

# AMERICAN HORTICULTURIST

AUGUST 1983



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AMERICAN HORTICULTURAL SOCIETY'S 38th ANNUAL MEETING

# Join Us in Philadelphia

**L**ast year Philadelphia celebrated its 300th anniversary—a happy marriage of people and plants. Founded as the City of Brotherly Love and as a “greene Country Towne,” it and the surrounding Delaware Valley today boast the largest concentration of botanical gardens and arboreta of any region in the nation. We will explore this region rich in gardens and garden history during our 38th Annual Meeting September 14-17.

In association with the Pennsylvania Horticultural Society, we will visit such well-known gardens as Longwood, the Morris Arboretum, Andalusia, Chanticleer and the Highlands. We will have the rare opportunity to view



The Morris Arboretum

Elizabeth D. Hume

no fewer than 10 other outstanding private gardens. Lectures and panel discussions are on our itinerary, as are such special highlights as cocktails and a private dinner at Longwood and our President's Banquet, which will take place at the Franklin Plaza Hotel.

We will be staying at the new Franklin Plaza, conven-

ient to most of the historic sites of Philadelphia. Sign up for our Post-Conference Tour and visit even more lovely gardens and arboreta in Pennsylvania, New Jersey and New York before returning to Philadelphia.

If it's gardens you want to see, don't miss Philadelphia this fall. There's still time to register. Call the Education Office for a Registration Packet. Read more about the Delaware Valley on page 15 of this issue.



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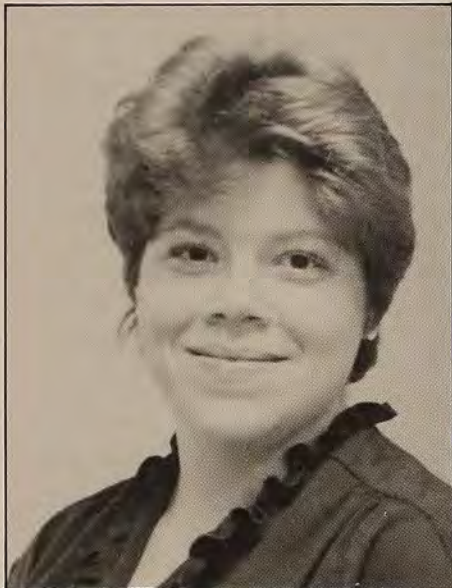
*Allium tuberosum*, Chinese chives, is one of a number of species of ornamental onions that lend color to the summer garden. For more about these attractive perennials, turn to page 12. Photograph by Barbara W. Ellis.

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ON THE COVER: *Lilium* sp. Photograph by Tom Arndt.

ERRATUM: The photographs attributed to Jeanne Shojaat in the June article on Holly Shimizu were taken by Ann Kennedy.

# TO YOUR BENEFIT—AND OURS



J. W. Gray

As I write this, the year's first true summer thunderstorm is soaking River Farm. The daisies standing thick in our wildflower meadow are stalwart under the downpour, and I can imagine the Ideas Garden, north of my view, calmly receiving the first sign of summer's extremes. The world out my window looks excitingly fresh, with green and white leaves and flowers leading my eye to the Potomac River, a few hundred yards from the historic River Farm house where AHS has its offices.

Those of us who work here, and the several thousand AHS members who live in this area, realize how central a role River Farm plays in the Society's functions. It is easy for us to do so, as we enjoy its natural beauty and the fine work the Society's grounds staff has done on these 26 acres over the years. Evidently, even our far-away members appreciate River Farm, as many of you have generously contributed funds for us to build our own greenhouse and to staff River Farm with summer interns.

Important as River Farm is, however, the Society's activities must focus primarily on all the needs of its entire membership. Who are our members, and what do they want from the Society?

Periodically, AHS's Publications De-

partment conducts a readership survey to profile our members for advertising purposes. The most recent readership survey echoed earlier results: 25% of our members are professionally engaged in horticulture, while 75% are avid amateur gardeners; *American Horticulturist* readers are most interested in "how-to-do-it" stories and articles about private gardens; most AHS members grow their own vegetables. Members rate our publications highly, and, for the most part, their responses to the survey contained no surprises.

As Membership Director, I have also done some research on the Society's membership. Recently I was delighted to find that one-third of our members joined the Society in 1975 or earlier. We even have a handful of members who joined in the 1930s, and a significant number who have been with us since the 1950s. It is gratifying that the Society has satisfied such a large core group of members for so many years. I have also found that many AHS members support the Society very generously by paying dues higher than the regular level of \$20.00 per year, and by occasionally contributing to special projects. Our 72 Life Members also compose a small but vital group of supporters.

All in all, statistics about the Society's members paint a wonderful picture. But when I examined our readership survey in depth, I noticed some puzzling discrepancies. For example, 61% of the members surveyed said they found the idea of our free Seed Program "very interesting." Yet in 1983, only 22% of our members participated in the Seed Program. Similarly, the survey showed that 69% of our members liked the idea of our free gardener's information service, but I am certain that the percentage of members actually using this service is much lower.

Even with our Book Buyer's Service, the difference between what our members said they wanted and what they have actually done appears large. Fifty per cent of surveyed members expressed enthusiasm for this service, which offers members discounts of 10-30% off retail price on gardening books. But nowhere near 50% of our members have made use of this mem-

bership service to obtain these discounts by buying books from us.

This leads me to believe that we have a communication problem. Perhaps AHS members do not know that being a member entitles them to free advice from our staff horticulturists. It is possible, too, that members receive our Seed Program Catalogue in the mail and do not recognize it as such; they might throw it away and then wonder why they never received their free seeds from the Society.

Taking these facts into account, I decided to ask AHS members to evaluate their membership benefits. Ideally, I would like to send each of you a two-page questionnaire, but the survey card inserted in this issue of *American Horticulturist* saves time and money. Unfortunately, it also limits me in asking many of the questions I would like to ask. With the space restrictions of the survey card in mind, I decided to ask only for your ideas about the Seed Program.

Please fill out this card and drop it in a mailbox. Your response will enable me to evaluate your satisfaction with the Seed Program and with the American Horticultural Society—*your* Society. Knowing what you as members want, the Society's staff can refine our programs, improve our service and generate new ideas for membership benefits. We cannot fulfill the Society's goals unless we know what you, our members, want.

I would be delighted to hear from you about other aspects of AHS membership. Please call or write me whenever you have a suggestion, comment or question. I want to see the Society's membership grow and thrive, so that AHS can carry out its original mandate: "to promote horticulture in this country and in the world." I hope you will agree with me that this goal is a splendid one around which we can rally.

—Connie Clark  
AHS Membership Director

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# THE VERBENA FAMILY



'Springtime Mix' is a cultivar of the popular garden verbena, *Verbena X hybrida*.

Everybody knows that a lemon verbena is not a lemon, but did you know that it is not a verbena—strictly speaking? Wild verbena is vervain. Simpler's joy is a blue vervain reputed to have medicinal properties. Then, there are *French* mulberry, tropical *lilac*, bag flower! This is a sampling of the verbena family, Verbenaceae, which consists of a large number of trees, shrubs, herbs and vines, predominantly from tropical or subtropical regions. Included are many flowering garden and greenhouse plants and some economic timber species, notably teak and zitherwood. Some species are known for their rough hairy leaves; one is even called sandpaper vine. Many have spines on the

stems. The leaves may be entire or divided, they usually grow in opposite pairs but occasionally are whorled or alternate on the stems. In spite of this seeming confusion, the flowers are regularly composed of four or five unequal sepals united in a tube and four or five petals united to form a slender tube with a flaring or lobed rim. Pollination of the flowers results in a fleshy fruit containing one or more seeds, or a capsule, or a group of two or four single-seeded units (nutlets).

The genus *Verbena*, from which the family name is derived, is a group of hairy annual or perennial plants found in both North and South America. About 200 species of these erect or prostrate plants bear

the characteristic funnel-form flowers in various colors in terminal or axillary spikes.

The familiar garden verbena, *V. X hybrida*, is grown chiefly as a sprawling annual. Parentage of such a long-popular garden bedding or border plant is impossible to trace. It is probably a hybrid of *V. peruviana* with other *Verbena* species. Garden hybrids come with additional labels descriptive of growth or flowering habit, for instance, *compacta*, *gigantea*, *grandiflora*, *multiflora*, *rosea stellata*, *violacea stellata*. The flower spike is reduced to a flat head of red, pink, violet, yellow or variegated florets.

Wild verbenas, native to many parts of the United States and Canada, are rarely

cultivated, although there are exceptions where attractive species have been selected for garden use.

*V. canadensis*, rose verbena or rose vervain, is native from Virginia to Florida and west to Iowa, Colorado and Mexico. Heads of rose or purple flowers are raised above the trailing stems. In northern states it is grown as a garden annual and several cultivars are listed for this use. In the south it is perennial.

*V. bipinnatifida*, Dakota vervain, a prostrate perennial native to northern midwestern states, blooms all summer with lilac flowers.

*V. bonariensis* from South America has become naturalized in California and in our southern states. *V. hastata*, blue vervain, simpler's joy, an eastern American native, is a four-foot perennial with very small blue-violet flowers in terminal spikes. Adapted to many habitats, it is common in moist fields. Indians and early American colonists are reported to have made medicinal use of this vervain.

*V. rigida*, sometimes listed as *V. venosa*, a perennial with tuberous roots and creeping stems, is native to Brazil and Argentina, but it is naturalized from North Carolina to Florida. Several named cultivars are offered by nurserymen as vigorous, low-growing ground covers.

*V. peruviana*, the presumed forebear of garden verbenas, is a scarlet-flowered procumbent perennial from Argentina and southern Brazil. Surely this must account for the richness of the red-flowered garden hybrids.

*V. tenuisecta* has been cultivated as *V. erinoides* and is known as moss verbena. Another South American, it has naturalized from Georgia to Louisiana. This sprawling, hairy plant, with finely dissected leaves, produces dense spikes of blue, purple or violet flowers.

While in the main vervains can hardly be regarded as important honey plants, certain species are valuable sources of nectar in limited localities. Three species are reported as important in the Baton Rouge-New Orleans area of Louisiana; they are *V. bonariensis*, *V. rigida* and *V. littoralis*. In California, *V. prostrata* is mentioned as a honey plant; in Iowa, *V. stricta*.

Although lemon verbena is not a *Verbena*, its popularity has resulted in its retaining the name it has borne through the ages as a member of the family. Its botanical name is *Aloysia triphylla* but it has also been called *A. citriodora* and *Lippia*

*citriodora*). It is a tropical, sometimes woody, shrub often grown in the greenhouse or as a house plant. The lemon-scented fragrance of the leaves, especially when they are crushed, is from glands on the underside of the light-green leaves. The scent has been marketed under the name verbena oil. Small white, verbena-type flowers are borne in upright whorled spikes. As an indoor plant it is maintained as a shrub of about four feet, although it is much taller in warm regions of North and South America where it is native.

The French mulberry, neither French nor mulberry, is an American native, *Callicarpa americana*, common in our southern states in dry, sandy soil. Its short-stalked clusters of flowers are very attractive to bees but it is probably not common enough to be the source of much honey. The name *Callicarpa* means beautiful fruit, and all the *callicarpas* bear colorful nutlets. *C. americana*, American beautyberry, has violet-colored berries; a white-fruited form is known but is rare.

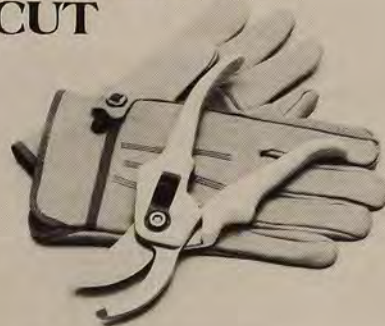
*C. bodinieri* is a beautyberry from China known for its very ornamental lilac fruits after the leaves fall. Nurseries offer *C. bodinieri* var. *giraldii* 'Profusion', a name descriptive of the wealth of lavender flowers in August and purple fruit thereafter.

The small white to pink flowers of *C. japonica*, Japanese beautyberry, are followed by fruits of metallic purple, especially ornamental in the autumn. This Japanese shrub, which is about half the size of *C. bodinieri*, is hardy in the United States to Zone 5 or 6.

An Asiatic shrub that is hardy from Zone 5 southward in the United States is hardy blue spirea, *Caryopteris*, a name meaning winged fruit; the nutlets formed are slightly winged. Bluebeard, *C. X clandonensis*, originated in 1933 from a cross of *C. incana* with non-horticultural species. A distinction of *Caryopteris* flowers is that one of the five lobes of the corolla tube is larger than the others and is fringed. This compact hybrid form, 18 to 24 inches, is a useful perennial border plant, a source of intense blue flower spikes in August and after. It may be killed back by severe winter weather, a sort of natural pruning, but recovers with the following season. Bluebeard can be grown also as a greenhouse plant.

Of special greenhouse interest in the verbena family is *Clerodendrum*, glory tree or glory-bower, a genus of about 450 species of shrubs, vines or trees of tropical

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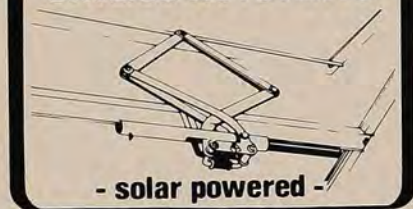


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## STRANGE RELATIVES CONT'D

origin. Sometimes the colorful calyx is more handsome than the showy clusters of tubular flowers with protruding stamens. The fleshy fruit is enclosed by the withered calyx. Several species of these exotic flowering vines or shrubs have attained wide popularity. All but one are adapted to outdoor culture only in Zones 7, 8 and 9; otherwise they must be grown in the greenhouse. That one is *C. trichotomum*, harlequin glory-bower, which is hardy from Zone 4 southward. The special attraction of this shrub or small tree is the blue berries, each surrounded by a red calyx, borne on the upper side of horizontal branches and lasting into October. August-September blossoms are fragrant.

Hyacinth-scented flowers grace *C. philippinum*, fragrant glory-bower. The double, pinkish flowers of this Chinese species grow in tight terminal clusters; the red calyx of each blossom adds to the color display.

*C. thomsoniae*, bleeding-heart vine, bleeding-heart glory-bower, or bag-flower, produces a small red flower set in a striking white, bag-like calyx. It is a great favorite in conservatories where it can run rampant, loaded all spring and summer with its masses of flower sprays. This West African vine displays protruding stamens that project from the blossom to afford a landing place for pollinating insects. It can be grown outdoors in Gulf Coast states and in California; elsewhere it is greenhouse grown. Some florists have offered it as a special for Valentine's Day.

*C. thomsoniae* is adaptable to indoor light garden culture if kept rigorously pruned; it tolerates pruning to such an extent that it can be kept to a modest size like a small shrub; such shorter, bushier plants are much more densely flowered as the flower buds develop in the new growth.

A touching legend is associated with *C. thomsoniae*. A lovely maiden, rejected and deserted by her lover, wept bitter tears and pined away from a broken heart. Where her tears fell, her lover upon his return found the bleeding heart vine in bloom.

Tropical lilac, a shrub or small tree, is cultivated as a spiny hedge plant in Florida, California and elsewhere in the South. This is *Duranta repens* (*D. plumieri*), also known as golden-dewdrop for the fleshy yellow fruit clusters like a bunch of currants that follow the small, pale lilac-blue flowers. *Duranta* is native from Florida to Brazil. It is attractive to bees but not sufficiently abundant to be an important source of

honey. And, of course, it is not a lilac (*Syringa*).

Another species in this family of prominent calices is *Holmskioldia sanguinea*, Chinese-hat plant or coolie's cap, so named for the spreading calyx. It is a somewhat sprawling or straggling tender evergreen shrub from the Himalayas. Below the small, tubular red flowers is a brick-red mem-

## The French mulberry, neither French nor mulberry, is an American native, common in our southern states.

branous flaring calyx; seated within this calyx the four-lobed fruit develops.

