve's tremendous contribution to horticulture for having created beautiful evergreen hollies suitable for the home landscape, personally I lament the fact that so few deciduous hollies are presently being used. Holly foliage, it seems to me, is attractive close up but unspectacular (except for the variegated forms). This means that evergreen hollies are, first and

foremost, background plants. On the other hand, in fall and winter, deciduous hollies can be spectacular, as brilliant clusters of bright red fruit often play counterpoint to the lustrous white of freshly fallen snow. In a season so devoid of show, their splash of color grips the eye and focuses our attention. It reminds us that life goes on despite the gloom.

Perhaps the best-known and most appropriately named of all deciduous hollies is winterberry, *Ilex verticillata*. It is the hardiest of all native American hollies, thriving as far north as Ontario, New Brunswick and Nova Scotia. In its native setting in the eastern United States, winterberry is commonly found on acid soils along swamps, marshes and lowlands. It may grow as high as 20 feet but usually does not exceed nine or 10 feet in cultivation.

Winterberry's habit is that of a large, rounded shrub with a considerable mass of fine, twiggy branches. The stems are dark grey or light brown. The serrate, elliptic-to-obovate leaves are dark green in summer and range from two to three inches in length. After a hard freeze they abruptly turn black, leading some people to refer

to the plant as black alder.

Clusters of small, white flowers are borne in the leaf axils of the current season's growth in June. Winterberry is dioecious, so a ratio of one male plant for every six or so females is necessary for fruit production. The sex of the plant is evident only when it is flowering, with the male flowers exhibiting prominent stamens laden with yellow pollen and the female flowers, a central, enlarged pistil.

In early September, the ¼-inch berries (actually drupes) become noticeable as they gradually change from green to bright orange-red. Depending on the number of birds in the neighborhood, the berries may persist through January. When the shrubs are leafless and sunlight glints off beaming red fruit clusters, the effect is stunning. One stops, looks, and looks again.

In the home landscape, winterberry is best used in a naturalized setting. It tolerates both shade and "wet feet." A grouping of these plants along the edge of a still pond is magnificent in October and November. Winterberry is also suitable for banks, median strips, mass plantings and the shrub border. When used against a

Perhaps the best-known and most appropriately named of all deciduous hollies is winterberry, Ilex verticillata.



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foundation, small evergreens should be planted in front of it to conceal any leginess. A serviceable option is to plant dwarf winterberry, *Ilex verticillata* 'Nana', which fruits as heavily as the species but is much lower growing.

Two excellent red-fruited winterberry cultivars are 'Christmas Cheer' and 'Winter Red'. 'Chrysocarpa' is a yellow-fruited cultivar.

A close relative of winterberry is *Ilex laevigata*, or smooth winterberry. As the name implies, its leaves are more finely toothed than those of winterberry. It is also a smaller-growing shrub. However, its orange-red fruits are slightly larger and may be produced parthenocarpically (without pollination or true fertilization), thus making a male unnecessary for fruit production. Be this as it may, larger crops of more persistent berries result from regular pollination. As an added attraction, the leaves of smooth winterberry turn yellow in the fall. The plant is hardy to U.S.D.A. Zone 5.

The largest of the American deciduous hollies is possum haw, *Ilex decidua*. In its native range of southern woods, it may reach 30 feet in height. Under cultivation, however, it grows to about two-thirds this height. Possum haw's habit is that of a small tree with a dense network of grey, ascending branches. The obovate foliage ranges from two to three inches in length and is dark green in summer, changing to yellow (and, rarely, reddish purple) in late autumn. Bright red or orange berries ripen in September and often persist until April—longer than those of any other deciduous holly. Possum haw is hardy to U.S.D.A. Zone 6.

Because of its size, possum haw is out of place against a house. A better use of the plant is in a naturalized area, perhaps on the edge of a clearing or in the background of a woody planting. During the summer, its dark green foliage is a backdrop for flowers and smaller ornamentals; in autumn and winter, its spectacular fruits are sparks of flame against the bitter sky.

An excellent deciduous holly introduced from Japan into this country in 1866 is finetooth holly, *Ilex serrata*. Although similar in appearance to winterberry, it is smaller in all respects. It forms a rounded, spreading shrub approximately eight to nine feet tall in cultivation. Its serrulate leaves range from one to 1½ inches in length. Its scarlet fruits are smaller than those of winterberry (about one-eighth inch in diam-

eter), though more profusely borne. In late summer and early autumn, they put on a magnificent show before dropping in mid-November or being eaten by birds. Finetooth holly is hardy to U.S.D.A. Zone 5.

