GROWING HEALTHY ROSES WITHOUT TOXIC PESTICIDES

THE AMERICAN GARDENER

A Publication of the American Horticultural Society

May/June 1999 $4.95

AMERICAN IRISES
Great choices for every garden

ENGLISH-STYLE BORDERS
with a Texas attitude

USING NATIVE GRASSES
Design with regional flair

RAIN LILIES
Add sizzle to the summer border

Give Your Garden A Boost.

Annual Booster™ and Perennial Booster™ by Pursell are specially formulated with POLYON® timed-release fertilizer for extended, even feeding.

For a beautiful garden – count on POLYON® products for premium, professional results.

TIMED-RELEASE FERTILIZER
Polyon®
IF IT'S NOT GREEN... IT'S NOT POLYON®

PURSELL
INCORPORATED 1904

For more information about POLYON® products, visit our website @ www.fertilizer.com or Call Our Customer Hotline 1-800-874-8892

contents

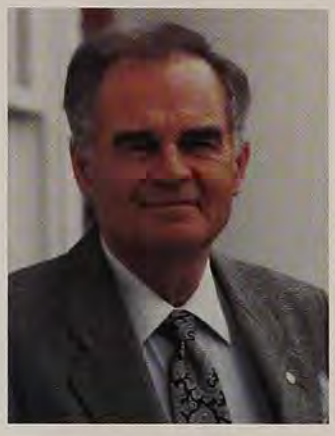
Volume 78, Number 3 May/June 1999

DEPARTMENTS

FEATURES

On the cover: Iris virginica, *a southern native iris, grows in wetlands from Virginia to Texas. This cultivar, 'Mysterious Monique', bears rich purple flowers. Photograph by Roger Foley.*

an inside look



Judging by the number of new books on ornamental grasses and by the use of grasses as the focal point of designs such as the New American Garden created by Wolfgang Oehme and James Van Sweden at the U.S. National Arboretum, these valuable plants are finally coming to the attention of American gardeners. In this issue, Rick Darke, author of a new encyclopedia on ornamental grasses, writes about native grasses appropriate for gardens in different regions of the United States.

If he were still with us, my grandfather, Patrick Henry McArthur—we called him Mr. Pat—would have offered a spirited discussion about native grasses. Grasses were the enemy of his vast fields of cotton, tobacco, and soybeans in Wakulla, North Carolina. His field hands spent every summer cropping weeds out of the fields. In rainy years, the grasses often got ahead of the crops.

Along with the cultivated farmland, Mr. Pat also maintained hundreds of acres of virgin stands of long-leaf pine *(Pinus palustris)*. Native grasses were a mortal foe of these pines because they were part of the successional process that allowed oak seedlings to develop and eventually shade out the pines.

So every three or four years, in early winter, the entire area had to be burned to preserve the long-leaf pine as the dominant species in this landscape. The December ritual was always the most trying of days because the fire had to be carefully controlled to avoid damage to farm buildings and the stately trees.

While Mr. Pat was worrying about his fields and pines, my grandmother, Caledonia McDonald McArthur, was growing beautiful flowers such as rain lilies *(Zephyranthes* and *Habranthus* species), irises, and roses. Articles in this issue by John Bryan, C. Colston Burrell, and William Quarles, respectively, update and extend our knowledge about these popular ornamentals.

Also in this issue you'll enjoy garden historian Susan Davis Price's article on the French naturalists André and François Michaux, whose contributions to American plant exploration are memorialized by many plant and place names. Coincidentally, François named the long-leaf pine *P. australis,* which—if it had been ruled a legitimate name—would have led my grandfather to believe François was confused about which hemisphere he was in.

Finally, we have a message for those of you who garden in the wide-open spaces of Texas and the surrounding region. Garden writer Lana Robinson describes how the owners of a Texas nursery are using a select variety of drought-tolerant natives and adaptable exotics to create brightly colored, English-style mixed borders that stand up to the hot, dry climate.

Despite Mr. Pat's deep-seated antagonism toward native grasses, he was a practical man. I'm sure if he were alive today he would have a container nursery on his farm, and he would be selling native grasses rather than burning them. Ever in green,

H. Marc Cathey

—H. Marc Cathey, *AHS President Emeritus*

Marc Cathey's upcoming speaking engagements around the country are listed on page 9.

members' forum

The pale pink flowers of Asiatic lily 'Maria Callas'.