*Lantana camara*, red or yellow sage, is one of 50 known *Lantana* species native to tropical America. Rough, hairy, pungent leaves on prickly, hairy stems surround flowers that at first are yellow, then orange and red or sometimes all three colors simultaneously. The flowers, in a more or less flattened or globose head, are followed by small fruits that in the green, unripened state are toxic if ingested; they ripen to blue-black berries.

This shrubby lantana makes a good ground cover or bedding plant outdoors in sunny locations; it is suited likewise to growth in pots and hanging baskets for the patio. It is not winter hardy.

Trailing lantana, *L. montevidensis*, is more delicate looking than the shrub type, thanks to long, graceful branches bearing great numbers of one-inch clusters of rosy lavender flowers, making the plant especially suited for hanging basket culture.

A group of creeping herbs with small violet, blue, pink or white flowers are the *Phyla* species, or frogfruit, matgrass, cape-weed or turkey-tangle. *Phyla nodiflora* var. *rosea* is the carpet grass of California, introduced from Chile and widely cultivated along the Pacific Coast as a lawn plant. As a lawn substitute it can be walked on and it can be mowed—to reduce the number of flowers that attract bees; honey from this source is light in color and mild in flavor.

*Petrea volubilis* is one of the world's

loveliest climbers, worthy of its popular names queen's-wreath and bluebird vine. Sprays of bluish-violet flowers, 15 to 30 in a cluster, cascade from a stem that may reach to 30 feet. Sepals are lighter in color than the corolla and outlast it, leaving a lavender-mauve tinge to the whole plant. This is the plant mentioned earlier as the sandpaper vine, referring to the roughness of the leaves.

*Tectona grandis*, teak, is one of the four *Tectona* species, tall deciduous trees of Southeast Asia. Cultivated in India, this 150-foot tree tends to naturalize in favorable climates. It is valued almost as highly as mahogany for its strong, durable wood, which is manufactured into handsome articles of furniture and parquet floors and veneers.

Another timber tree in the verbena family is zitherwood or fiddlewood, *Citharexylum fruticosum*, a native of tropical North and South America. It has the appearance of wild cherry, with clusters of small white or yellow fragrant flowers throughout the year on sometimes spiny twigs. The common name identifies the small musical instruments for which the wood has been used.

Last but by no means least in a River Farm overview of the Verbenaceae comes *Vitex agnus-castus*. Five small, much-branched deciduous flowering trees shade one of our borders. This *Vitex* is considered hardy from Zone 5 southward, but our specimens were badly damaged by the severe winters of 1979 to 1982. The name Mexican lavender applied to it is in reference to the pungency of the grayish-green, palmately compound, slightly hairy leaves which are pleasantly scented, especially in the warmth of your hand. Indian-spice and sage tree are other names indicative of its aromatic nature. Lilac to lavender flowers in dense panicles cover the tree in August to September—and attract bees. As with lilac (*Syringa*), the clusters of seed stalks remain from season to season.

Slightly more hardy than *V. agnus-castus* is *V. negundo* var. *heterophylla*, but otherwise similar to the former in most respects. It is especially grown for bees.

Sparsely represented at River Farm by *Callicarpa*, *Vitex* and *Verbena hybrida*, perhaps other members of the wild verbenas will appear in our meadow planting some day. ☉

—Jane Steffey

Jane Steffey is horticultural advisor for the American Horticultural Society.

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# BOOK REVIEWS

## JEWELS OF THE PLAINS: WILD FLOWERS OF THE GREAT PLAINS, GRASSLANDS, AND HILLS.

Claude R. Barr. University of Minnesota Press. Minneapolis, Minnesota. 1983. 237 pages; hardbound, \$21.20 including postage and handling.

This fine book will inspire anyone who appreciates a model of a productive life dedicated to making this plundered planet a better place to live. Barr died in 1982 at 95. He spent many years promoting the cause of prairie wildflowers as a producer and distributor of seeds, plants and information about their propagation.

Although he traveled extensively, the base of operation was his isolated Prairie Gem Ranch homestead in the Black Hills of South Dakota. Ever present gumbo and drought conditions provided a demanding environment for plant propagation. In "making the best of it," Barr carried out numerous imaginative research projects, the results of which are reflected in *Jewels*—his magnum opus.

The book is a fitting memorial for a job well done. Plant fanciers of all persuasions will enjoy his lively writing style, encyclopedic knowledge and the commentary on specific species. Traveling the plains vicariously with this experienced instructor is a stimulating exercise. What a rewarding field trip!

A glossary, bibliography and scientific name index, coupled with 119 excellent color plates add value to the book. Both professionals and amateurs who are interested in native American plants should have this guidebook in their reference libraries.

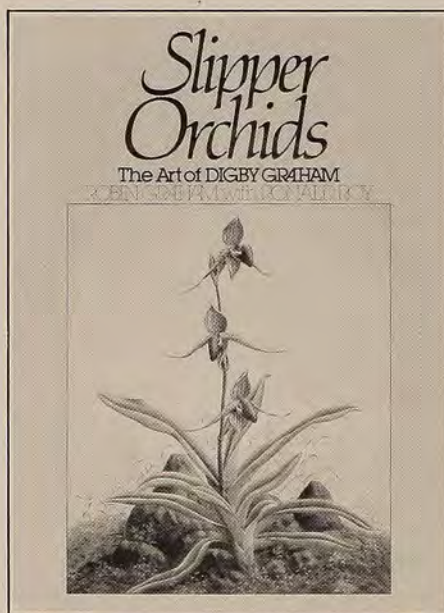
—Jack DeForest, Ph.D.

## ORCHIDS

### SLIPPER ORCHIDS—THE ART OF DIGBY GRAHAM.

Robin Graham with Ronald Roy. David and Charles. Pomfret, Vermont. 1983. 109 pages; hardbound, \$39.95. AHS discount price, \$33.20 including postage and handling.

Superb color plates of 37 species of *Paphiopedilum* (tropical lady slippers of the Old World) are the work of a New Zea-



land artist whose project to paint all the known species was cut short by his death in 1979. The addition of a short description and history of each species makes this a valuable reference work for anyone interested in these plants.

### GROWING ORCHIDS.

#### BOOK TWO—THE CATTLEYAS AND OTHER EPIPHYTES.

BOOK THREE—VANDAS, DENDROBIUMS AND OTHERS. J. N. Rentoul. Timber Press. Portland, Oregon. 1982. Book Two, 218 pages; Book Three, 241 pages. Softcover, \$19.95 each. AHS discount price, \$18.20 each, including postage and handling.

These are the final volumes of the series that were reviewed in the February 1982 issue of *American Horticulturist*.

### ORCHID BIOLOGY—REVIEWS AND PERSPECTIVES. VOLS. 1 AND 2.

Joseph Arditti (Editor). Cornell University Press. Ithaca, New York. 1977 (Vol. 1), 1982 (Vol. 2). 310 pages (Vol. 1); 390 pages (Vol. 2). Hardbound, \$42.50 each. AHS discount price, \$37.35 each including postage and handling.

For the serious orchid grower, these two

volumes present current articles on all facets of the hobby from plant collecting and floral biology to taxonomy and tissue culture.

### POCKET GUIDE TO CHOOSING WOODY ORNAMENTALS.

Gerd Krüssmann (translated by Michael Epps). Timber Press. Beaverton, Oregon. 1982. 141 pages; softcover, \$12.95. AHS discount price, \$12.25 including postage and handling.

This English translation has been updated from the original German edition to include many plants useful in American gardens that were not in the original work. In addition, many of the European trees and shrubs that are rare in the United States, but are suitable for our gardens, have been left in. Plants are grouped together in lists that specify various attributes and applications of the species in the landscape. Of particular use is a special index of 172 categories called "Where do I find plants for . . . ?" Within the tables, plant hardiness is always listed with the applicable characteristics of size, shape, color, etc. If you are planning a home garden, this book is a worthwhile investment, and if you are involved in garden planning in any more extensive way, you will find this handbook will become a constant companion.

### HAWORTHIA AND ASTROLOBA—A COLLECTOR'S GUIDE.

John Pilbeam. Timber Press. Portland, Oregon. 1983. 167 pages; hardbound, \$32.95. AHS discount price, \$29.25 including postage and handling.

This is the kind of book any specialty collector needs for information about his favorite plant. With more than 70 species and many varieties, the identification of these popular plants is usually very confused. With the help of this book the confusion should be greatly reduced. Each species is illustrated, and the confusion in identification and the taxonomic history of each plant is discussed. The exact collecting areas of each variety are mentioned. Where applicable, cultural information is also provided. In addition to the many black and white photos and line drawings in the text, eight pages of colored photographs are also included.

## ENDANGERED SPECIES

### PLANT EXTINCTION: A GLOBAL CRISIS.

Harold Koopowitz and Hilary Kaye. Stonewall Press, Inc. Washington, D. C. 1983. 239 pages; hardbound, \$16.95 AHS discount price, \$15.00 including postage and handling.

### WHERE HAVE ALL THE WILDFLOWERS GONE?

Robert H. Mohlenbrock. Macmillan Publishing Co. New York, New York. 1983. 239 pages; hardbound, \$15.95. AHS discount price, \$15.60 including postage and handling.

### ACID RAIN.

Robert H. Boyle and R. Alexander Boyle. Nick Lyons Books. New York, New York. 1983. 146 pages; softcover, \$8.95. hardbound, \$14.95. AHS discount price, \$10.20 softcover; \$16.20 hardbound, including postage and handling.

These three books cover three very different facets of the destruction of our environment and its effect upon the plants and animals (including man).

*Plant Extinction* provides a number of case histories of how plants are being destroyed and particularly tries to point out what can be done about it and the significance of the loss of each species throughout the world. This is a book that clearly shows the greater significance of the seemingly inconsequential loss of a single plant.

*Where Have All the Wildflowers Gone?* treats the United States on a regional basis. The account of each endangered species within these regions deals with the original discovery of the plant and its history to date. This book gives a good perspective of the individual plants in relation to their environment.

*Acid Rain* is a very different kind of book. It tells the story of one of the more insidious forms of environmental destruction. It is not a simple story, since it involves chemistry, energy, economics and politics. The disappearing features of a statue in the park and the death of all organisms in a freshwater lake are both consequences of the same kind of atmospheric pollution.

All of these books are well written and each tells the story in a readable and enjoyable (if you can say that about the sub-

ject) manner. For a greater awareness and understanding of the environment around you, I recommend all of these books.

## THE CREATORS OF ENGLISH GARDENS

A CENTURY OF GARDENERS. Betty Massingham. Faber and Faber Ltd. London. 1982. 256 pages; hardbound, \$24.95. AHS discount price, \$23.65 including postage and handling.

### WILLIAM ROBINSON 1838-1935—FATHER OF THE ENGLISH FLOWER GARDEN.

Mea Allen. Faber and Faber Ltd. London. 1982. 255 pages; hardbound, \$19.95. AHS discount price, \$19.20 including postage and handling.

*A Century of Gardeners* actually spans nearly two centuries and the lives of 17 individuals whose biographies are the subject of this book. These are some of the people whose ideas and efforts were instrumental in the development of many of England's most outstanding gardens. This

is a book about gardeners rather than gardens, but if you should be fortunate enough to visit some of England's famous gardens, these brief biographies will give you a perspective that will add significantly to your appreciation of what you see.

*William Robinson* is the biography of a single gardener whose influence, like that of Gertrude Jekyll and Vita Sackville-West, led to the development of the natural style of gardens that we so admire today—a departure from the strict formality that was so characteristic of much of the Victorian era. The author of many gardening books, Robinson's *The English Flower Garden*, first published in 1883, has gone through 15 editions and is still referred to today.

If you are interested in the history of gardens or are simply curious about people who devoted their lives to gardening, both of these books are recommended. ☉

—Gilbert S. Daniels

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

Jack DeForest, Ph.D., is a free-lance economist living in Alexandria, Virginia.

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# A SEASON OF FLOWERING ONIONS

A few years ago when the snows of late winter began to fade away, I received a listing of rare bulbs from a dealer in Maine that included a large selection of alliums or ornamental onions. These particular plants are not grown for food but strictly because of their stunning floral display (although they smell like onions if the leaves are torn or the bulbs are bruised).

I succumbed to the lure of the new and ordered five different species. Then remembering an old drawing of a pot full of *Allium karataviense* in full bloom, with starry balls of blossoms held above thick and glabrous leaves, and noting their presence on the list, I purchased six more bulbs: three for the garden and three for greenhouse forcing the following spring.

The bulbs arrived, the experiment with forcing succeeded, and I began to collect what I thought were the more interesting and charming of these members of the lily family. The following descriptions are of specimens now in our perennial border or the rock garden. It's an entirely arbitrary selection: I've left out the giant lollipops of Tibet that are usually shown with a small child holding them against the setting sun (*Allium giganteum*), yet I've included an old favorite, the Egyptian onion, and I've never even seen these particular plants bloom.

Cultivation demands are few: a reasonable soil that is loose enough to allow bulbs to expand; average demands for water; and, except for the wood leek, as much sun as possible. Propagation is by seed sown in early spring or by setting out bulbs or bulbets in autumn. Most species of the genus are hardy in our U.S.D.A. Zone 5 garden and make excellent cut flowers for summer bouquets. Many seed heads dry with great effect to make stunning additions to dried flower arrangements.

By checking various seed lists from the rock garden societies, catalogs from seed houses and the many nursery offerings, I've noted that over 50 species of *Allium* are available in North America (there are over 400 species in the genus).



Wood leek by Peter Loewer

### The Egyptian Onion

The Egyptian or walking onion (*Allium cepa*, the Proliferum group) seems an odd choice for the flower garden. Instead of blossoms, onion bulbs are formed atop four-foot scapes. The effect is entirely sculptural and not to every gardener's taste, but a clump is always found at the wild end of our garden.

A few scapes bend under the weight of the growing bulbs, eventually bending to touch the ground where a new plant begins. If allowed, the walking onion can wend its way across the garden. Scapes are excellent stuffed with ground beef, and the bulbs produced can be used just like regular onions.

### The Nodding Onion

*Allium cernuum*, the nodding onion, blooms in the summer with pendulous heads of some 40 rose to purple flowers, which resemble skyrockets tied to the earth. Scapes are about 18 inches high and the leaves have a very strong scent of the onion. A number of these flowers in a grouping are unusually attractive and carry their beauty well into the fall when the seed heads dry and split, revealing shiny black seeds that look like Victorian jet jewelry.

Look for variations in color. The white form is especially charming for the border.

### A Perfect Blue

*Allium cyaneum* boasts no common name; it's small in stature with thin, filiform leaves and a taller scape of some eight inches. But the bell-shaped, nodding flowers are a shade of perfect blue that brighten up their tiny corner of the rock garden. These plants originally came from China yet they are adapted to many climates if given an adequate snow cover in winter and a sandier soil than the average allium. My plants bloom in early summer.

### One for Forcing

When my bulbs of *Allium karataviense* arrived in the fall of 1979, three went directly into the back end of the rock garden and three were planted in a nine-inch clay pot filled with potting soil, sand and composted cow manure (one third of each). I covered the bulbs with two inches of soil, watered them well and covered the pot with an old dinner plate. I then set the pots under the greenhouse benches where temperatures would fluctuate between 30° to 45°F.

I ignored the bulbs until the following March when I noted three tiny white tips upon removing the plate. Immediately I moved the pot to an upper bench in full view of the winter sun: the tips quickly flushed with green and began to grow. By mid-April the leaves had fully opened—some seven inches high and three inches wide—and were a bright, bluish-green. The

## Most species in the genus are hardy in our Zone 5 garden and make excellent cut flowers for summer bouquets.

flowers appeared on April 27 and were still glorious on May 6.

When the leaves die down naturally, the pot can be set aside for another year or set outside into the garden.

### A Fine Yellow

*Allium flavum* is another flowering onion without a common name. Blossoms are a bright yellow, usually appearing in mid-summer in loose globular heads some two inches across on stalks of different lengths. The leaves are grass-like, and plants self-sow with ease but never become pests. They are perfect in either the rock garden or the front of the perennial border. These plants originally came from southern Europe and Turkey.