'Sparkleberry' is a novel hybrid produced by the United States National Arboretum. It results from an interspecific cross between *Ilex verticillata* and *Ilex serotina*. Combining the best properties of both, its large, bright red berries are borne more profusely than those of winterberry and persist longer than those of finetooth holly.

Although each of the deciduous hollies mentioned is distinctive, all are similar in numerous respects: all are dioecious and require at least two plants for significant fruit production; all tolerate shade and moist soils; all make excellent plants for naturalized areas, banks and shrub borders; and, most importantly, all have been greatly overlooked as landscaping plants by the American public.

Gene Eisenbeiss, research horticulturist at the National Arboretum, has devoted considerable effort to the development of superior deciduous hollies. Fruit production, plant vigor and habit have all been improved; now the focus is on upgrading the foliage. Introducing significant fall color to deciduous hollies is one goal. Eisenbeiss believes that early fall defoliation would also be a worthwhile achievement, as it would fully reveal the resplendent fruit several weeks ahead of schedule.

Winterberry is by far the easiest deciduous holly to locate in the nursery trade. Many local nurseries carry it, and some excellent cultivars are available (see the source list on page 34). The rest are nearly impossible to locate commercially. This is hard to understand, especially since they are easily propagated by softwood cuttings. The only solution, as I see it, is to bombard local nurseries with requests for these plants in hopes that they will spread the word to the wholesale growers.

My tribute to deciduous hollies has reached its end. I now await Mrs. Meserve's poison pen note in the mail. But I rather think that it won't be coming; she and I both know that a holly, even an "ugly" deciduous one, is still better-looking in winter than 90 percent of this world's plants. ☛

—Steve Bender

Steve Bender is the new Assistant Garden Editor for *Southern Living* magazine and is a frequent contributor to *American Horticulturist*.

1983 INDEX

An annual index to articles appearing in *American Horticulturist* magazine is printed in each December issue. A separate, cumulative index has also been published for the years 1922-1971 and is available in paperback for \$10. Although no index for the years 1972-79 has yet been published, these back issues have been catalogued by the editorial staff. Address inquiries to Lynn M. Lynch. Back issues of the magazine, if available, are \$2.50 each.

AUTHOR

Aden, Paul. Hostas. August 30.
 American Horticulturist, The Staff of. New Plants for '83. February 15.
 Bender, Steve. Brookgreen. August 25; Deciduous Hollies. December 39; The Sour Gum. October 31.
 Bonta, Marcia. Alice Eastwood. October 10.
 Brown, Joan Sayers. The National Herb Garden. June 20; Water Gardens. August 20.
 Crawford, Kathleen. Passionflowers. December 18.
 De Blasi, Anthony. Jasmines. October 22.
 Ferebee, Libby Matthis. The Cutting Garden. June 26.
 Fretz, Dr. Thomas A. Trilliums. April 16.
 Harper, Pamela. A Favorite Honeysuckle. February 26; Foliage Favorites. December 15; Garden Work of Art. April 19; Seaside Gardening. August 26.
 Hensel, Margaret. Garden Paths. December 44; Shade. April 41; Trees. June 41; Vistas. February 41; Walls. October 40; Water. August 38.
 Hume, Elizabeth. The Delaware Valley: A Garden Heritage. August 15.
 Ingwersen, Will. Buttercups of the World. June 24.
 Loewer, Peter. A Catalogue Review. February 33; A Garden Small. October 16; A Season of Flowering Onions. August 12.
 Martin, Tovah. Aristolochia. February 4.
 McGourty, Frederick. Improving American Gardens. December 10; Long Flowering Perennials. April 28.
 Parke, Margaret. The Glass Flowers. December 22.
 Robertson, Josephine. The Tradescant Trust. February 23.
 Sawyers, Claire. Stamp Gardens. February 28.
 Shojat, Jeanne. Curator of the National Herb Garden: Holly Shimizu. June 15.
 Simington, Maire. Las Palmas Altas. December 28.
 Steffey, Jane. The Acanthus Family. December 4; The Amaranth Family. April 5; The Box Family. October 4; The Dogbane Family. February 10; The Evening

Primrose Family. June 5; The Verbena Family. August 4.
 Stine, Dona Logan. California Poppies. April 25.
 Straley, Gerald Bane. The Other Evening Primroses. June 31.
 Taloumis, George. The Seven Gables Garden. October 25.
 Trimble, Michael B. Moss and Lichen Gardens. February 30; Reading Tree Leaves. June 9.
 Tucker, Arthur O. Two Popular Victorian Garden Magazines. April 10.