LILIUM 'MARIA CALLAS'

Asiatic lilies are my favorite plants. I grow them in pots until I can see exactly what color they are. Because I try so many, I developed a strip along the north side of the house—which gets morning sun—for planting lilies. Before planting, I dug in sand, bonemeal, compost, and greensand, then planted the bulbs, labeled them, and topdressed with a little manure and mulch. Under these conditions, the bulbs not only bloom well, they increase rapidly.

My current favorite Asiatic lily is 'Maria Callas', pictured here with my daughter, Dominique. I love this lily for what Gertrude Jekyll called its "tender" coloring. The blooms are a pale beige-pink, with dark spots and a soft raspberry throat.

Camay Woodall
Towson, Maryland

ON THE RIGHT TRACK

As a long-time reader of *The American Gardener* and other gardening magazines, I'd like to say thanks very much for continuing to publish a magazine with in-depth, fresh, and creative articles on a wide range of topics. So many of the other magazines have "dumbed down" or "trended up" in ways that have led me to drop subscriptions.

Another thing I really like about the magazine, incidentally, is its clean layout. Many magazines these days use fancy graphics, fonts, variously split layouts, and other tactics that certainly catch the eye and make dramatic visual statements. Unfortunately these graphics also often compete with, rather than enhance, content. To me, *The American Gardener* layout is like good garden design—strong but not overwhelming.

Wynne A. Lee
Chicago, Illinois

PRETTY BUT DEADLY

The article by Pam Baggett titled "Bold Plants" (January/February) featured pokeweed *(Phytolacca americana)*. Yes, it is an impressive plant, but I am writing because no mention was made of how dangerous this plant is. Many people have died from eating pokeweed berries, which are so poisonous that it takes only three to kill a small child, although—strangely enough—birds who ingest the berries merely become intoxicated. In addition, the leaves and roots are also poisonous.

I suggest that *every* article in your publication that endorses planting a poisonous plant include—as with the article on hellebores—information about toxicity so that a gardener can avoid using such a plant in an area to which small children have access.

Overall your publication is an excellent one. I look forward to receiving every issue and heartily support AHS. *Leslie Touw*
Concord, Massachusetts

THE AMERICAN GARDENER

EDITOR
DAVID J. ELLIS

MANAGING EDITOR
MARY YEE

ASSISTANT EDITOR
CHRISTINA M. SCOTT

COMMUNICATIONS ASSISTANT
MARK C. MOLLAN

DESIGN AND ART DIRECTION
JOSEPH YACINSKI DESIGN

COLOR SEPARATIONS
FILM GRAPHICS

PRINTER
BANTA PUBLICATIONS GROUP

The American Gardener (ISSN 1087-9978) is published bimonthly (January/February, March/April, May/June, July/August, September/October, November/December) by the American Horticultural Society, 7931 East Boulevard Drive, Alexandria, VA 22308-1300, (703) 768-5700. Membership in the Society includes a subscription to *The American Gardener.* Annual dues are $25; two years, $45. International dues are $60. $10 of annual dues goes toward magazine subscription. Periodicals postage paid at Alexandria, Virginia, and at additional mailing offices. **Postmaster:** Please send Form 3579 to *The American Gardener,* 7931 East Boulevard Drive, Alexandria, VA 22308-1300.

Botanical nomenclature is based on *A Synonymized Checklist of the Vascular Flora of the United States, Canada and Greenland* and on the *Royal Horticultural Society Index of Garden Plants.* Opinions expressed in the articles are those of the authors and are not necessarily those of the Society. Manuscripts, artwork, and photographs sent for possible publication will be returned if accompanied by a self-addressed, stamped envelope. We cannot guarantee the safe return of unsolicited material. Back issues are available at $5 per copy.

Editor's note: *We try to point out all potentially poisonous plants that are mentioned in the magazine, but once in a while one slips by us. Thanks for setting us straight.*

HELLEBORES INSPIRE PASSION

I have known Colston Burrell for many years and respect him as a writer and speaker, but I was disappointed when I read his hellebore article in the January/February issue. The article put too much emphasis on hard-to-find species that are suitable only for the very serious collector. Lenten roses—correctly called *Helleborus ×hybridus*, not *H. orientalis* or Orientalis hybrids, as used in the article—are the easiest plants to grow and to locate.