### The Lily Leek

*Allium moly*, or the lily leek, has been a garden favorite for many years. The star-like, bright-yellow flowers bloom in early to midsummer, the heads some three inches across on foot-long scapes. They are more vigorous than most of the alliums, and with a good position in the border the gardener will soon have a sizeable clump of flowers. The only reason my bunch has remained under control is because they fight for space with a large clump of eulalia grass (*Miscanthus sinensis*).

### For the Rock Garden

*Allium ostrowskianum* blooms in late spring or early summer when given a sunny spot

in the rock garden or the front of the border. Flowers are pink and form four-inch balls atop six-inch scapes. These particular plants need a period of hot summer sun for ripening and good flowers for the following season. 'Zwanenburg' bears more flowers than the species.

### The Kitchen Garden

Chives, or *Allium schoenoprasum*, has always suffered from bad press as a garden flower. Many people accuse them of having a too-violent shade of rose or rose-violet that clashes with most everything else. I am never without a clump and maintain a large group right in front of my gas plant (*Dictamnus albus*), where their colors complement instead of fight. This spot is also near the kitchen door so both traditions are observed: I can quickly snip chives for summer salads. After initial blooming, cut the plants to the ground.

### The Wood Leek

Wood leeks, *Allium tricoccum*, are the only onions I've grown that require a woodland habitat. They like a soil rich with humus and a shady spot in the garden. Leaves are about two inches wide and 10 inches long, resting flat upon the soil when mature and disappearing before the flowers appear on foot-long scapes. They bloom in early to midsummer, and after the flowers fade an underplanting is needed to hide the bare spots left by the leaves. These plants are also known as ramps in the Appalachian Mountains, where the bulbs are purported to possess all kinds of magical powers.

### Chinese Chives

Some springs ago a friend in California sent us a package of Chinese chive seeds (*Allium tuberosum*, which the Chinese call gow choy). We grew them like regular chives, starting them indoors in late March and planting them out in May. By July the foot-high chive leaves were topped with bunches of delicate white blossoms, entirely unlike the typical chive. We were instructed to chop up the budding flower heads and add them to tossed salads because they impart a mild and pleasant garlic taste, while the leaves taste more like onions. In the fall we always dig up a few bulbs to bring indoors for salads. ☉

—Peter Loewer

Peter Loewer is a botanical artist and scientific illustrator who writes and illustrates his own books. His latest book is *Evergreens, A Guide for Landscape, Lawn and Garden*.







# The Delaware Valley: A Garden Heritage

BY ELIZABETH D. HUME

When, in 1681, William Penn planned the colonial development of Pennsylvania, he was careful to preserve green spaces for the future. London had been rebuilt after the great fire of 1666 with acres of parks established throughout the city to serve as fire breaks and green areas for residents. Parks were laid out in each quadrant of Philadelphia, with a fifth central square of 10 acres for "Houses for Public Affairs." Penn's vision of a country town included streets "... uniform down to the water from the country bounds." Dwellings within each share were to be placed "... in ye middle of its platt, that there may be ground on each side for Gardens or Orchards, or fields, it may be a greene Country Towne which will never be burnt, and always wholesome." Penn also stipulated that wherever land was developed in his colony, there should be an acre of trees left standing for every five acres cleared.

Penn was himself an avid gardener, fascinated by the wealth of plants found in the New World and eager to try out many for commercial production. Among the instructions to his gardeners at his country house, Pennsbury, on the Delaware River, were details to establish vineyards and move native trees such as the sweet gum onto the property. (Penn, like Washington, spent more years away from his country estate dreaming up plans and writing his gardener than he actually spent living there.)

Penn's love of nature may have derived partly from his Quaker associations. George Fox, the founder of the Religious Society of Friends, used many natural metaphors in his preaching. Fox had a philosopher's interest in botany and gardening. He may

have learned much about plants from an early follower, Thomas Lawson, a former vicar from Westmoreland, England, who turned his herbarium collection over to John Ray for his *Synopsis Methodica Stirpium Britannicarum* of 1690. The land that Penn gave to Fox in Philadelphia was willed to become a garden "... for lads and lasses to learn simples there, and the uses to convert them to." The garden was not created, but most Quaker schools have followed this dictum, setting aside an arboretum or garden as a learning tool on campus.

So the Quaker love of nature definitely left its mark on Philadelphia and the surrounding area—now known as the Delaware Valley. Plant explorers, plantsmen, seedsmen, nurseries, gardens and garden schools have all been nurtured in this rich horticultural environment. Because the winters are not so lengthy and the summers are not usually extremely hot, many plants from as far north as New England and as far south as Georgia can be grown with good care in the Delaware Valley.

None of the earliest gardens still exist in Philadelphia, although there have been some stylistic restorations such as the colonial garden of the Pennsylvania Horticultural Society at 3rd & Walnut, Bartram's Garden, Powell House and Pennsbury Manor. The truly authentic remnants of earlier Philadelphia gardens can be found in the city's suburbs. The Highlands in Ft. Washington was at its

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The Grange in Havertown is the garden where George Washington and his new cabinet met during the summer that yellow fever raged through Philadelphia.

height in the 1840's. It featured a romantic walled garden and model scientific agricultural farm methods. The Grange in Havertown is the garden where Washington and his cabinet met just after formation of our government. In the heat of summer, in 1793, while yellow fever raged through the city, they sought the cool woodlands of the country rather than Philadelphia to conduct affairs of state.

Interest in plants led to the development of numerous seed companies and nurseries in the area, some of which still exist today. Burpee was preceded by other companies such as Landreth, Hibbert and Buist, and Dreer. In the 19th century, Montgomery County alone had 19 sizeable commercial nurseries; Chester County had extensive cut flower greenhouses. These greenhouses have suffered as a result of rising fuel costs and foreign competition in the last decade, but there are still many diversified growers in the Philadelphia-Wilmington area.

The Delaware Valley acquired such a reputation that many plant explorers such as Kalm, Nuttall, Raffinesque, Pursh and Michaux stopped at this horticultural mecca on their way into the heart of the country. In fact, it is believed that the Lewis and Clark expedition was first conceived at a meeting in Bernard M'Mahon's shop in Philadelphia with Thomas Jefferson present. The important herbarium collection from that expedition is deposited at the Academy of Natural Sciences in Philadelphia, along with the herbaria of other historic collectors active during the last 300 years.

Philadelphia residents John Bartram and his sons William and John were at the hub of early exploration and plant exchange. John and William both carried on correspondence with European plantsmen such as Carl Linnaeus, Sir Hans Sloan, Peter Collinson and John Fothergill. Bartram's garden was maintained by the family and by later owners until the middle of the 19th century and is now a featured historic site of the city's Fairmount Parks.

With so many knowledgeable people located in and around Philadelphia, it is not surprising that botany and horticulture were taught intensively from the start. In 1768 Adam Kuhn, trained by Linnaeus, was appointed the first botany professor at the

University of Pennsylvania, where one of the earliest botanic gardens was also established—this to aid physicians who had to learn about the medicinal properties of plants. There were elaborate plans for a Physic Garden at Pennsylvania Hospital, but it has only become a reality in recent years.

Several horticulture schools developed as a result of this interest. The Delaware Valley College of Science and Agriculture was founded in 1896 in Bucks County to teach gardening and agricultural skills on a professional level. The Pennsylvania School of Horticulture for Women was started early in this century by Jane Bowne Haines and was directed for many years by Louise Bush-Brown, co-author of *America's Garden Book*. That school evolved into the Department of Horticulture and Landscape Design at Temple University's Ambler Campus. In 1940, Laura Barnes, the wife of the famous art collector Albert C. Barnes, founded the School of the Arboretum as part of the Barnes Foundation in Merion. It has trained a great many amateur gardeners and designers, and is instrumental in supplying the sizeable corps of horticultural volunteers on which Philadelphia depends. This school offers a vigorous three-year program in botany, taxonomy, horticulture and landscape architecture.

In the mid-19th century the Pearce brothers, Quakers of Chester County, had long maintained their property as a pleasure garden open to the public. This garden was purchased as a summer house by Pierre du Pont in 1906 and was later developed into the magnificent display gardens that we know as Longwood. The old house still stands on the property in the ancient woods where the native flora are preserved and enhanced with judicious selection.

Another Quaker pair belonging to the same regional "Quarterly Meeting" as the Pearces and Marshalls were the Painter brothers. They planted nearly a thousand shrubs and trees on their Minshall property. Through a descendant, John J. Tyler, their farm and collection became the Tyler Arboretum in Lima, Chester County.

The University of Pennsylvania had its own botanical garden in town. In 1932 it





Elizabeth D. Hume



Barbara W. Ellis



Elizabeth D. Hume

Elizabeth D. Hume

ABOVE LEFT: Meadowbrook, owned and designed by J. Liddon Pennock, Chairman of the Philadelphia Flower Show. ABOVE RIGHT: The Flower Walk at Longwood Gardens in Kennett Square. FAR LEFT: The Swan Pond and Love Temple at the Morris Arboretum. RIGHT: The rock garden belonging to Sir John Thouron in Chester County.



Edmund B. Gilchrist, Jr.

ABOVE LEFT: The Colonial Garden at the headquarters of the Pennsylvania Horticultural Society.  
 ABOVE RIGHT: "Mt. Cuba," the Lammot du Pont Copeland property.  
 LEFT: The Rose Garden at the Morris Arboretum.  
 RIGHT: A portion of the garden at Andalusia, now a property of the National Trust for Historic Preservation.



Elizabeth D. Hume



Elizabeth D. Hume



Elizabeth D. Hume

inherited the estate of John and Lydia Morris for the express purpose of continuing scientific research and the scientific education of professionals. The Morrises not only had a vision of education and research, but also expected their garden to be enjoyed by the public. They hoped that the lovely Wissahickon river banks might be preserved for posterity. The Morris Arboretum is now experiencing a renaissance as an English landscape garden. It serves an extensive population with continuing education courses and conducts research on urban forestry problems and native endangered species.

There were also numerous scientific organizations dedicated to furthering knowledge of plants and horticulture established during the city's early days. The Philadelphia Society for Promotion of Agriculture, founded in 1785, is now combined with the Pennsylvania Horticultural Society, which was founded in 1827. The Library Company, The Academy of Natural Sciences, the Philadelphia Zoological Society & Botanical Garden and The Philadelphia Botanical Society are all institutions that at some point in their history have actively sought knowledge of plants.

Near Longwood are three private gardens which today carry on the historic traditions of the early plantmen. The garden of Sir John Thouron was begun on the broad sweeps of Chester County 25 years ago; today its perennial borders rival any in European gardens. Thouron is a keen collector of both hardy and tender plants, and his Scottish gardener, Jock Christie, carries on the centuries-old traditions of Scottish horticulture. The Lamont du Pont Copeland property, "Mt. Cuba," is another garden where collections of uncommon plants are displayed in tasteful design. Wildflowers populate wooded slopes above the pond and, in company with exotics, colorfully adorn a steep rocky outcrop along the entranceway. Landscape architect William Frederick and his wife have carved a designer's haven out of a rushing Delaware stream bed in a small valley between steep slopes. They carry on the homesteader's tradition of farming (and gardening) under difficult environmental conditions and do a beautiful job of it.

Today Philadelphia still has colorful personalities associated with the plant world. J. Liddon Pennock has dominated the Philadelphia plant scene for years, originally as a floral designer (climaxed by a stint at the White House), and more recently as Chairman of the Philadelphia Flower Show. He is a council member at PHS as well as President of the Philadelphia Orchestra. His garden at Meadowbrook Farm serves as an *al fresco* extension of the house and is really a series of formal rooms designed on a long axis and at different levels, punctuated by sculpture and water features. Year-round interest is created by a variety of evergreens as well as colorful seasonal plantings and flowering shrubs and trees. The Greenhouse at Meadowbrook Farm is an overwhelming initial experience. The fact that the ornamental plants there are for sale does nothing to minimize the impact of the stunning variety of plants displayed.

Ernesta Ballard served for many years as Executive Director of the Pennsylvania Horticultural Society. She is primarily credited with building the Society into a strong organization and with rebuilding the Philadelphia Flower Show into the magnificent public spectacle it is today—one of Philadelphia's principal visitor attractions. Mr. and Mrs. Ballard's garden is a gem of alpine and bonsai specimens designed for intimate enjoyment by family and friends.

All of these gardens and academic institutions contribute to a horticultural environment that is unsurpassed in excellence in this country. Next month, members of the American Horticultural Society will have the opportunity to view and learn about the garden tradition of the Delaware Valley firsthand when they attend the Society's 38th Annual Meeting. Garden tours, lectures and panel discussions designed to introduce them to this rich heritage are certain to convince all those attending that William Penn's wish for the establishment of a "greene Country Towne" in the Delaware Valley has been honored for over 300 years. ☉

Elizabeth Hume is Director of the Education Department of the American Horticultural Society.



Joan Sayers Brown

# Water Gardens

BY JOAN SAYERS BROWN

Water gardens vary greatly in size and shape, but they all have a common denominator: their owners enjoy them tremendously. The water gardens surveyed here range from one that is large and complex to others that occupy medium to small, manageable areas.

Mr. and Mrs. Michael Zajic have a water garden as one of several "rooms" in their large garden. Mr. Zajic, who is a landscape designer, regards water as "the voice of a garden. When anyone makes a garden, it's his own little bit of Eden, a reflection of nature," he says. "The full complement of nature includes earth, air and water. A water garden gives a voice to a garden with sound and visual motion; the goal is to make it as natural as possible, so one must observe nature closely."

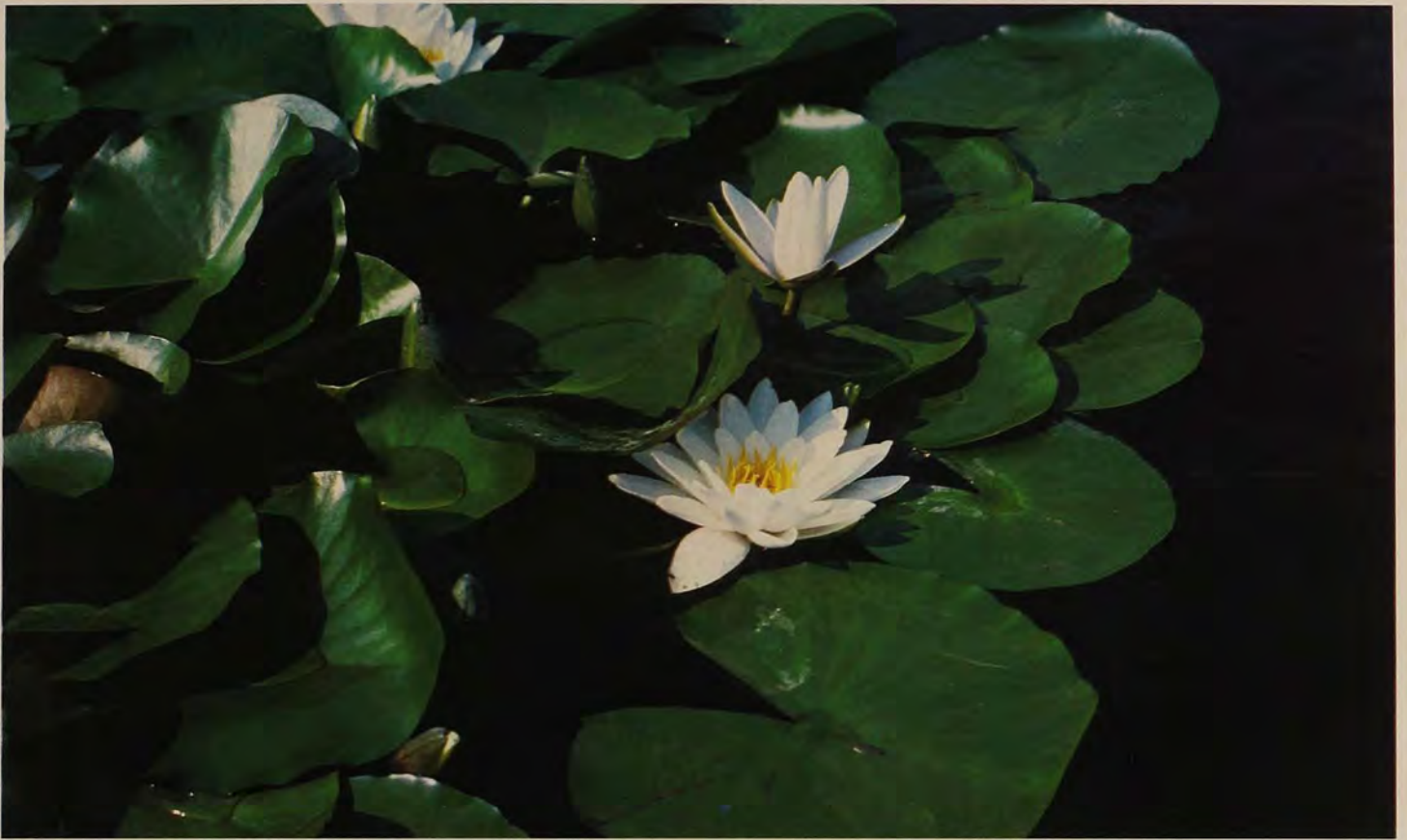
Because the Zajics' garden and neighborhood contain many deciduous trees, they spread a plastic net over their pool in the fall to catch the leaves. "If leaves are in the pool when the water freezes over, they will produce methane gas and poison

the fish, who cannot escape." The 4,000-gallon pool has a recirculating pump for its waterfall. Zajic estimates that the level of an average water garden drops one inch per week during the summer months; it can be replenished with a garden hose in about half an hour.