SUBJECT/TITLE

Acanthus Family, The. December 4.
 Alice Eastwood. October 10.
 Alliums. A Season of Flowering Onions. August 12.
 Amaranth Family, The. April 5.
 American Gardens. Improving American Gardens. December 10.
 Apocynaceae. The Dogbane Family. February 10.
 Aristolochia. February 4.
 Blaschka Glass Flowers. The Glass Flowers. December 22.
 Botanists. Alice Eastwood. October 10.
 Box Family, The. October 4.
 Brookgreen. August 25.
 Buttercups of the World. June 24.
 Buxus. The Box Family. October 4.
 California Poppies. April 25.
 Catalogue Review, A. February 33.
 Curator of the National Herb Garden: Holly Shimizu. June 15.
 Cutting Garden, The. June 26.
 Deciduous Hollies. December 39.
 Delaware Valley: A Garden Heritage, The. August 15.
 Desert Gardens. Las Palmas Altas. December 28.
 Design Page, The. Garden Paths. December 44; Shade. April 41; Trees. June 41; Vistas. February 41; Walls. October 40; Water. August 38.
 Diseases. Reading Tree Leaves: A Guide to

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Diagnosing Symptoms. June 9.
Dogbane Family, The. February 10.
Eastwood, Alice. October 10.
Eschscholzia. California Poppies. April 25.
Evening Primrose Family, The. June 5.
Fantasy Plants. February 20.
Favorite Honeysuckle, A. February 26.
Fences and Walls. Walls. October 40.
Foliage Favorites. December 15.
Garden Design. Garden Paths. December 44;
 Shade. April 41; Trees. June 41; Vistas.
 February 41; Walls. October 40; Water.
 August 38.
Garden Paths. December 44.
Garden Small, A. October 16.
Garden Work of Art, A. April 19.
Gardens. Brookgreen. August 25; The
 Cutting Garden. June 26; The Delaware
 Valley: A Garden Heritage. August 15; Las
 Palmas Altas. December 28; Moss and
 Lichen Gardens. February 30; The
 National Herb Garden. June 20; Seaside
 Gardening. August 26; The Seven Gables
 Garden. October 25; Stamp Gardens.
 February 28; The Tradescant Trust.
 February 23; Water Gardens. August 20.
Glass Flowers, The. December 22.
Hand, Harland. A Garden Work of Art. April
 19.

Harvard Botanical Museum. The Glass
 Flowers. December 22.
Herb Garden. Curator of the National Herb
 Garden, Holly Shimizu. June 15; The
 National Herb Garden. June 20.
Hollies, Deciduous. Deciduous Hollies.
 December 39.
Honeysuckle. A Favorite Honeysuckle.
 February 26.
Hostas. August 30.
Ilex. Deciduous Hollies. December 39.
Improving American Gardens. December 10.
Insects. Reading Tree Leaves: A Guide to
 Diagnosing Symptoms. June 9.
Jasmines. October 22.
Las Palmas Altas. December 28.
Lichen Gardens. Moss and Lichen Gardens.
 February 30.
Long Flowering Perennials. April 28.
Loncera. A Favorite Honeysuckle. February
 26.
Magazines, Two Popular Victorian. Two
 Popular Victorian Garden Magazines. April
 10.
Mail Order Nurseries. A Catalogue Review.
 February 33.
Moss and Lichen Gardens. February 30.
National Herb Garden. The National Herb
 Garden. June 20; Curator of the National

Herb Garden, Holly Shimizu. June 15.
New Plants for '83. February 15.
Nurserymen, Mail Order. A Catalogue
 Review. February 33.
Nyssa sylvatica. The Sour Gum. October 31.
Oenothera. The Evening Primrose Family.
 June 5; The Other Evening Primroses. June
 31.
Onions, Flowering. A Season of Flowering
 Onions. August 12.
Other Evening Primroses, The. June 31.
Passionflowers. December 18.
Paths, Garden Paths. December 44.
Perennials, Long-Flowering. Long-Flowering
 Perennials. April 28.
Plant Explorers. Alice Eastwood. October 10.
Plants For: Cutting Gardens. The Cutting
 Garden. June 26;
 Foliage Favorites. December 15;
 Fragrance. Jasmines. October 22; Long
 Bloom Period. Long-Flowering Perennials.
 April 28; Seaside Gardening. August 26.
Poppies. California Poppies. April 25.
Primroses, Evening. The Other Evening
 Primroses. June 31.
Ranunculus. Buttercups of the World. June
 24.
**Reading Tree Leaves: A Guide to Diagnosing
 Symptoms.** June 9.
Seaside Gardening. August 26.
Season of Flowering Onions, A. August 12.
Seasonable Reminders. Reading Tree Leaves:
 A Guide to Diagnosing Symptoms. June 9;
 Deciduous Hollies. December 39.
Seven Gables Garden, The. October 25.
Shade. April 41.
Shimizu, Holly. Curator of the National Herb
 Garden. June 15.
Sour Gum, The. October 31.
Stamp Gardens. February 28.
Strange Relatives. The Acanthus Family.
 December 4; The Amaranth Family. April
 5; The Box Family. October 4; The
 Dogbane Family. February 10; The Evening
 Primrose Family. June 5; The Verbena
 Family. August 4.
Tradescant Trust, The. February 23.
Trees. June 41.
Trees, Insects and Diseases of. Reading Tree
 Leaves: A Guide to Diagnosing Symptoms.
 June 9.
Trilliums. April 16.
Tupelo, Black. The Sour Gum. October 31.
Two Popular Victorian Garden Magazines.
 April 10.
Verbena Family, The. August 4.
Victorian Garden Magazines. Two Popular
 Victorian Garden Magazines. April 10.
Vistas. February 41.
Walls. October 40.
Ware Collection of Glass Flowers. The Glass
 Flowers. December 22.
Water. August 38; Water Gardens. August
 20.
Wildflowers, California. California Poppies.
 April 25.