The Christmas rose *(H. niger)* may be the best-known hellebore, but it is much more sensitive to environmental conditions than other species. Some hellebores, such as the Lenten rose, are easy to grow, but none are quick to establish. Also, both *H. foetidus* and *H. argutifolius* are short-lived perennials.

The acaulescent (stemless) hellebore species hybridize too freely under cultivation for plants grown from seed collected from cultivated plants to be sold as "species" seedlings. When I have grown seed or plants of the acaulescent species, I have always been disappointed with the results.

The only way one can be sure of a plant's color is to see it in flower. There can even be changes in flower color from year to year and under differing environmental conditions. We have more than 2,000 mature clumps of *H. ×hybridus* growing at Piccadilly Farm, and I have yet to find two plants producing identical flowers.

The zone recommendations in the article are incorrect. We sell Lenten roses all over the eastern United States from New England to Minnesota and south to Texas, but I would not recommend them in AHS Heat Zone 10. They are marginal in Zone 9.

Misleading information such as this does nothing but disappoint gardeners and cause nurseries such as ours to deal with phone calls from people who say they read it in an article in *The American Gardener.*

Carleen Jones
Piccadilly Farm, Bishop, Georgia

Burrell responds: *Thank you for relating your experiences with hellebores in Georgia. I truly regret that our mutually busy schedules prevented me from speaking with you before the article went to press; your input would certainly have made the article richer.*

Since most readers of The American Gardener *are fairly experienced gardeners, I was asked to write about the entire genus* Helleborus, *including the more uncommon and temperamental species. The inclusion of "hard to find" collectors' plants, as they were clearly labeled in the article, was intended to expose new readers to the breadth of the genus, as well as to provide information for experienced gardeners and horticulturists.*

My initial references to H. orientalis *and its subspecies were in a section devoted to discussion of hellebore species. In this section I clearly stated that because these species are difficult to find in their pure form, they are often listed as* H. ×hybridus. *In the box titled "Color Waves of the Future," I then elaborated on the various selections being made from* H. ×hybridus. *In my dealings with both nursery people and amateur gardeners, these selections are collectively known as Orientalis hybrids, as* H. orientalis *is the defining species in most of the selections.*

Though the Christmas rose (H. niger) *may be a sensitive species for you, in my experience it is easy and floriferous; it self-sowed freely in my childhood garden in Virginia.*

It has also been my experience that usually after a full year in the garden, a plant of H. niger *or* H. ×hybridus *will show a dozen or more blooms. I feel this is quick for a long-lived perennial.*

The hellebore species and selections offered by reputable nurseries are grown from wild-collected seed or from carefully controlled crosses. I have been pleased with the hellebores I have purchased, and the next few years promise greater availability of worthy selections.

Editor's note: *When we asked C. Colston Burrell to write about the entire genus* Helleborus, *we ensured that there are mail-order sources for nearly all the plants mentioned in the article. We also emphasized that it is important to choose hellebore selections in bloom to be sure of getting the desired flower color.*

The reference in the text to most hellebores being suitable to grow into AHS Heat Zones 8 to 10 was an editorial error—more accurate heat zones for individual species were listed in the hardiness and heat zone index in the back of the magazine.

ANOTHER VIEW

We would like to thank C. Colston Burrell for the beautiful article on hellebores (January/February). We have grown thousands of plants in the nursery, but hellebores are our favorite. We found Burrell's article thoughtful, detailed, and accurate, with the unabashed affection of the aficionado. It is a pleasure to read articles by people who obviously have experience with their subject and are not simply regurgitating the prose of others.

Judith Knott Tyler
Pine Knot Farms Perennials
Clarksville, Virginia

news from ahs

1999 AHS BOOK AWARDS

Four gardening books, all by different publishers, have been chosen to receive the Society's 1999 Annual Book Award (see box on right). Awards for the books will be presented to the publishers at the closing banquet of the AHS Annual Conference in Boston, June 9 to 12. The award-winning books were selected from books published in 1998.