He has built his water gardens to last a lifetime, given proper care. Zajic recommends a site that receives full sun for at least five hours a day, because water plants need that much radiation to bloom. As a result of his own experience he does not advise putting the pond under deciduous trees, which shed leaves, nuts, sap and twigs.

The shape of the pool should be dug into the ground. "Don't make it all on a slope, part of it should be fairly level. There must be a deep place, over two feet, but three to four is preferable, for the fish. Deep water is necessary for their growth, and in cold weather they need a place where the

*Continued on page 43*



ABOVE LEFT: The Zajic water garden.

ABOVE RIGHT: A hardy water lily, 'Virginalis'.

LEFT: What was once a small, plain yard is now a delightful garden at the Washington, D.C. home of Susanne Shaw, an interior designer. She asked her friend, landscape gardener Michael Zajic, to create a care-free area for outdoor living and entertaining, actually an extension of her house. Zajic designed a water garden complete with waterfall and a flagstone patio that blends with the stones edging the pool.

Hungarian born Susanne talks to her Koi in her native language, and they swim to the edge of the pond at the sound of her voice. Mr. Zajic believes that fish are essential to all water gardens because they eat mosquito eggs and add an important decorative touch. Says Zajic, "Koi live to be 100 years old and are passed down through generations in Japan. They see and hear; they learn to know their master and are aware of individuals but may hide from strangers. Tame fish not only eat from their master's hand but will come and rub against the hand affectionately." Koi come from Japan, goldfish from China; both are of the carp family.

Hardy, tall pickernel rushes, *Pontederia cordata*, native to the East Coast, attract butterflies and bees. *Eichhornia azurea*, commonly called peacock hyacinth, blooms in the hottest time of the summer in response to temperature; its roots provide an excellent place for fish to hide, eat and spawn. Hardy arrowhead, *Sagittaria lophotocarpus*, blossoms with a white flower from spring to frost.



Joan Sayers Brown

ABOVE: Twenty years ago Mr. and Mrs. David Varner, of Washington, D.C., decided to add a small freeform water garden at the edge of their brick patio. A small re-circulating pump keeps the four-by-six-foot (approximate) pool practically maintenance free. A single hardy water lily, 'Comanche', blooms during the summer months and remains potted in place through the winter. Boards with a layer of straw cover the pool during the cold weather, protecting the lily, snails and fish. Mr. Varner cleans the pool in the spring, allowing the water to purify before returning the fish and snails to their home. The only problem the Varners have encountered has come from a family of raccoons who live in a tree a block away and consider the snails a delicacy. Their nocturnal raids leave dead fish and torn plants and have prompted Mr. Varner to construct a lightweight, protective screen to cover the pool at night.

RIGHT: The Japanese water garden at Hillwood, the Washington, D.C. estate of the late Mrs. Marjorie Meriweather Post, designed by Shogo J. Myaida of Tokyo, is an excellent American example of pure Japanese landscape art. Each stone, each plant has been carefully selected for its place in the garden.

The hill around the waterfall is planted with dwarf evergreens, azaleas and English ivy. "Snow" lanterns, traditional to temple and tea house gardens as well as other gardens, illuminate pathways. Stepping stones meander across the mid-level pond. Taebok Kang of Washington Woodworking Company, Inc., received the Building Congress award of excellence for his design and construction of the two redwood bridges. A Japanese maple provides an accent color. Other interest comes from the umbrella palm (*Cyperus alternifolius*) below the bridge, which is removed to the greenhouse during the winter. Steward Bankert, the garden's horticultural advisor, reports that this garden area is almost maintenance free except for pruning once or twice a year.

Water lilies in the lower pond are the hardy 'Virginia' and 'Mrs. C.W. Thomas'.



Joan Sayers Brown





ABOVE: 'Aquarius' water lily

CENTER: A large pond (20 by 30 feet, 9,000 gallons) forms the focal point of a garden behind an elegant Victorian house in Washington's Georgetown section. Lester Collins, A.S.L.A., designed this water garden in consultation with its owners, Mr. and Mrs. Robert Edmund Lee, in 1961. San Jose junipers pruned into square topiaries repeat the shapes of the cantilevered stones on either side of the rear wall. A waterfall flows over those to the left, while those on the right form steps. Koi, common goldfish and calico fantails (Shubunkin) swim among the iris and water lilies, which include both tropical and hardy varieties. Toward the center of the pond is a special peach-colored hardy lily, 'Mrs. C.W. Thomas', named in honor of the wife of the owner of Lilypons Water Gardens.

BELOW: The Alexandria, Virginia water garden of Mr. and Mrs. David Ginsberg is the focal point of a formal rectangular rose garden bordered with English boxwood (*Buxus sempervirens*).

Bronze statues decorate the edge of the surrounding wall, which serves as a seat. This edge was rebuilt in 1972, although the pool is over 55 years old. Selective plantings provide an uncrowded environment so that life in the water garden remains healthy. The two hardy water lilies are cut back and repotted each spring, but the two tropical specimens must be replaced each year, as is the papyrus (*Cyperus papyrus*). Oxygenating plants and snails, which remain year after year, help maintain an ecological balance. Bright comet goldfish (*Carassius auratus*) thrive here and are fed twice a week. A pinch of Terramycin soluble powder added to their regular fish food protects them from disease. Happily the fish are self-sufficient creatures. When the Varners go on vacation they don't worry about them since the fish can survive on natural food in the water such as mosquito larvae.



Pamela Harper

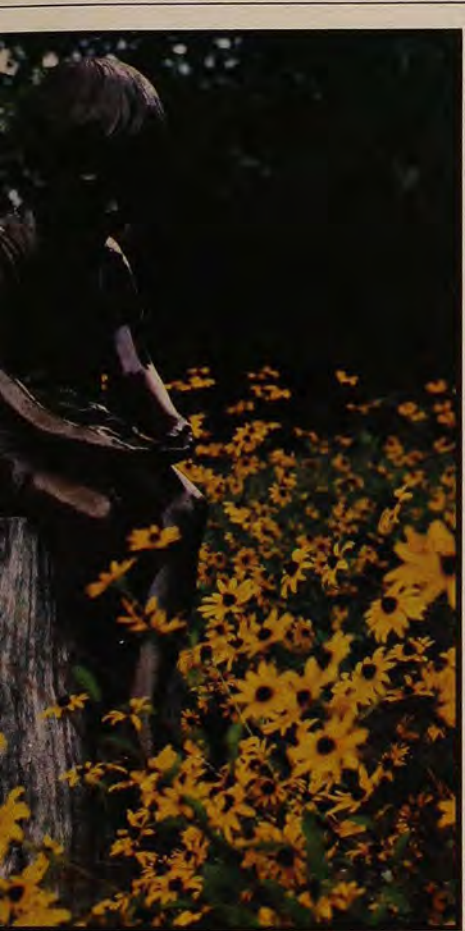


J. W. Gray

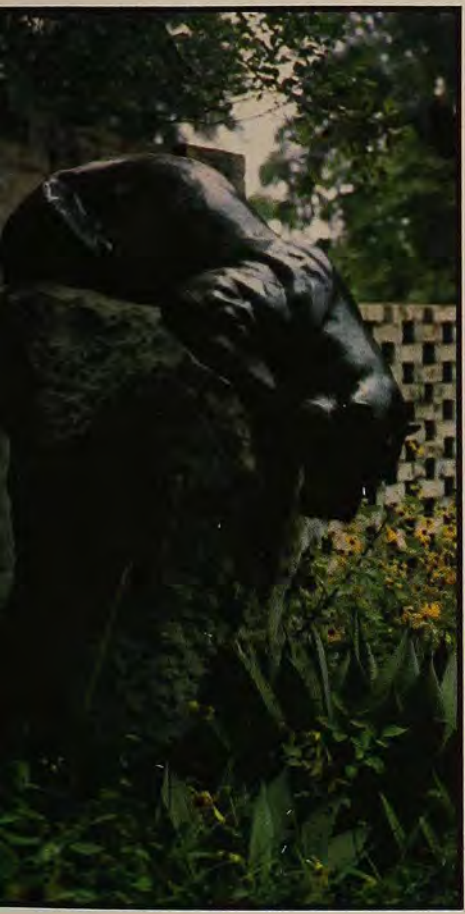


# Brookgreen

BY STEVE BENDER



Steve Bender



Steve Bender

Every small town should have something to recommend it. Murrells Inlet, South Carolina, does. It is home to Mickey Spillane, famous mystery writer and the Back Porch restaurant, featuring the sincerest of pecan pies and southern waitresses. But, most of all, it is where one finds Brookgreen Gardens, this country's foremost sculpture garden.

Brookgreen Gardens sits on a narrow peninsula, called Waccamaw Neck, between the Atlantic Ocean on the east and the Waccamaw River on the west. The site embodies the very essence of southern flora. There are live oaks (*Quercus virginiana*), their massive arms majestically brushing the ground; bald cypresses (*Taxodium distichum*), with knobby knees peering like periscopes above the marsh water; and Spanish moss (*Tillandsia usneoides*) smothering every tree branch and telephone line in sight. The sandy soil supports forest stands of longleaf pine (*Pinus palustris*) and turkey oak (*Quercus laevis*) and an occasional palmetto (*Sabal* sp.).

Brookgreen Gardens began as a conglomerate of old rice plantations purchased for use as a summer home in 1930 by Mr. and Mrs. Archer Huntington. At first the gardens were viewed solely as a splendid sanctuary for Mrs. Huntington's sculpture (she was a well-known sculptress). However, the Huntingtons' vision soon widened. They saw Brookgreen becoming a museum without walls housing a representative collection of American sculpture from the 19th century onwards. Feeling that art is best seen in the midst of nature, they determined to surround it with a wide variety of plants and animals native to the southeastern United States.

The initial step in constructing the original gardens was to build a winding, open-work brick wall to define the grounds. The red brick was sprayed with cement, giving it a gray tone so it would harmonize with the Spanish moss hanging from the trees. The rambling wall's many niches made ideal

places for locating sculpture. Inside the wall, Mrs. Huntington designed the garden walks in the shape of a butterfly with outstretched wings. Within two years, the gardens were opened to the public.

Brookgreen's entrance from Highway 17 is about the most dramatic imaginable. Standing high atop a block of stone is *Fighting Stallions*, a magnificent aluminum sculpture by Anna Hyatt Huntington, and one of the largest castings in this material ever attempted. The awesome power of the piece arrests the eyes of would-be passers-by and bids them enter.

Mrs. Huntington apparently favored equine sculpture, for two of the gardens' other dominant pieces also feature horses. *Riders of the Dawn*, with its heroic horsemen atop mighty steeds, is the focus of the Dogwood Garden. Designed by A. A. Weinman, *Riders* was carved from two blocks of Indiana limestone, each weighing 40 tons. On the western side of the gardens reigns *Pegasus*, a monumental work carved of Mt. Airy (N.C.) granite by Laura Gardin Fraser. The winged horse, riding the clouds, was carved on the site from three separate stone blocks, an effort that required over four years to complete.

Through donations and purchases, Brookgreen continually acquires new sculpture in a variety of materials, including marble, limestone, granite, aluminum and bronze. The Museum of Small Sculpture, an unroofed building of cement-sprayed brick, houses a wide selection of smaller pieces that cannot be accommo-

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ABOVE, FAR LEFT: At left, *Flamingo*; at right, *Black Necked Stork*, both by Paul Manship.

MIDDLE: *Dionysus* by Edward McCartan.

TOP RIGHT: *Long, Long Thoughts* by Charles Parks.

LEFT: *Swans*, by Gaston Lachaise, in the Dogwood Pond.

RIGHT: *Jaguar* by Anna H. Huntington, poised over *Agave parryi*.

# Seaside Gardening

TEXT AND PHOTOGRAPHY BY PAMELA HARPER



Seaside gardens are a mixed blessing. Summers are cooler than they are inland; winters are warmer; spring and autumn frosts are farther apart; summer breezes lower humidity, making the garden a pleasanter place to be and lessening the likelihood of the insect and fungus infestations that occur when the air is stagnant. Gusting, salt-laden gales are the other side of the coin, blackening and defoliating plants, and sometimes tearing them out of the ground.

The soil is usually sandy. Sand warms up early in the year, so seashore gardeners have a head start over those inland, which is particularly advantageous in the vegetable garden. Sand is easy to dig, and it can be worked or walked on after rain without damaging its structure. Sand absorbs water rapidly, with little lost to runoff. On the other hand, sand dries out fast, it is usually low in nutrients, dry sand may drift, and although fast-draining, sand can get waterlogged if underlain by the tight-packed layer of subsoil called hardpan.

Favored trees and shrubs for shelter belts include pines, spruce, oaks, white poplar (*Populus alba*), autumn olive (*Elaeagnus*

*umbellata*), arrowwood (*Viburnum dentatum*), wild thorns, bayberry (*Myrica* species), various privets, inkberry (*Ilex glabra*) and, in the mildest regions, such evergreens as *Escallonia* and *Griselinia*. Massed planting of a single species is unwise because if (as with the elm) a pest or disease destroys that species, then all is lost; with a mixed planting you don't have all your eggs in one basket. Be guided by local knowledge: Japanese black pine (*Pinus thunbergiana*, formerly *P. thunbergii*) is one of the hardiest and most salt- and wind-resistant evergreens, but in some areas it is being decimated by nematodes. Whatever is chosen, plant them close for mutual protection, being prepared to do some thinning later if necessary.

One of the world's most famous seaside gardens is Tresco Abbey in the Scilly Isles off the coast of England. A century ago it was bleak and bare, with such vegetation as could survive kept low by sweeping

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ABOVE: Wild roses and *Myrica pensylvanica* on a Martha's Vineyard beach.

RIGHT: Sea oats, *Uniola paniculata*, is an excellent plant for stabilizing the sandy soil of a seaside garden.



winds. Now the range of plants grown there is similar to that of Southern California. Shelter belts made this possible, using oak, Monterey cypress and Monterey pine. Monterey cypress (*Cupressus macrocarpa*) is a fast growing evergreen much used for filtering salt-laden breezes, but it is cold hardy only to U.S.D.A. Zone 7b. Over the last 20 years its place in English gardens has been taken by a comparatively new hybrid, the Leyland cypress, X *Cupressocyparis leylandii*. This has the distinction of growing more rapidly than any other evergreen, making a narrow screen as much as 20 feet high in five years from a cutting. Three forms of Leyland cypress are sold in the United States, having green, yellow-green or gray-green foliage. There is an attractive form raised, I believe, in the United States that has foliage speckled with white. Leyland cypress is hardy to Zone 6/7.