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GARDEN PATHS

Well-placed paths are as indispensable as trees and shrubs to a successful landscape. Even when they are simply joining house with garage, vegetable garden, flower border and compost pile, paths serve as a framework that shapes the landscape.

A logical placement of paths can emerge naturally from the patterns of daily routines, but following these footsteps will not necessarily take full advantage of the potential drama and beauty of your landscape. The shortest distance between two points is not always the most interesting.

Because paths are so central to establishing a garden framework and mood, their placement should be the result of thoughtful observation. When deciding where a path should go, it is important to observe not only how you get from here to there, but also where you may cut through a hedge for a view of the surrounding hills or the spot where you would turn to observe a favorite oak in autumn.

For a shady walk in summer, observe the shadows of trees at various times of the day. Or study the land's contours for a change in elevation that might provide an exciting vantage point or different perspective that could be incorporated into your garden. The placement of paths can and should take advantage of existing landscape features.

When considering path placement, think about where you want to go, how you want to get there and what you want to see, touch and smell along the way. While a set goal is frequently the objective of a well-placed path, the experience along the way is often as important as arriving at the compost pile or shrub rose garden.

All too frequently a landscape develops without a preconceived plan, the placement of structures and features the result of expediency rather than logic or aesthetic sensitivity. Paths not only divide and shape



Garden paths can take many forms. Here, a stone walkway contrasts with a wide grass path. Both serve the same purpose—to lure the visitor through the garden.

the landscape, they also unite it by drawing attention to its strongest features. Properly sited paths can help make sense of an otherwise amorphous landscape.

Few things are more frustrating in a garden than a path that leads nowhere. It is like a joke that drags on without a punch line. A path needs a goal, whether it is a sundial, fountain, bench or view. But there is no rule that says this goal must be blatantly apparent, the end result of a straight line. A glimpse of water through trees or shrubs is often a far more effective lure than the pond or stream in full view.

Partially hidden, an object or scene remains unknown and demands further exploration. A path that offers partial glimpses, then veers away, then entices once more, titillates one's sense of expectation. The easiest way to veil a path's goal is to introduce a curve. And while the object of this shift in direction may be to temporarily obscure a view, it is often appro-

priate to provide some reason. Placed as if there were no choice but to go around, the justification for a curve could be anything from a tree too beautiful to chop down or ignore, to a particularly fragrant mock orange or a clump of iris.

Paths can be as various as the landscape they traverse, as straightforward as the gridwork of brick and stone at Sissinghurst in Kent, England, or as lightly defined as the winsome brick serpentine through the daffodils at Dumbarton Oaks. In keeping with the simplicity of a country landscape, a path may be only a hint of a direction, a swath through tall meadow grass.

The selection of paving materials will depend, in part, on whether the intent is to harmonize or to contrast with the character of the garden. Various patterns of brick can be formal or informal. Likewise, mown grass can become formal when enclosed by box parterres, or easily flowing like the grass paths between herbaceous borders at Great Comp in Kent, England.

I know of one path in particular that quietly yet brilliantly illustrates the sensitive use of various surfaces. Meandering through a pine woods, this narrow path's "pavement" is pine bark laid lengthwise. Past wild wood asters and goldenrod in autumn, where the path edges close to a small stream, the surface ebbs into a paving of stream gravel worked well into trodden wild grasses.

Whenever this path's direction may be doubtful, good-sized flat stones from the stream are sunk into the gravel and continue a ways along the path to indicate direction. Adding an extra bit of visual weight, these stones also help establish a sense of priorities when other crossing paths converge. ♠

—Margaret Hensel

Margaret Hensel, a landscape designer and garden writer, is a regular contributor to *American Horticulturist*.



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