This is the third year of the AHS Annual Book Award program, which was developed in 1997 as part of the celebrations for the Society's 75th anniversary. The award books are chosen by a seven-member committee co-chaired this year by Steve Lorton, Northwest correspondent for *Sunset* magazine, and Valerie Easton, library manager at the University of Washington's Elisabeth C. Miller Library. Other committee members are Suzanne Bales, contributing editor of *Family Circle* magazine; Stephen P. Bender, senior writer for *Southern Living* magazine; Sarah Boasberg, a Washington, D.C., landscape designer and former chairman of the AHS Board of Directors; Thomas Cooper, editor of *Horticulture* magazine; and Susan Eubank, senior librarian at the Helen Fowler Library of the Denver Botanic Gardens. Pamela Lord, founder of the Garden Book Club, serves as an advisor to the committee.

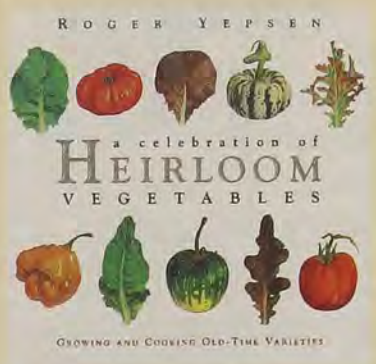
Books considered for the Annual Book Award must be produced by American authors and publishers. To encourage and reward excellence in garden-book publishing, the committee looks for books that are well written and technically accurate, as well as innovative in content, design, and production quality.

Gardening books that receive the AHS Annual Book Award are distinguished by a gold seal embossed with the Society's name and a leaf symbol. Look for these books in your local bookstore or order them through the AHS Horticultural Book Service.

ANNUAL CONFERENCE

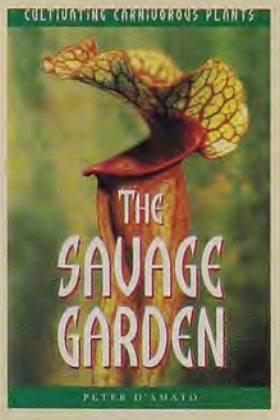
Presentation of the book awards is only one of the many exciting events scheduled for this year's AHS Annual Conference in Boston,

1999 AHS Book Award Winners



A Celebration of Heirloom Vegetables: Growing and Cooking Old-Time Varieties
by Roger Yepsen, Artisan. AHS price: $24.50.
Illustrated by the author, this well-written and visually appealing book was a consensus favorite. "This book does everything right," said Bender. "The cover practically leaps off the shelf and shouts, 'Open me!', while the illustrations of heirloom vegetables inside are stunningly beautiful. In addition, the accompanying text is interesting, informative, and as easy to digest as the dozens of recipes scattered throughout."

Earth on Her Hands: The American Woman in Her Garden
by Starr Ockenga, Clarkson N. Potter. AHS price: $40.
This collection of profiles of 18 American women who have created outstanding gardens over several decades appealed to committee members because it is a masterful combination of strong photography, writing, and book design. "The women profiled are all dedicated and knowledgeable gardeners, so there's something to learn from each one," said Easton. "The photographs, mostly by the author, are simply stunning, especially the full-page black-and-white portraits of the women themselves." Sidebars with each profile focus on a topic of special interest, such as lists of favorite plants or how to build a stone wall. (For more on this book, see the review on page 53.)



The Savage Garden: Cultivating Carnivorous Plants
by Peter D'Amato, Ten Speed Press.
AHS price: $17.95.
Committee members applauded this in-depth look at an unusual and fascinating group of plants that are diversely represented in North America. Nursery-propagated selections of some carnivorous plants are just beginning to become available, so this book is a timely reference on how to grow these plants, many of which are endangered in the wild. "I never thought this book would end up on my bedside table as compelling reading, but it did. The strangeness of the plants and their behavior is fascinating," said Bales. "D'Amato writes with authority, passion, and humor—a winning combination."

The Tropical Look: An Encyclopedia of Dramatic Landscape Plants
by Robert Lee Riffle, Timber Press. AHS price: $45.
This comprehensive description of hundreds of plants that offer a tropical look even in temperate gardens is also timely. "There's a trend going on in contemporary American horticulture that I like to call the neo-Gauguin movement," says Lorton. "This book offers an effective pattern for achieving that look in a home garden." Extensive lists of plants for various garden habitats and landscapes add to the usefulness of this reference.