If the garden is too small for a shelter belt, then a wall, fence, hedge or the banked sand of dunes must provide protection. A solid wall may not be the best choice. When wind hits an impenetrable barrier it does not stop but goes over the top, or through such gaps as gateways, continuing with undiminished force and often wreaking more havoc than if no barrier had been there at all. Filtered wind goes on its way more gently, and tests have shown that 55 percent density is ideal. A wall of pierced concrete block or openwork brick is usually better than a solid one. A hedge might be the best choice were it not for the labor of keeping it trimmed.

With some of the bite taken out of the wind, there remains the sand. If it needs stabilizing, some of the best plants for the purpose include sea buckthorn (*Hippophae rhamnoides*), sea oats (*Uniola paniculata*), *Rosa rugosa*, and such native roses as *R. carolina* and *R. virginiana*. Temporary barriers (snow fence might be used) will be needed until the plants become well anchored.

When hardpan or clay underlies the sand, as it does in my own garden, spot treatment consists of boring holes with an auger and filling these with stones and gravel. A commoner solution is raised beds, often edged with rail ties, or with planks of salt-treated, rot and termite resistant lumber. Because it can be bent to a curve, my own preference is for one-by-six-inch redwood strips, obtainable from lumberyards in lengths up to 16 feet. A tip: if the edging strip is insufficiently curved for your purpose when bent as far as it seems to want to go, knock in a stake (a garden fork does the job if you have one temporarily to spare)



TOP: *Rosa rugosa*, another excellent plant for stabilizing sandy soil, has attractive rose to white flowers and ornamental hips that turn red in the fall.

BELOW: Drought resistant perennials suitable for the seaside garden: *Opuntia*, *Yucca*, *Gaillardia*, *Asclepias*, *Hydrangea*, *Verbascum*.



Pelargoniums in terrace containers by the sea.

to hold it in that position, then leave it for a few weeks. The redwood strip can then, with ease, be bent further. Raised beds need extra soil to fill them. Where I live topsoil is scarce, expensive and of poor quality, but wood mulch and sawdust are available. Paths alongside the beds were made by digging out a foot or more of soil (using this for the raised beds), putting a thick layer of overlapping newspapers at

the bottom of the trench, then filling it with sawdust topped with mulch.

Raised beds dry out fast and mulching is advisable. Through a rainless summer my most drought-resistant plants were *Abelia X grandiflora* and *A. 'Edward Goucher'* (Zone 6 hardy), Indian-hawthorn (*Raphiolepis*) and Jerusalem-sage (*Phlomis fruticosa*), both hardy to Zones 7-8, rosemary (Zone 7), *Yucca filamentosa*

(Zone 5), prostrate junipers, (*Juniperus horizontalis*), (Zone 2), the Zone 4 hardy butterfly weed, gaillardia, daylilies, *Opuntia humifusa*, moss-pink (*Phlox subulata*) and the even hardier creeping, ground-covering *Potentilla tridentata*, which I have found to be the very best carpeter for sun and sand. Magnolias, to my surprise, fared well. Dogwoods suffered worst. Geraniums (*Pelargonium*) are among the best container plants for seaside gardens.

There are two approaches to gardening on sand. The sand can be turned into loam by adding (and forever continuing to add) quantities of such humus-forming material as peatmoss, compost, leafmold, manure and (nature's bounty for those who garden by the sea) seaweed. The other course is to grow plants that like, or at least put up with sand. How can you tell what these are? Under seashore conditions it doesn't do to take something home from the garden center just because it's pretty. Most of the best seashore plants have leaves that are either slender or needlelike, gray, tough and leathery, or thick and fleshy, usually a combination of two or more of these qualities. These are all ways in which plants reduce transpiration and thus protect themselves against the desiccating effect of cold, wind, heat and salt.

Another clue lies in the family to which a plant belongs. Brooms (*Cytisus*, *Genista*, *Spartium junceum*), indigos (*Indigofera*), lead plant (*Amorpha canescens*), bladder senna (*Colutea*) and pea-tree (*Caragana*) all belong to the Leguminosae or pea family. A characteristic of this family is the presence on the roots of little nodules caused by nitrogen-fixing bacteria.

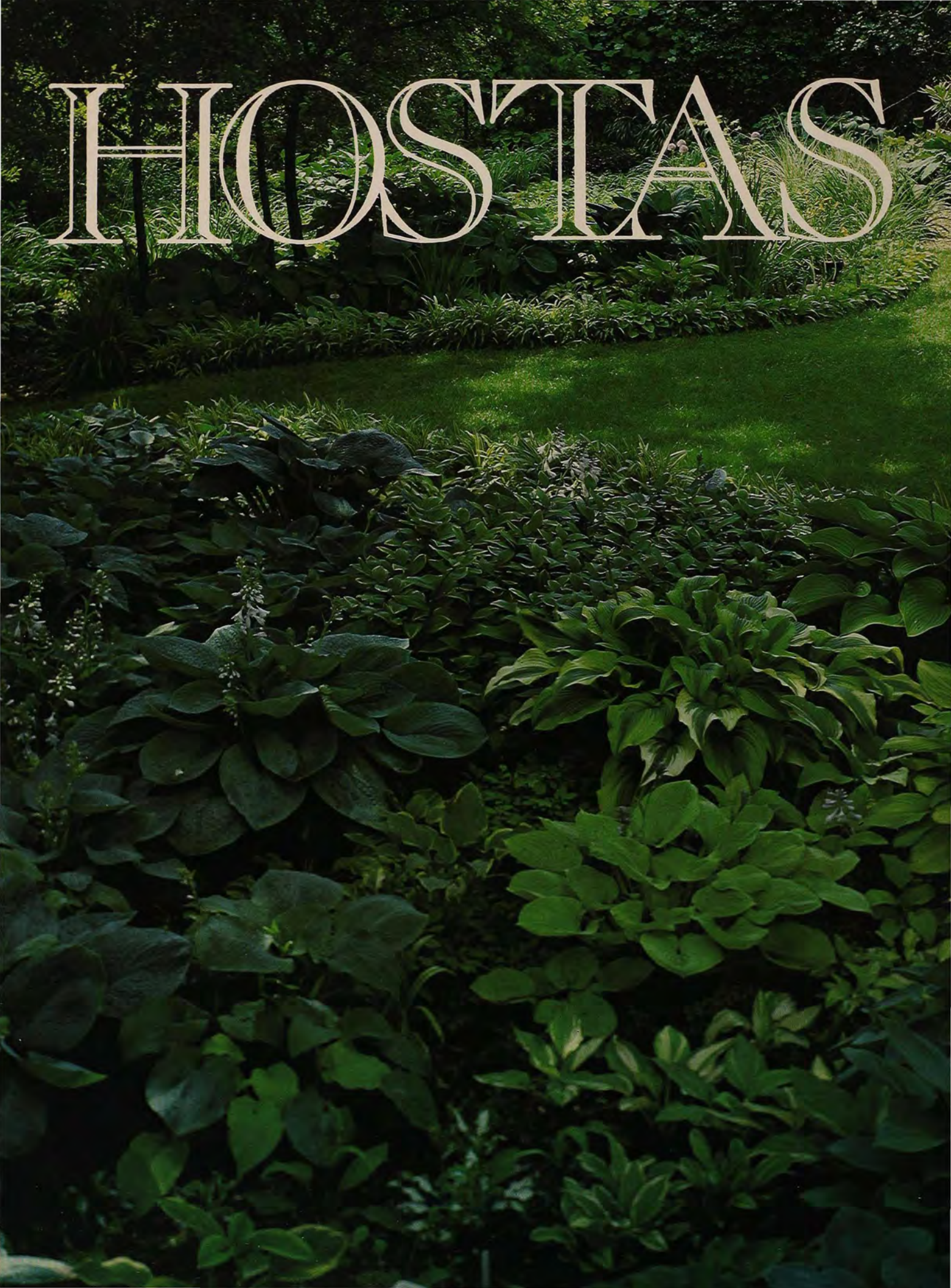
Garden encyclopedias list plants recommended for seashore gardens. *Wyman's Garden Encyclopedia* is a helpful guide for East Coast gardeners, *Sunset's Western Garden Book* for those on the West Coast. The names of plants offer further clues. Anything with the botanical name *maritima* ("of the sea") is a likely candidate. Popular names to check out are those containing the words beach, coast, sea, shore, sand and salt. The plants listed below are among the best.

#### TREES AND SHRUBS

- Sea buckthorn (*Hippophae rhamnoides*). Zone 4. Inland this grows tall, but on beaches it makes huddled, sand-stabilizing thickets of dense, suckering stems. The deciduous leaves are slender and gray. Rated A-1 for ruggedness, its most ornamental feature is the orange berries that wreath the thorny branches of female

*Continued on page 42*

# HOSTAS





Japan is a country rich in plants suitable to the American landscape, and, as a result, Japanese species and cultivars commonly grace our gardens. Hostas are no exception. Their lush, variable foliage and shade-loving tendencies have made them popular perennials in this country. Not only can hostas be found growing wild in Japan, but the Japanese have also used these plants very creatively in their gardens. Since the Japanese have found so many uses for this plant and have expressed such an interest in the new, exciting cultivars American breeders are producing, I was happy to accept an invitation from the Japanese Horticultural Society to visit and lecture there.

Soon after my arrival my hosts took me on a plant hunting expedition. Imagine my delight at finding hostas growing in the wild—out of thin cracks in sheer, granite cliffs overhanging a stream and sometimes competing with tree roots as they barely hung onto rocks. Any doubts I had about the rugged quality of these plants were quickly dispelled. I found hostas growing in areas ranging from the deepest shade to full sun—plants in sunny situations typically thrived most profusely near a body of water.

Hostas were also prevalent in Japanese gardens. They were used as background, foreground, rock garden, ground cover and edging plants. The Japanese love of hostas is so great that they were naturally interested in the new American hybrids I showed them. Our bright golds, intense blues and margin and medio-variegation types created a sensation (see a list at the end of this article). But for me, it was Japanese ingenuity in using this plant, whether species or the newest cultivar, that intrigued me the most on my trip.

Imagine seeing pots of hostas decorating a sidewalk, front or back porch, hostas as sentinels at gate entrances, or masses of them planted along the steep banks of irrigation canals as beautiful and effective erosion control.

In Japan, *Hosta* is even a food crop. In the shaded, mountainous areas, particularly in the north, the stems of young *H. sieboldiana* and *H. montana* are sliced into one-inch chunks, boiled and eaten with a sweet, soy-type sauce. Young hosta leaves are dipped into an egg batter and deep fried tempura-style. In a country where open, arable land is at such a premium, this use of shaded areas to produce hosta vegetables is a virtue.

The Japanese use hostas as edging plants around trees and flower beds, especially

those in the middle of lawns. Their presence apparently makes it easier to mow a neat edge. All of these hostas overhang the walk-edge as well as the empty horizontal space between adjacent plants, leaving little room for weeds to grow. Gold-leaved cultivars are particularly effective edging plants in the shade because they seem to light up dark areas. Variegated hostas in white or yellow are attractive in either sun or shade. Hostas with very glossy leaves or ones with unusual foliage texture or color (like blue) are also very effective as edging plants. In general, the hostas used as edging plants are lower, neater and have less visual impact than the bedding plants found in Japanese gardens.

At larger sites, the Japanese use hostas very effectively as ground covers. They work as a tidying-up device, converting unsightly waste areas, such as the area under shallow-rooted trees or slopes where few plants could hold the soil, into attractive spaces. The flow and rhythm of their intermeshing foliage create a tasteful, impressive, but low-maintenance site. Hostas perform well in spaces between rocks or tree roots, or on sharp slopes, particularly when they are set in place in clump strength. Finishing such areas with hostas used as ground covers, and converting them from unattractive eyesores into areas of the garden that provide a sense of comfortable repose, is a most satisfying triumph of Japanese gardening.

Stoloniferous tendencies are more tolerable in ground cover plants than in plants used for edging. In fact, such tendencies are desirable in ground covers used to control erosion on slopes. Many narrow-leaved hostas tend to be mildly stoloniferous. None could be called invasive. Some good examples of stoloniferous hostas especially suitable as ground covers are *H. 'Celebration'*, *H. 'Ginko Craig'* and *H. 'Ground Master'*. Hostas that the Japanese use as ground covers are more varied in size than those used as edging plants. In general, the size of the plants increases (even up to four feet) as the depth of the bed becomes larger or as the plants are placed farther into the background. This is not a rigid rule. Fragrant-flowered hostas are planted near the front of beds where their aroma can be enjoyed in the prevailing breezes.

Fortunately, many dwarf hostas are

Because of the variety of color, shape and texture of hosta foliage, to say nothing of their flower color during the summer, it is possible to create a garden of considerable beauty with hostas alone, as this photograph suggests.

available for use as ground covers in rock gardens. Typically, cultivars selected for use as ground covers in rock gardens are more exciting in color than those used as edging plants. Masses of blue-leaved hostas adjacent to splashes of yellow- or gold-leaved cultivars effectively reinforce one another. Some gold cultivars color nicely in the shade and will perk up what would normally be a dull spot. Many almost seem

to glow at dusk. Other good choices, particularly for sunny areas, are hostas that have especially glossy-green foliage or have yellow variegation at the leaf margin or within the center of the leaf (medio-variegation).

The Japanese use some hostas as specimen plants. These, of course, are plants selected for their great visual impact. The medio-variegated hostas are especially effective when used in this manner.

Variegation combined with other interesting foliage characteristics such as leaf shape, texture, finish and the possible presence of unique flower fragrance, color and arrangement of buds and placement on the scape (including branching) and unique size (including dwarfs as well as giants), make it easy to understand how an individual cultivar with the right combination of qualities can become an attention getter.

Japanese gardeners know how to highlight their specimen hostas. They are generally presented either as individuals or in groups of three and are often elevated and positioned closer to the viewer, no matter what the size. Either more space is allowed around them or they are set against a neutral background that does not compete for attention. Specimen hostas are particularly effective in small gardens and work very well with companion plants such as astilbe, ferns, iris and daylilies.

Hosta flowers have been greatly improved in size, form and arrangement in recent years. In Japan, during midsummer, flowering hostas help to bridge the gap between the June and fall flower seasons. It is also not surprising to see hosta flowers used in bouquets and arrangements. The ability of the Japanese to use a single hosta leaf as a foil in a corsage or arrangement as well as many hosta leaves as fillers in flower bouquets is a use of the plant I had not seen. It might even be worthwhile to grow hostas indoors during the winter season just for this purpose.

It is easy to accept the idea that as a gardener gets older, his or her zest for maintenance changes. The older the garden—and gardener—the more likely the garden is to be shadier. Maybe it was a coincidence, but I found more hostas in Japanese gardens that belong to older gardeners. No longer able to maintain a demanding maintenance schedule, they find hostas are a blessing. With no staking or pruning, minimal spraying, replanting, fertilizing or weeding, hostas work well for them.

The Japanese have a special gift for working with companion plants. Their

combinations of hostas used with peonies, daylilies, iris, conifers and ferns cause each plant in the planting to magnify the beauty of every other plant. I was unprepared for the number of Japanese shade gardens in which hostas predominate. This is easier to accomplish than would appear at first blush. Hostas offer a tremendous range of size, form and other attributes, which maintain interest and at the same time continuity.

***Japanese gardeners know how to highlight their specimen hostas. They are generally presented either as individuals or in groups of three.***

American gardeners ought to know that hostas generally succeed from mid-Alabama (around Birmingham) to latitudes in mid-Canada. There are some hosta species from southernmost Japan that may succeed farther south, but they have not been fully tested. Hostas in Florida and Texas have problems. In general, the hosta success range varies with the amount of rainfall and average temperature. Since altitude affects average temperature, and waterholding ability of the soil determines the amount of rainfall needed, these too are factors along with the amount of shade.

Hostas are extremely long-lived, permanent foliage plants. For some reason, people just don't throw hostas away. They look best when they are planted right the first time and then left alone to mature. In fact, a minimum of two years growth at a given site is necessary for a hosta to show its typical color. A minimum of three to five years may be necessary for your hosta plant to show its many attributes.

The moisture transpired by a plant varies with leaf surface area. To keep your hostas at their peak, especially during hot and dry summer heat, pick a shady site. A high shade canopy that provides dappled shade is ideal. The blue-foliaged hostas certainly hold their color better in areas with considerable shade, and the blue color will also last longer if you avoid watering with a high pressure hose. Some golds color

## HOSTAS for food

Both the petioles and young leaves and young shoots (just emerging from the ground) of *H. montana* 'Aureo Marginata', *H.* 'Frances Williams' and *H.* 'Samurai' have been used in a number of different ways.

- Young leaves can be used to wrap rice balls or meat balls (as a substitute for cabbage leaves).

- Hosta salad can be prepared by cutting leaf petioles into short pieces about one inch long. Remove the skin and boil slightly so as not to lose the green color. Toss the pieces with a dressing made of a nut or sesame paste, salt, vinegar and sugar to taste. Try a little soy sauce also.

- A tempura dish can be prepared by using young leaves or cut-up young shoots (before the blade opens). These can be covered by a batter of egg and bread crumbs and then deep fried. The Japanese are very interested in cooking with native plants, and many programs dealing with hosta cooking are seen on their TV.

- Flower buds can also be prepared tempura style. Wash and dry the hosta buds. Dust well with flour and dip into a batter made of 2 egg yolks, 1 cup water, 1 cup flour, ½ tsp. salt. The oil for deep frying should be kept hot (about 365°-370°F) so the flowers quickly fry to a golden color.

Make the following sauce to dip them in for serving: 2 avocados, ¼ cup mayonnaise, 1 garlic clove, mashed, 2 Tb. lemon juice and a dash of Tabasco sauce.

Mash avocados and combine all ingredients. A drop of green food coloring may be added for proper eye appeal. Chill at least one hour before serving.

up nicely in the shade, others require more sun to show their best color. In general, plants with white either in the margin or as medio-variegation are very effective in the shade. Combining blue and gold hostas in shade areas works well.

Think of your hosta plants as fountains or air conditioners. A considerable amount of moisture will evaporate from their leaf surfaces, especially during hot, dry weather. The plants not only look cool, they can also be cooling. The more you can get your soil to retain moisture (but still have drainage), the better your plants will look. If you have sandy soil, add large quantities (up to 50 percent) of organic matter such as peat moss, leaf mold or well-composted manure by sifting it into the soil with a fork. Heavier clay soils need to have less compost added. One-third cup of super-phosphate, osmocote or any slow-release, complete fertilizer mixed in with the soil mix doesn't hurt. Hostas will thrive amazingly well with little or no additional fertilizer treatment. Once your hostas have developed a good root-hair system, they can withstand drought even in full sun. You may have to be a bit more generous with your watering during the first summer.

Hostas can succeed in sunny sites. This is particularly true of plants with glossy foliage, those with yellow and/or green foliage or those that are in established clump strength. Of course, greater sun exposure results in greater moisture loss from the foliage, so your soil may have to be beefed up to better retain moisture.

Hostas are relatively pest-free. Taxus weevils and inch worms may cause some damage. Unless you are extremely fussy about the perfection of every leaf, the amount of damage done probably does not warrant a spray program. Slug damage seems to vary with the amount of rainfall in May. Since slugs prefer soft, immature growth, the most critical time for slug control is when the plants have just emerged from the ground. Reduce slug damage by avoiding a watering pattern that leaves your plants wet before dark. Finding slug hiding places is the main key in control. Planning for garden ventilation along with leaf cleanup and the removal of masses of slug eggs helps. The slug eggs are worth looking for. They are tan, in groups of 25 or more, about one-eighth inch round and somewhat transparent. They are often found in discarded containers left out-of-doors for the winter. The chemical metaldehyde is widely sold as a bait-poison. It is more effective when spread in small piles at dusk.

Two drops of rubbing alcohol applied to the head of a slug also usually works. Dregs of beer placed at dusk in old jelly jars or plastic covers seem to be a powerful slug attractant and killer (no brand preference shown). In general, pest damage diminishes as your plants mature and have better substance (it makes for tougher chewing).

Hostas are really indispensable to any garden that provides suitable conditions

for their growth. If American hybridizers continue to produce so many new and desirable types, and if Japanese gardeners continue to show the world just how versatile hostas can be, a long and happy future is assured for these plants. ◉

Paul Aden is a former editor of the *American Hosta Bulletin* who now works full time in developing and testing low-maintenance perennials for the garden.

# HOSTAS

## to buy

For those of you who would like to take the hosta plunge and would like a sure-fire Baker's Dozen to start with:

- *H. 'Blue Skies'*—foreground size for groundcover use; heavy blue; very floriferous; hyacinth-like flowers; good grower; shade to half sun.
- *H. 'Blue Umbrellas'*—huge, background size that impresses in a wide range of microclimates; blue, heavy-substantiated leaves with super texture; bound to be a classic; cap-like leaves can easily keep rain off head; shade to full sun.
- *H. 'Francee'*—foreground size for groundcover use; ovate shaped leaves of blue-green have a white margin; vigorous grower; shade to three-quarters sun.
- *H. 'Frances Williams'*—huge, background size for specimen or groundcover use; large, round, puckered leaves have a broad, irregular yellow margin and a blue-green base; shade to half sun.
- *H. 'Ginko Craig'*—foreground size for use as edger, groundcover or in rock garden; lance leaves with frosted green base with white margin; shade to three-quarters sun.
- *H. 'Gold Edger'*—foreground size for use as edger; good substance, gold, ovate leaves in neat mound; rapid grower; half shade to full sun.
- *H. 'Gold Standard'*—background size for specimen or groundcover use; ovate leaves have yellow base with blue-green margin; rapid grower; three-quarters shade to half sun.
- *H. montana 'Aureo-marginata'*—huge, background size for specimen use; leaves with green base have broad, irregular yellow margin (turns

cream); shade to three-quarters sun.

- *H. 'Shade Fanfare'*—foreground size for specimen or groundcover use; yellow base (turns light green) with broad, cream margin; floriferous; shade to full sun.
- *H. tardiflora*—dwarf species for either edging, groundcover or rock garden; dark-green, glossy, lance leaves with reddish petioles; neat mound; floriferous; fall flowers are long lasting; rapid grower; shade to full sun.
- *H. tokudama 'Aureo-nebulosa'*—foreground size for specimen use; round, cupped, puckered leaves with a flushed yellow base have blue margin; slow growth; one-quarter to three-quarters sun.
- *H. tokudama 'Golden'*—golden sport of above; beautiful gold; half shade to full sun.
- *H. ventricosa 'Aureo-marginata'*—background size for groundcover or specimen use; glossy, pinched leaves with blue-green base have broad, irregular margin of yellow (that turns cream); rapid grower; choice; shade to three-quarters sun.

Other bright golds of merit include 'Golden Prayers', 'Gold Pan', 'Gold Standard', 'Midas Touch', 'Piedmont Gold' and 'Zounds'.

Other blues of merit include 'Big Mama', 'Blue Angel', 'Blue Moon', 'Blue Wedgwood', 'Hadspen Blue', 'Love Pat', 'True' and 'True Blue'.

Other margin and medio-variegation types to consider include 'Celebration', 'Cheese Cake', 'Flamboyant', 'Variegated', 'Fringe Benefit', 'Golden Tiara', 'Janet', 'Ground Master', 'Reversed' and 'Samurai'.

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**SOURCES**

**ALLIUMS**

Ornamental onions are available from the following nurseries and seed companies.

**Plants**

Gardens of the Blue Ridge, P.O. Box 10, Pineola, NC 28662, catalogue free, (ramps, *A. tricoccum*).

John D. Lyon, 143 Alewife Brook Parkway, Cambridge, MA 02140, list free.

Rocknoll Nursery, 9210 U.S. Route 50, Hillsboro, OH 45133, catalogue 40¢ in stamps.

Sunnybrook Farms Nursery, 9448 Mayfield Road, Chesterland, OH 44026, catalogue \$1.00.

Well Sweep Herb Farm, 317 Mt. Bethel Road, Port Murray, NJ 07865, catalogue free.

**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.

**WATER GARDENS**

Water lilies, fountains, bog plants and pool supplies are available from the following sources.

Lilypons Water Gardens, Lilypons, MD 21717 and Brookshire, TX 77423, catalogue free.

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

Van Ness Water Gardens, 2460 North Euclid, Upland, CA 91786, catalogue free.

**SEASIDE GARDENS**

Write for catalogues from Busse, Carroll and Wayside Gardens, whose addresses are listed in the *Hosta* sources list, as well as to the following:

Greer Gardens, 1280 Goodpasture Island Road, Eugene, OR 97401, catalogue \$2.00.

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

**THE DELAWARE VALLEY: A GARDEN HERITAGE**

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*From Seed to Flower—Philadelphia 1681-1876*. Philadelphia: Pennsylvania Horticultural Society. 1976.

*Gardens & Arboreta of Philadelphia & the Delaware Valley*. Philadelphia: Tercentenary Gardens Collaborative. 1981.

*John Bartram*. The John Bartram Association. 1953.



*Allium karataviense*

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- Marion, John Francis. *Philadelphia Medica*. Smith Kline Corporation. 1976.
- Proud, Robert. *History of Pennsylvania*. Philadelphia, 1797.
- Myers, Albert Cook, ed. *Penn's Narratives of Early Pennsylvania, West New Jersey & Delaware 1681-1685*. New York: Barnes & Noble.
- Pennell, Francis W. "Quaker Botanists." *Friends Historical Association Bulletin*. Vol. 37 #1. Spring, 1948.
- Webb, Alfred W. Bennett. *The Fells of Swarthmoor Hall and Their Friends*. London: Alfred W. Bennett, 1865.

**HOSTAS**

Most garden centers and nurseries carry a few types of hostas, but to choose from the full range of possibilities this genus has to offer, gardeners should write for several of the following catalogues and select from among their offerings.

- Busse Gardens, 635 East 7th Street, Route 2, Box 13, Cokatom, MN 55321, catalogue \$1.00.
- Caprice Farm Nursery, 15425 S. W. Pleasant Hill Road, Sherwood, OR 97140, catalogue free.
- Carroll Gardens, P. O. Box 310, 444 East Main Street, Westminster, MD 21157, catalogue free.
- Englerth Gardens, Route 2, Hopkins, MI 49328, catalogue free.
- Klehm Nursery, 2 East Algonquin Road, Arlington Heights and Algonquin Road, Arlington Heights, IL 60005, catalogue free.
- Savory's Greenhouses and Gardens, 5300 Whiting Avenue, Edina, MN 55435, catalogue free.
- Sunnybrook Farms Nursery, Homestead Division, 9448 Mayfield Road, Chesterland, OH 44026, catalogue \$1.00.
- Andre Viette Farm and Nursery, Route 1, Box 16, Fishersville, VA 22939, catalogue \$1.00.
- Wayside Gardens, Hodges, SC 29695, catalogue \$1.00.
- White Flower Farm, Litchfield, CT 06759, catalogue subscription \$5.00.

The American Hosta Society is an excellent source for information about these plants. To join write Mrs. Joe M. Langdon, Secretary, 5605 11th Avenue South, Birmingham, AL 35222. The dues for a one-year membership are \$12.50.

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# PRONUNCIATION GUIDE

## Guide to Botanical Names in This Issue

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".

### *Abelia X grandiflora*

- a-BEEL-ya grand-i-FLOR-ah  
*Aesculus pavia* ESS-kew-lus PAY-vee-ah  
*Alchemilla vulgaris*  
al-che-MILL-ah vul-GAY-riss  
*Allium cepa* AL-ee-um SEE-pa  
*A. cernuum* a. SIR-new-um  
*A. cyaneum* a. sy-ANN-ee-um  
*A. flavum* a. FLAY-vum  
*A. giganteum* a. jy-gan-TEE-um  
*A. karataviense* a. care-ah-tav-ee-EN-see  
*A. moly* a. MOLL-ee  
*A. ostroskianum* a. oss-strow-ski-A-num  
*A. schoenoprasum* a. skone-o-PRAY-sum  
*A. tricoccum* a. tri-KO-kum  
*A. tuberosum* a. too-ber-O-sum  
*Aloysia citriodora*  
al-OYS-ee-ah sit-ree-o-DOOR-ah  
*A. triphylla* a. tri-FILL-ah  
*Amelanchier canadensis*  
am-el-ANK-ee-er can-ah-DEN-sis  
*Amorpha canescens*  
ah-MORE-fa can-A-senz  
*Armeria maritima*  
ar-MARE-ee-ah ma-RIT-i-ma  
*Artemisia stellerana*  
ar-tem-EEZ-ee-ah stell-er-A-na  
*A. lucoviciana* a. lew-ko-viss-ee-A-na  
*Asclepias tuberosa*  
ass-KLEE-pee-us too-bur-O-sa  
*Baccharis halimifolia*  
ba-CAR-iss hal-im-i-FO-lee-ah  
*Buxus sempervirens*  
BUCK-sus sem-per-VEER-enz  
*Callicarpa americana*  
kall-i-KAR-pa a-mer-i-KAN-ah  
*C. bodinieri* var. *giraldii*  
c. bo-din-ee-AIR-ee jir-ALL-dee-eye  
*C. japonica* c. ja-PON-i-ka  
*Carpobrotus chilensis*  
car-po-BROT-uss chi-LEN-sis  
*Caragana* kar-a-GAN-ah  
*Caryopteris X clandonensis*  
care-ee-OP-ter-iss clan-do-NEN-sis  
*C. incana* c. in-KAN-ah  
*Citharexylum fruticosum*  
kith-ah-rex-ZY-lum fru-ti-KO-sum  
*Clerodendrum fragrans pleniflorum*  
kler-o-DEN-drum FRAY-granz  
plen-i-FLOOR-um  
*C. philippinum* c. fill-i-PINE-um  
*C. thomsoniae* c. TOM-son-ee-ee  
*C. trichotomum* c. try-KOT-o-mum

### *Clethra alnifolia*

- KLETH-ra all-ni-FOE-lee-ah  
*Chasmanthium latifolium*  
kas-MAN-thee-um lat-i-FOL-ee-um  
*Colutea* ko-LEW-tee-ah  
*X Cupressocyparis leylandii*  
kew-press-o-cy-PAIR-iss lee-LAND-dee-eye  
*Cupressus macrocarpa*  
kew-PRESS-us mack-ro-KAR-pa  
*Cyperus alternifolius*  
sy-PAIR-us al-ter-ni-FO-lee-us  
*C. papyrus* c. pa-PY-russ  
*Cytisus* si-TEE-sus  
*Cyrilla* si-RILL-ah  
*Dictamnus albus* dick-TAM-nuss AL-buss  
*Duranta plumieri*  
dur-ANT-ah plu-mee-AIR-ee  
*D. repens* d. REE-penz  
*Eichhornia azurea*  
ike-HORN-ee-ah az-ur-EE-ah  
*Elaeagnus umbellata*  
el-ee-AG-nus um-bell-A-ta  
*Elodea nuttallii* el-o-dee-ah nuh-TAL-ee-eye  
*Erigeron glaucus* er-IJ-er-on GLAW-kuss  
*Eryngium maritimum*  
air-RIN-jee-um ma-RIT-i-mum  
*E. planum* e. PLAY-num  
*Escallonia* ess-ka-LO-nee-ah  
*Eupatorium coelestinum*  
yew-pa-TOR-ee-um so-less-TY-num  
*Foeniculum vulgare*  
fee-NICK-yew-lum vul-GARE-ee  
*Genista* je-NIST-ah  
*Gordonia lasianthus*  
gor-DOE-nee-ah lay-zee-AN-thus  
*Griselinia* gri-sell-INN-ee-ah  
*Hippophae rhamnoides*  
HIP-o-fee ram-no-EYE-deez  
*Holmskioldia sanguinea*  
holm-skee-OLD-ee-ah san-GWIN-ee-ah  
*Hosta montana* HOSS-ta mon-TAN-ah  
*H. sieboldiana* h. see-bold-ee-A-na  
*H. tardiflora* h. tar-di-FLOOR-ah  
*H. tokudama* h. toe-ku-DA-ma  
*H. ventricosa* h. ven-tri-KO-sa  
*Ilex glabra* EYE-lex GLAY-bra  
*I. vomitoria* i. vo-mi-TORE-ee-ah  
*Indigofera* in-di-go-FARE-ah  
*Iris kaempferi* EYE-ris KEMP-fare-eye  
*I. sibirica* i. sy-BEER-i-ka  
*Juniperus conferta* jew-NIP-er-us kon-FER-ta  
*J. horizontalis* j. hor-i-zon-TAL-iss  
*J. virginiana* j. ver-jin-ee-A-na  
*Lantana camara* lan-TAN-ah ka-MARE-ah  
*L. montevidensis* l. mon-te-vee-DEN-sis  
*Limonium latifolium*  
li-MO-nee-um lat-i-FOL-ee-um  
*Lippia citriodora*  
LIP-ee-ah sit-ree-o-DOOR-ah  
*Lobelia cardinalis*  
lo-BEEL-ee-ah/lo-BEEL-ya car-di-NAY-liss