June 9 to 12. If you haven't already signed up to attend, do so soon so you won't miss out on the lectures, workshops, and garden tours that highlight this inspirational four-day celebration of American gardening. It's an opportunity to mingle with other avid gardeners and meet some of the nation's best-known horticulturists, garden writers, and landscape designers. To register, or for more information, call (800) 777-7931.

YOUTH GARDEN SYMPOSIUM

It's also not too late to register for the seventh annual 1999 AHS National Youth Garden Symposium (YGS) in Denver, July 22 to 24. This year's event features a who's-who of national leaders in youth gardening activities and educational programs, including Ed Hume, host of the nationally televised gardening show "Gardening in America," and Norm Lownds, curator of the 4-H Children's Garden at Michigan State University.

In addition to the main conference, special pre-conference programs include a workshop on growing heirloom flowers and vegetables and tours of Denver Botanic Gardens. For teachers of kindergarten through sixth grade, there is also a pre-conference Life Lab program that integrates garden-based science with other subject areas.

To register, or for more information on the conference, call Mary Ann Patterson at (800) 777-7931 ext. 21, or visit the YGS page on our Web site at *www.ahs.org*.

FLOWER POWER AT EPCOT

The sixth annual EPCOT International Flower and Garden Festival, spotlighting the decade of the '60s, is taking place from April 16 to May 30. Horticultural and agricultural experts from around the world will present garden workshops, daily demonstrations, and lectures at a variety of venues throughout Walt Disney World, Lake

Floral extravagance at Disney World.

Buena Vista, Florida. Topics range from innovative ways to grow vegetables to design ideas for ornamental gardens.

In a joint program with Disney and the Home and Garden Television (HGTV) network, AHS's ongoing Great American Gardeners Lecture series is being presented on Fridays and Saturdays during the festival. On May 7 and 8, Kitty Bartholomew, interior designer, author, and host of HGTV's "Your Home" will offer tips on decorating your home from the garden. On May 21 and 22, Paul James, host of HGTV's "Gardening By The Yard," will present a program titled "Everything You Wanted to Know About Gardening." Wrapping up the series on May 28 and 29, Jim Wilson, former co-host of PBS's "The Victory Garden," will show how to create colorful container gardens.

For more information, contact Walt Disney World at (407) 824-4321, or visit its Web site at *www.disneyworld.com.*

CLEMATIS SOCIETY BLOSSOMS

The Southern California Clematis Society has taken on the challenge of expanding to reach a national audience. The society recently changed its name to the American Clematis Society (ACS) and announced its intention to educate gardeners across the country on how to grow the popular ornamental vine.

Edith M. Malek, president and founder of the ACS, which currently has about 120 members, says the society will also focus on clematis breeding programs. "We have not pursued any of the hybridization programs that other countries have, so one of my goals is to get Americans interested in doing research on this fabulous vine."

Annual membership in the ACS is $16 for individuals and includes a newsletter subscription. For more information, write ACS, P.O. Box 17085, Irvine, CA 92623, or visit the society's Web site at *www.clematis.org.*

Cathey's Lectures

AHS President Emeritus H. Marc Cathey continues his speaking engagements about the AHS Heat-Zone map this season at the following locations. For more information call AHS at (800) 777-7931 ext. 21.

May 18	Frederik Meijer Garden *Grand Rapids, Michigan*
July 8	American Conifer Society *Wilcox, Oregon*
July 12	Ohio Florists Short Course *Columbus, Ohio*

focus may/june

carefree roses

ROSES, PERHAPS MORE THAN ANY OTHER ORNAMENTAL PLANTS, *have a reputation for being difficult to grow without calling on an arsenal of chemical controls to fight off the onslaughts of the many pests and diseases that afflict them. Fungal diseases are among the most damaging, sometimes defoliating an attractive plant into mere canes in a matter of weeks. Commercial rose growers rely on up to 20 applications of chemical fungicides—including some that are highly toxic—each season to control powdery mildew, and some home gardeners are driven by desperation to try similar controls. Repeated applications of fungicides have potential to poison the user—and they may also damage plants.*

Disease-resistant 'Scarlet Meidiland' provides a dramatic backdrop for a rustic chair.

In many cases, researchers are also finding that where pesticides are used over a long period of time, the targeted pest can develop resistance to the chemicals. This leads to what is known as "the pesticide treadmill," a never-ending cycle of using stronger and stronger pesticides. To avoid such problems, gardeners are urged to consider a combination of approaches that are safer for gardeners and for the environment, including selecting disease-resistant roses, maintaining proper cultural practices, and using organic or less-toxic pest controls.

disease resistance

By William Quarles

Roses are among the oldest and most storied ornamental plants, although their precise origins predate recorded history. Over the centuries some 200 species have been identified; these species, as well as all hybrids produced before 1867, are commonly considered "old roses." The production of the first hybrid tea rose in 1867 launched the era of modern roses. Since that time, roses have been extensively hybridized, resulting in the production of at least 20,000 cultivars.

Some of the most desirable characteristics of roses can be traced to just a few ancestors. For example, the treasured bushy

shape and recurrent flowering habit probably originated with *Rosa chinensis*, and shoots with clusters of many flowers were derived from *R. multiflora*. The 1920 rediscovery of an ancient dwarf cultivar, *R. chinensis* 'Minima', has led to all the miniature roses available today.

Old roses are generally disease resistant, but because modern roses are derived from a narrow genetic base—and developed with breeding techniques in which 99 percent of seedlings are discarded in order to isolate desirable plants—many genes for disease resistance have been lost. For instance, the crossbred yellow rose 'Soleil d'Or', introduced in 1900, is the ancestor of all modern yellow roses. Unfortunately, the genes for yellow color in 'Soleil d'Or' correlate directly with a loss of genes that offer resistance to powdery mildew and black spot.

Growing roses successfully and responsibly today requires that we use the least toxic methods for controlling the diseases that inevitably afflict these beautiful plants. You'll gain an upper hand in the ongoing battle if you choose disease-resistant roses (see box, right). Since susceptibility to diseases is affected by local conditions, you should also consult your local rose society. The American Rose Society (see "Resources," page 12) can locate a chapter near you.

Selected Disease-Resistant Roses

CULTIVAR	TYPE	FLOWER COLOR	RESISTANCE
'Altissimo'	*Climber*	*Red*	*Black spot*
'Ballerina'	*Hybrid musk shrub*	*Pink*	*Black spot*
'Bredon'	*English rose*	*Yellow*	*Insect, disease*
'David Thompson'	*Rugosa*	*Pink*	*Insect, disease*
'Dortmund'	*Shrub or climber*	*Red*	*Insect, disease*
'Étoile de Holland'	*Hybrid tea*	*Red*	*Mildew, black spot*
'Fragrant Cloud'	*Climber*	*Orange*	*Insects, disease*
'Frontenac'	*Shrub*	*Deep pink*	*Mildew, black spot*
'Gold Medal'	*Shrub*	*Yellow*	*Black spot*
'Graham Thomas'	*English rose*	*Yellow*	*Insect, disease*
'Henry Kelsey'	*Shrub*	*Red*	*Black spot*
'Mister Lincoln'	*Shrub*	*Red*	*Insects, disease*
'New Dawn'	*Climber*	*Pink*	*Insects, disease*
'Old Master'	*Shrub*	*Red and white*	*Disease*
'Pacesetter'	*Miniature*	*White*	*Insect, disease*
'Peace'	*Hybrid tea*	*Gold and white*	*Disease*
'Scarlet Meidiland'	*Shrub*	*Red*	*Disease*
'Starina'	*Miniature*	*Red and orange*	*Disease*
'Sunsprite'	*Floribunda*	*Yellow*	*Black spot*
'Sweet Inspiration'	*Floribunda*	*Red and yellow*	*Disease*
'The Fairy'	*Polyantha*	*Pink*	*Disease*
'Thérèse Bugnet'	*Hybrid rugosa*	*Pink*	*Mildew, black spot*
'White Meidiland'	*Ground cover*	*White*	*Disease*
'William Baffin'	*Shrub or climber*	*Pink*	*Insect, disease*

DEGREES OF RESISTANCE

The term "disease resistant" is often misused when talking about plants. In many cases it is important to understand the difference between "resistance" and "tolerance." A rose is resistant to a disease if it often prevents the germination and growth of a pathogen. A rose is tolerant to a disease if it shows the initial symptoms, but is able to flower and function despite cosmetic damage. Many old roses are truly resistant to black spot, while some modern roses—including 'Mr. Lincoln', 'Fragrant Cloud', 'Double Delight', and 'Pristine'—are more tolerant than resistant. Black spot-resistant modern roses include 'David Thompson', 'Coronado', 'Ernest H. Morse', 'Fortyniner', 'Sphinx', 'Tiara', and 'Simplicity'. Gallicas, albas, and non-hybrid tea roses are generally rust resistant.