*Magnolia acuminata*

mag-NOL-ya ah-kew-min-A-ta  
*M. grandiflora* m. gran-di-FLOOR-ah  
*M. macrophylla* m. mack-ro-FILL-ah  
*M. X soulangiana* m. sou-lange-i-A-na  
*M. virginiana* m. vir-jin-i-A-na

*Miscanthus sinensis*

mis-CAN-thuss sy-NEN-sis

*Myrica* MY-ri-ca

*Opuntia humifusa*

o-PUN-tee-ah hew-mi-FEW-sa

*Pelargonium* pell-ar-GO-nee-um

*Petrea volubilis* PET-ree-ah vol-you-BILL-iss

*Phlox fruticosa* FLOW-miss fru-ti-KOS-ah

*Phlox subulata* FLOCKS sub-yew-LAY-ta

*Phyla nodiflora* var. *rosea*

FY-la no-di-FLOR-ah ROWS-ee-ah

*Pinus cordata* PY-nuss kor-DAY-ta

*P. mugo* p. MEW-go

*P. palustris* p. pal-LUSS-tris

*P. radiata* p. ray-dee-A-ta

*P. strobus* p. STRO-buss

*P. thunbergiana* p. thun-berge-i-A-na

*P. thunbergii* p. thun-BERGE-ee-eye

*Polygonatum biflorum*

po-lig-o-NAY-tum by-FLOOR-um

*Pontederia cordata*

pon-te-DARE-ee-ah kor-DAY-ta

*Populus alba* POP-yew-lus AL-ba

*Potentilla tridentata*

po-ten-TILL-ah tri-den-TAY-ta

*Prunus besseyi* PRUNE-us BESS-ee-eye

*P. maritima* p. ma-RIT-i-ma

*Quercus virginiana*

QUER-kus vir-jin-ee-A-na

*Raphiolepis* raf-ee-o-LEP-iss

*Rhododendron viscosum*

ro-do-DEN-dron vis-KO-sum

*Rosa carolina* RO-za care-o-LINA-ah

*R. rugosa* r. rew-GO-sa

*R. virginiana* r. vir-jin-ee-A-na

*Rudbeckia hirta* rood-BECK-ee-ah HER-ta

*Sabal* SAY-bal

*Sagittaria lophocarpus*

sadge-i-TARE-ee-ah lo-fo-toe-KAR-puss

*Sanguinaria canadensis*

sang-gwin-AY-ri-ah can-ah-DEN-sis

*Smilacina racemosa*

smile-ah-SEE-na ray-see-MO-sa

*Spartium junceum*

SPAR-tee-um JUN-see-um

*Syringa* sa-RING-ga

*Tamarix pentandra* TAM-ar-ricks

pen-TAND-ra

*T. ramosissima* t. ray-mo-SISS-i-ma

*Taxodium distichum*

tacks-O-dee-um dis-TY-kum

*Tectona grandis* teck-TOE-na GRAND-iss

*Tillandsia usneoides*

till-ANDS-ee-ah us-nee-o-EYE-deez

*Trollius* TRO-lee-us

*Tussilago farfara* tuss-i-LAY-go FAR-far-ah

*Uniola latifolia*

ooh-nee-O-la la-ti-FO-lee-ah

*U. paniculata* U. pan-ick-yew-LAY-ta

*Verbena bipinnatifida*

ver-BEE-na by-pin-a-ti-FID-ah

*V. bonariensis* v. bo-nare-ee-EN-sis

*V. canadensis* v. can-ah-DEN-sis

*V. erinoides* v. air-in-o-EYE-deez

*V. hastata* v. has-TAY-ta

*V. X hybrida* v. HY-brid-ah

*V. littoralis* v. lit-tor-AL-iss

*V. peruviana* v. per-ooh-vee-A-na

*V. prostrata* v. pro-STRAY-ta

*V. rigida* v. RIDGE-i-da

*V. stricta* v. STRICK-ta

*V. tenuisecta* v. ten-you-i-SECT-ah

*V. venosa* v. ve-NO-sa

*Viburnum dentatum*

vy-BUR-num den-TAY-tum

*Vitex agnus-castus*

VY-tex AG-nuss CAST-uss

*V. negundo* var. *heterophylla*

V. ne-GUN-do het-er-o-FILL-ah

*Yucca filamentosa*

YUCK-ah fill-ah-men-TOE-sa

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# WATER

Water is the most mutable of design elements. Colorless, it becomes all colors, the mirror of spring greens, black summer storms and cerulean autumn afternoons. Shapeless until molded, water can be round or square in a concrete pool, a thin ribbon drawn through a grove of trees or a cascade down a hillside.

Water gives life to a garden. Especially in dry climates, it can change a garden's entire mood. In an otherwise arid landscape dominated by spikey foliage and hard-edged textures, water contributes movement, light and sound.

Rushing water is compelling. Its sound lures us around hedges, through gates and into hidden garden corners. Linking one area of the garden to another, whether by sound or a glimpse of still and shimmering blue, water thoughtfully placed or directed can be part of a successful garden plan.

How you use water in your garden will depend on whether you want it to dominate, remain a minor element or become an opportunity to grow your favorite waterside or aquatic plants. Water can also reinforce the existing character of a garden. The sharply defined edges of a concrete pool can reflect the architectural formality of surrounding walls and plantings. Here, the only plant you may want is a single pot of lotus, its translucent blooms followed by bizarrely beautiful seed pods.

A "naturalistic" pool of anything from durable concrete, fiber glass (preferably in a simple, pleasing shape) or thick plastic (unfortunately short-lived and vulnerable to puncture) might hold a few pots of water lilies and be surrounded by a variety of primroses. This spring display might then be followed by *Iris sibirica* and *Iris kaempferi*, with its large, gracefully poised blooms. *Trollius* (globeflower), then late summer blooming *Lobelia cardinalis*, could link the



ABOVE: The long pool at Westbury Garden. RIGHT: A pond at Wakehurst Place.

pond with existing plantings of moisture-tolerant shrubs such as *Clethra alnifolia*, *Rhododendron viscosum* and *Amelanchier canadensis*, with its brilliant autumn foliage.

Plants surrounding a natural or man-made pool may also suggest a theme to be continued in surrounding areas. Water can create the specialized environment required by moisture-loving plants. Or, in the case of an artificial pond, it may be only the illusion reinforced by the use of plants frequently associated with damp conditions, such as clumps of various bamboos, rushes and reeds contrasted with the delicate foliage of ferns or glaucous-leaved hostas.

Water can also create the illusion of greater space, much like a mirror, expanding the boundaries of a garden to include neighboring trees or even hillsides. To stare into the confines of a pool or pond is to be doubly aware of the character, texture and color of nearby trees and shrubs, a perspective that can be another important variable to consider in the placement of a water garden.

For many of us, the only source of water may be some underground plumbing, as in the hillside herb garden of the Berkshire Garden Center in Stockbridge, Massachusetts. There, a shallow stone basin surrounded by ferns and coltsfoot (*Tussilago farfara*) has been the long-term residence of a water-spouting lead frog, spewing glistening drops onto the velvety leaves of lady's mantle (*Alchemilla vulgaris*). Barely three feet long, this shallow basin provides the perfect excuse for a nearby table and chairs, a favorite meeting and resting spot.

Certainly one of the greatest assets of any garden is a natural source of water, a free running stream being wonderfully malleable. Divided by a small weir, and controlled by rocks placed strategically along the stream bed,

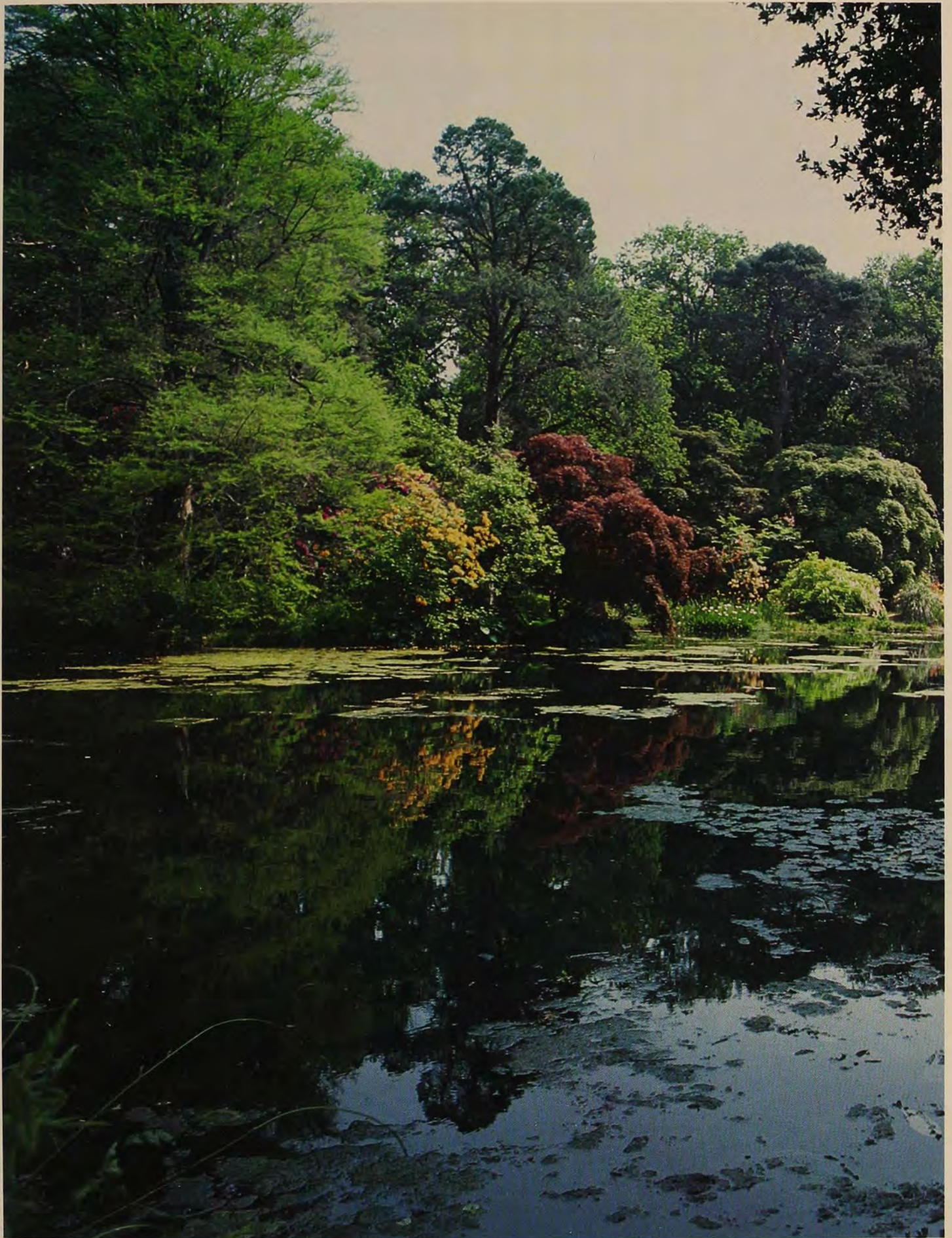
each change in level or course results in a minor symphony of new sounds—the whoosh of water over the dam, crashing into a silent pool, then gentle murmurings around well placed rocks. No longer a thin thread running through the landscape, the pool has become a major focal point.

But the melody of water needn't come from a stream or a school of plump, marble dolphins. Even a single plume of water bouncing off the rim of a thin, lead bowl can pervade a small garden with music. One garden I visit in mid-August has just such a simple fountain. On hot afternoons it produces the most compelling, bell-like tones. Walking up from a surrounding meadow, its sound is as illusive as the shifting wind, for suddenly it is gone, replaced by the rustle of parched field grass. Then, there it is again, luring me through an arch of hemlocks. Even though I know it is there, it remains a perennial surprise and a cool respite for me and a pair of resident robins. ♪

—Margaret Hensel

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





Photos by Margaret Hensel

dated elsewhere in the gardens. Currently, 418 pieces by over 175 artists are on display, making Brookgreen's collection of American sculpture the largest in the world.

For emerging artists, having a work accepted by Brookgreen is considered quite a boon. An advisory board oversees all additions and decides where and how they will be displayed. "The sculptures appear to be casually placed around the gardens," says Robin Salmon, Brookgreen's archivist, "but actually a great deal of careful planning goes into it."

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A languid stroll throughout the gardens brings this point home. Here and there, carved archers with bowstrings bent are placed. They stand always under open sky, never under the canopies of trees. Just inside the garden wall, an ebony jaguar crouches atop a rock. He peers down at the needle-tipped agave below, as if weighing the risks of descent. At the foot of the Live Oak Avenue, Edward McCartan's gilt-bronzed *Dionysus* stands. A drop of gold amid a green sea of leaves, the statue is literally the light at the end of the tunnel.

Then there is *Long, Long Thoughts* by Charles Parks, a bronze sculpture of a pensive little boy dressed casually in a short-sleeved shirt and shorts. He sits barefoot atop a natural old stump, surrounded by living black-eyed Susans (*Rudbeckia hirta*). The effect is magical!

Such orchestration does not end with the sculpture; there is handwriting on the walls. Intent on delighting visitors at every turn, the Huntingtons inscribed the garden walls with "the verse of some of those writers who have taken pleasure in the beauty of nature and her living forms . . ." Included are the thoughts of such authors as Lewis Carroll, Rudyard Kipling, Ralph Waldo Emerson, and, of course, Joyce Kilmer. Lighthearted doggerel is also on tap, as evidenced by the following verse by Dixon Lanier Merritt:

A wondrous bird is the pelican  
His mouth holds more than his belican  
He takes in his beak  
Enough food for a week  
But I'm damned  
If I see how the hellican.

Plants at Brookgreen are clearly subordinate to the sculpture. This does not mean, however, that avid gardeners come away feeling cheated, for the flora possesses many charms. From the commanding presence of 250-year-old live oaks to the indigo spikes of the chaste tree (*Vitex agnus-castus*), Brookgreen has plenty to please the plant enthusiast. There are bays galore—sweet bay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), bull bay (*Magnolia grandiflora*)—everything but the Chesapeake Bay. There are bigleaf, cucumber and saucer magnolias (*M. macrophylla*, *M. acuminata*, and *M. X soulangiana*, respectively). Other prominent plants are *Cyrilla*, arrowwood (*Viburnum dentatum*) and red buckeye (*Aesculus pavia*).