Among the rose cultivars known for disease resistance are 'New Dawn', above left, a climbing rose, growing together here with another climber, scarlet-colored clematis, and 'Bredon', right, a golden yellow English rose.

CULTIVATING DISEASE-FREE ROSES

Successful cultivation of healthy roses requires the planting of resistant species in the right location, then giving them the proper care and maintenance to optimize growth and minimize susceptibility to diseases. Here are the basics of rose care:

- Most roses need lots of sunlight. If you have a shady garden, plant miniatures and climbers, which need less light.
- Good ventilation is critical, especially in humid regions. Where humidity is a problem, give your roses lots of room and prune them appropriately so air can circulate freely.
- Choose roses adapted to your climate. If you live in a region with very cold winters, plant hardy species; if you live in the Deep South, plant black spot-resistant selections.
- Roses grow best in sandy loam, which is 30 to 50 percent sand and about 20 percent clay. Soil should be slightly acidic, with a pH of about 6.0 to 6.5. Before planting, soil should be mixed with about one-third its volume of compost or other organic matter and about 1 cup of alfalfa meal per plant. If the soil is too acidic after adding organic

Sources

ANTIQUE ROSE EMPORIUM, 9300 Lueckemyer Road, Brenham, TX 77833. (409) 836-9051. Catalog $5.
HEIRLOOM OLD GARDEN ROSES, 24062 Riverside Drive, NE, St. Paul, OR 97137. (503) 538-1576. Catalog $5.
HERITAGE ROSARIUM, 211 Haviland Mill Road, Brookville, MD 20833. (301) 774-2806. Catalog $1.
HERITAGE ROSES OF TANGLEWOOD FARMS, 16831 Mitchell Creek Drive, Fort Bragg, CA 95437. (707) 964-3748. Catalog $1.
HIGH COUNTRY ROSES, P.O. Box 148, Jensen, UT 84035. (800) 552-2082. Catalog free.
HORTICO, INC., RR 1, 723 Robson Road, Waterdown, ON, Canada L0R 2H1. (905) 689-6984. Catalog $3.
THE ROSERAIE AT BAYFIELDS, P.O. Box R(A), Waldoboro, ME 04572-0919. (207) 832-6330. Catalog free.
VINTAGE GARDENS, 2833 Old Gravenstein Highway S., Sebastopol, CA 95472. (707) 829-2035. Catalog $5.

Resources

ALL-AMERICA ROSE SELECTIONS, 221 N. LaSalle Street, Suite 3500, Chicago, IL 60601. (312) 372-7090. *www.rose.org.*
AMERICAN ROSE SOCIETY, P.O. Box 30,000, Shreveport, LA 71119; (318) 938-5402. *www.ars.org.*

matter, add a natural source of calcium such as calcitic limestone. If the soil is too alkaline, add sulfur until the pH is near the proper balance. If your soil has poor drainage, planting in raised beds may be necessary.

■ Mulching is one of the secrets of growing healthy roses. Mulches help reduce weeds, conserve moisture, reduce erosion, moderate soil temperatures, reduce diseases, and enrich the soil. Any readily available and attractive organic material can be used, including grass clippings, compost, and well-aged wood bark, chips, and shavings. Mulch about three to four inches deep around each plant, but keep mulch from coming into contact with the canes.

■ Healthy roses need fertilization. Organic possibilities include alfalfa meal, compost, fish meal or emulsion, manure, guano, soybean meal, bloodmeal, bonemeal, kelp, limestone, sulfur, rock phosphate, magnesium sulfate, granite dust, gypsum, and greensand. Avoid using large amounts of quick-release nitrogen, but mulch liberally around plants with compost.

■ To combat black spot, water only at the base of the plant—or use drip irrigation—to prevent getting the foliage wet. Because black spot overwinters each year, good maintenance can minimize its return next season: Strip roses of their leaves in winter, rake away debris from the base of the plants, and destroy the leaves and debris.