One notable plant found throughout Brookgreen Gardens is Yaupon holly, a Zone 7 plant that is little known in the North. Yaupon (*Ilex vomitoria*) grows into a small tree or large shrub 15-20 feet high with shiny, elliptical, non-spiny leaves. The scarlet fruits are produced in greater abundance than any other holly. 'Yawk-eyi', a yellow-fruited cultivar, finds a place at Brookgreen. Dwarf Yaupon (*Ilex vomitoria* 'Nana') is also present, making a most attractive low-clipped hedge. Its foliage resembles 'Stokes' Japanese holly, but the red fruits are a delightful departure.

In keeping with Brookgreen's stated purpose as a haven for native plants, wildflowers are found everywhere in the gardens. They are not grouped into organized collections but used informally as backdrops for various sculptures. For example, daylilies (*Hemerocallis* sp.) and bitter fennel (*Foeniculum vulgare*) frame Edward Sanford, Jr.'s bronze *Inspiration*. In close association with other works along the garden walls are false spikenard (*Smilacina racemosa*), blue boneset (*Eupatorium coelestinum*), bloodroot (*Sanguinaria canadensis*), Solomon's seal (*Polygonatum biflorum*), blue dogbane (*Amsonia tabernaemontana*), and butterfly weed (*Asclepias tuberosa*).

In addition to their subtle beauty, wildflowers are favored at Brookgreen because they are easily grown and, for the most part, pest and maintenance free. One disadvantage, however, is that they must be allowed to grow on to maturity, often past their peak of attractiveness. As a result, says Brookgreen horticulturist Bill McBee, "native plants often end up looking like weeds to many people."

To combat this impression, the directive on native plants has been relaxed somewhat, so that popular, non-native plants may occasionally be used. Many of Brookgreen's azalea species, for example, are non-native. Plant exchanges with arboreta and botanical gardens bring in other interesting additions. The objective is not to subvert the original intent of the gardens, but to augment it to the pleasure of visitor and non-visitor alike.

Brookgreen attracts approximately 160,000 visitors annually. A notable past visitor, believe it or not, was George Washington. On April 28, 1791, Washington spent the night at what was then Brookgreen Plantation, as guest of Dr. Henry Collins Flagg, a surgeon during the American Revolution. (So far, all temptations

to place "George Washington Slept Here" signs around Brookgreen have been vigorously resisted.)

Brookgreen Gardens is an institution with a firm grasp on the past and a clear vision of the future. A major project in the works is a new Interpretative Center. The facility will house offices, an auditorium and meeting rooms. It will provide the necessary space for garden club meetings, guest lectures and the teaching of horticultural short courses.

As this article deals primarily with flora and not fauna, little has been said concerning Brookgreen's wildlife. Yet, since much of Brookgreen's special atmosphere is derived from its population of native animals, it would be a mistake to ignore it. From the first, the Huntingtons conceived of Brookgreen as a wildlife refuge for native and migratory birds. Today, cardinals, herons, woodpeckers, brown thrashers, mockingbirds and wild turkeys can be glimpsed roaming the gardens. There are also healthy numbers of frogs, toads, turtles and anole lizards, all helping to control the mosquito population, which is a sizeable task during the rainy season in the low country of South Carolina. Directly adjacent to the gardens is the official wildlife park. It contains a huge aviary, replete with a collection of colorful birds, all emitting raucous screams. Foxes, eagles, owls, otters and alligators also live here.

Brookgreen Gardens is a hub of such diverse attractions that it is hard to capsule. Yet, if there is one work at Brookgreen that sums up its spirit it is Edith Howland's sculpture, *Between Yesterday and Tomorrow*. Its subjects, a woman and young child, stand on the wall at the gardens' edge, overlooking both today's cultivated flora and the wild marsh of long-abandoned rice fields. They seem to say that out of Nature, mankind sprung forth to achieve greatness; but only by protecting Nature can greatness be ensured for future generations.

Brookgreen Gardens is located 18 miles south of Myrtle Beach on U.S. 17 in Murrells Inlet, South Carolina. Open every day except Christmas from 9:30 a.m. to 4:45 p.m. Admission for adults is \$2; children 6-12 50¢. For more information, write or call Brookgreen Gardens, Murrells Inlet, SC 29576. (803) 237-4218. ☎

Steve Bender is a free-lance writer and horticulturist at Homestead Gardens in Davidsonville, Maryland.

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bushes. Sea buckthorn is dioecious (male and female flowers on separate bushes), so plant males in the ratio of 1-10, remembering that the pollen is windborn so the male should be to windward of the ladies to do his job effectively. Don't cut the berry sprays for indoor decoration; they stain, and they smell nasty. Birds leave them alone, so it seems they taste nasty too, but they look very pretty.

- Sea tomato (*Rosa rugosa*). Zone 2. The name comes from the hips, which resemble cherry tomatoes. These clash with the large, fragrant, magenta-pink flowers borne from late spring until frost, so the white form might be preferred; this comes true from seed. Bristly, stoloniferous stems sometimes attain six feet, but at the beach seldom more than three feet. A stalwart shrub, *R. rugosa* is good for dune planting, undaunted by cold, wind, salt-spray, drought and the meager sustenance offered by sand. There are several lovely hybrids, somewhat less tough.

- Beach plum (*Prunus maritima*) and sand cherry (*Prunus besseyi*), Zone 4. These similar shrubs (the first for the East Coast, the second for the West) grow wider than high on windswept seashore sites, seldom much more than four feet. Massed white blossoms in spring are followed by black fruits used for pies, jams and jellies.

- Shore juniper (*Juniperus conferta*). Zone 6. That junipers are adaptable is evident from the ubiquity of the so-called red cedar, *Juniperus virginiana*, at home in so many states and sites including seaside gardens, averse only to boggy soil and shade. Green-needled, prickly shore juniper, found wild on Japanese beaches, is one of the best carpeting junipers for sun and sand where it is hardy enough. The cultivar 'Blue Pacific' has blue-green needles.

- Shore pine or beach pine (*Pinus contorta*). Zone 7. This species grows along the coast from California to Alaska, usually dwarfed and contorted, though in a sheltered site it is irregularly pyramidal. It is useful for fixing dunes. Many other pines do well by the sea, but not the much-loved white pine (*Pinus strobus*), which scorches. On California's rocky headlands the Monterey pine (*P. radiata*, Zone 7) forms picturesque, and sometimes grotesque, wind-shaped bonsais. In colder areas Japanese black pine (*P. thunbergiana*, Zone 5) can be seen on the dunes just above high water mark. Swiss mountain pine (*P. mugo*, Zone 2) is usually comparatively low and bushy, hunkered down out of the wind, but seed

grown plants are a pig-in-a-poke because this is a variable species; they might grow three feet high, or thirty.

- Sea myrtle (*Baccharis halimifolia*). Zone 5. This plant will grow in quite dry soil but prefers salt marshes. It is usually about four to six feet tall with gray-green leaves. The flowers pass unnoticed, but in autumn cottony seed plumes turn the bushes to low-anchored clouds hovering over the marshes.

- Salt cedar (*Tamarix*). There are several species, all a good choice for seaside gardens. *T. ramosissima*, formerly *T. pentandra*, is the hardiest—Zone 2 according to *Wyman's Gardening Encyclopedia*. Tamarisks in bloom look as insubstantial as pink cotton candy; this is their strength, for they yield to the wind, then sway back upright. Tamarisks get leggy if not pruned, and when you do it is important. Prune spring-flowering kinds within a month after flowering. Prune late-flowering kinds (*T. ramosissima* is one) just before growth begins in spring.

#### PERENNIALS, GRASSES

- Sea oats (*Uniola paniculata*). The oat-like fruits on the three- to five-foot flexible stalks of this Southeastern grass can be seen tossing over the dunes of the Outer Banks, spreading by rhizomatous roots that hold the sand in place. Sea oats can be grown from seed. It is not hardy at below zero temperatures. *Chasmanthium latifolium*, formerly *Uniola latifolia*, is often called Northern sea oats but with little justification, its natural habitat being rich woodlands. It is an attractive grass, Zone 4 hardy, but not well adapted to seaside gardens unless in enriched soil with some shade and protection from salt-laden wind.

- Sea fig (*Carpobrotus chilensis*). This is a tender, trailing plant with succulent leaves and brightly colored, daisy-type flowers. It is excellent beach cover in frost-free areas.

- Sea holly (*Eryngium*). Sea hollies have grayish, spiny leaves and grayish or bluish stems; the flowers are thistle-like. One-foot *E. maritimum* grows wild on English beaches. More often offered in America are *E. planum*, about three feet tall with light-blue flower heads and blue-green bracts, and the one-foot cultivar 'Blue Dwarf', hardy to Zone 6. In common with many drought-resistant plants, sea hollies have long, thonglike roots and may not survive transplanting once established. They can be propagated by root cuttings.

- Sea lavender (*Limonium latifolium*).

Annual limoniums are the static of dried bouquets. This species is a very hardy perennial, about two feet high when in flower. The massed, hazy flowers, resembling a mauve gypsophila, spring from basal clumps of cabbage-like leaves that are evergreen except in the coldest areas. It is hardy to Zone 4, likes sand, prefers it moist and will even grow in salty swamps. In frost-free gardens *L. perezii* is often preferred.

- Beach wormwood (*Artemisia stellerana*). Zone 4. Gray-foliaged plants all need well-drained soil, and for most of them it should not be rich. Unfortunately, many are tender, and some rot in wet or humid summers. Beach wormwood is a survivor on both counts, unsurpassed as a winter-hardy seashore sub-shrub, which means that it wants to be woody-stemmed and evergreen but manages this only in mild areas, elsewhere disappearing from sight in winter. The white-woolly leaves are shaped like those of chrysanthemums. On the beach the stems tumble over and hug the ground, rooting as they go. It will grow in pure sand, even on the seaward side of the dunes. The flowers, drab creamy spikes, are no asset.

*Artemisia ludoviciana*, a very variable species, one form of which is known as 'Silver King', is another possibility for an untamed setting. The gray, willowy leaves are dainty, but the running roots are too invasive for the flower border.

- Sea pink (*Armeria maritima*, Zone 4) and seaside daisy or beach aster (*Erigeron glaucus*, Zone 4) can be found cliff-hanging within sound and splash of the sea on English and California coasts respectively. Sea pink makes grassy tufts of leaves topped by numerous pink or white drumstick flowers. Beach aster grows less than one foot high, with rosettes of oval leaves and yellow-disked, mauve-rayed daisies. Both do well in well-drained, sandy soil. When sea pink gets patchy it needs lifting and dividing.

Having chosen your plants, there may be a problem getting them established in the sandy soils so much enjoyed by moles and mice. Plants tunnelled under will die if their roots are left suspended in air. Wrapping the rootballs of small plants in chicken wire helps prevent disturbance while they are getting established. ☉

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

temperature is fairly stable." The dirt bottom should be absolutely smooth. Cover this with fiberglass insulation (the same kind used for home insulation), with the foil side up, as a cushion and as a preventive against muskrats and other rodents who dig their tunnels from the outside in. Zajic recommends that you cover the insulation with two or three layers of six mil polyethylene, which comes in 100-foot rolls and varying widths. It can be taped and seamed. Sunlight destroys polyethylene so it must be covered with natural materials, but be sure whatever material you use doesn't puncture the plastic. Cover flat surfaces with three to four inches of sand and use gravel and sand for the stream bed. "Quarry rubble is excellent covering," says Zajic. "Rock ledges at the edge of the pool accommodate iris and rushes, which grow best in about two inches of water. Place lilies and other plants in pine boxes filled with garden soil." The soil will not spread, and the dirt will be contained so that the water does not become muddy. Fish may stir up a sand bottom, but it settles immediately.

"When the water garden is first filled," adds Zajic, "it needs to be left alone for two weeks to lose the chlorine from its water. Plants introduced bring in all sorts of things to stabilize the environment. A stream provides the superb decorative element to a water garden, and its natural progress over gravel and sand oxygenates and filters the water. Thus plants, fish, snails and other occupants of the water garden stay healthy."

He concludes by emphasizing that a water garden need not be expensive or elaborate. "There are little old ladies out in the country with an old bathtub sunk in the ground serving as a water garden that lasts 50 years. It's wonderful!"

Location and construction are of prime concern, but as with any building project, existing conditions and the desires of the owner prevail. Regardless of construction, all pools require a solid base to prevent shifting and a rim to avoid surface drainage, which could contain toxic waste. A water garden should require minimum care, less than a conventional garden that needs mowing and weeding. Once the ecological balance is achieved, everyday care is simple. Oxygenating plants, such as *Elodea nuttallii*, are essential. Steward Bankert, horticultural advisor to Hillwood Museum Gardens in Washington, D.C., suggests that one "tie a few sprays to a stone

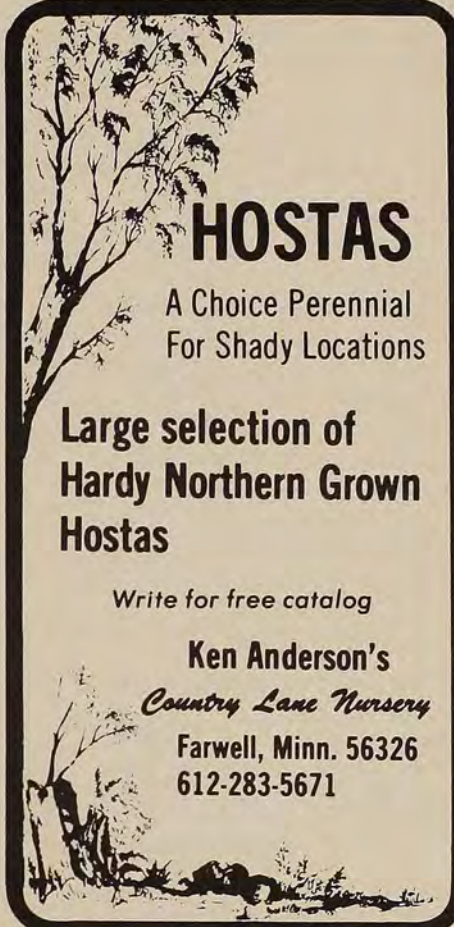
and drop [them] into the pool where you want them to root, otherwise they tend to float around and look messy." Snails help. Mr. Bankert reminds that tadpoles in the spring are interesting, but they develop into frogs and hop away. Turtles also crawl off, although water turtles stay around longer (they also may eat fish eggs and baby fish).

Maintenance is easy. Fish, essential to any water garden, help keep the water content in balance. Unless a natural stream runs through the garden, the re-circulating pump must function. Dead leaves and foreign matter need to be removed. Winter preparation includes removal of tropical plants, pool coverage, if required, and the addition of a pool heater if there is a possibility the water should freeze solid. Spring cleaning requires that fish and snails be removed to buckets, the hardy lilies be repotted, the pool scrubbed down and refilled. When the water has purified, the occupants may be returned. Do not overcrowd. The authorities at Lilypons Water Gardens say every 20 square inches of water can accommodate one inch of goldfish.

Two categories of water lilies are available: hardy and tropical. Hardy lilies are perennials, making them a good investment. Tropical lilies are generally considered to be annuals. These produce more blossoms per season than their hardy cousins. Their colors range from white through yellows to dark reds, purples and blues. Night bloomers blossom at dusk and close the following day. Lotus, sacred to many religions, are included in many large water gardens; the smaller varieties grow to a height of two to three feet while others stand four to five feet tall.

Keith Folsom of Lilypons Water Gardens believes that every garden should have some water in it. "There is less maintenance than a regular garden and it's fun. You have little critters in there . . . the fish and the snails . . . and watching what happens in a water garden is addictive. No two are alike. Some people have more than one. For instance, [Washington Post] columnist Henry Mitchell has five in his garden. Having one is the up and coming thing, and in the near future they may rival the popularity of rose gardens, which take more effort." ☉

Joan Sayers Brown is a free-lance writer who contributes regularly to *Antiques Magazine* and *Southern Accents*. She wrote an article on the National Herb Garden in our June issue.



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