■ If you can't resist the temptation to grow a beautiful, fragrant, but susceptible rose selection, interplant with resistant roses or with other plants to slow the spread of disease.

least-toxic controls

Fungal diseases on roses and other plants can be controlled by a variety of non-toxic or least-toxic substances, including antitranspirants, oils, soap, baking soda, potassium phosphate salts, and garlic. Most recently, biological controls such as beneficial fungi and yeasts have been introduced to suppress some rose diseases.

Many of the following pest controls work best as preventives to disease rather than as cures. Sprays should be applied at the first sign of disease, or when weather conditions are favorable for disease to develop. Before spraying any of these solutions, spot-test to make sure they don't cause phytotoxicity (damage to plant tissue). Although most of these pesticides are non-toxic or only mildly toxic, follow the safety instructions on commercial products and practice general safety procedures with homemade solutions—wear gloves when mixing or spraying them and keep them out of reach of children and pets.

ANTITRANSPIRANTS

Antitranspirants are polymer coatings that can be sprayed on plant foliage to prevent water loss. They can also protect some plants against diseases caused by fungi—such as airborne rust spores—that enter plants through microscopic leaf pores. In studies, such products as Wilt Pruf and Vapor Gard protected garden roses from powdery mildew for about 30 days. Antitranspirants also provide some protection against black spot.

Antitranspirants are non-toxic, biodegradable, inexpensive compared to chemical fungicides, and are readily available. Unlike fungicides, their action against pathogens is non-specific and therefore is unlikely to result in disease resistance. New growth is not protected, however, so the sprays have to be reapplied regularly. Since these leaf coatings reduce the rate of photosynthesis by about 5 percent, their use is probably best suited for sunny regions.

Application: For protection against powdery mildew, apply a 3 percent solution—approximately 8 tablespoons per gallon of water. Black spot requires a 4 percent solution—approximately 10 tablespoons per gallon of water.

BAKING SODA

Baking soda (sodium bicarbonate) is non-toxic, inexpensive, and—when applied weekly—effective against powdery mildew.

Although using baking soda is generally very safe for plants, be aware that under certain conditions repeated applications can result in nutrient deficiencies and slower plant growth because sodium bicarbonate makes soil alkaline. Be especially careful when spraying in drought-prone areas where there is little rain to flush away the excess sodium bicarbonate. Build-up can also occur when spraying in a small space, or where drip irrigation is used. Stop using the spray at the first sign of phytotoxicity or lower-quality blooms.

Application: The recommended amount is about 1 tablespoon baking soda per gallon of water. Add about 1/4 to 1/2 teaspoon of a surfactant (liquid soap or detergent) to ensure that the baking soda spray spreads evenly and adheres to the foliage.

BIOLOGICAL CONTROLS

Control of rose powdery mildew using biological controls is relatively new. One of these biocontrols, *Ampelomyces quisqualis*—sold as AQ10—is currently available in the United States (see "Sources," page 15). A beneficial fungus that spreads through rain splash, *A. quisqualis* infects a variety of powdery mildew fungi within 24 hours of contact and kills them within 14 days. To be effective, however, AQ10 requires very high humidity, thus making it useful mainly in greenhouses and in areas such as Louisiana, Mississippi, and other Gulf Coast states.

Application: Research has shown that combining biocontrols with a horticultural oil can improve their effectiveness. Using a solution of *A. quisqualis* with 1 percent (by weight) horticultural oil, for example, provides better control of powdery mildew on roses than the use of *A. quisqualis* alone.

COMPOST TEA

In addition to supplying nutrients, solutions of dilute compost—popularly known

as compost teas—have been shown to suppress powdery mildew. The effectiveness of this control, however, is related to the bacterial content of the extract, which can vary from batch to batch.

Application: To make compost tea, mix 1 part finished compost with 6 parts water, and let the compost soak for at least 10 days. Then strain the solution with cheesecloth and reserve the liquid. To use, dilute the liquid until it has a tealike color and spray or drench foliage.

GARLIC

Aqueous garlic extracts have been shown to suppress or control powdery mildew and black spot in some plants. Researchers suspect the fungicidal effects may be due to sulfur-containing compounds such as ajoene or allicin that are found in garlic.

Application: A stock solution of garlic spray can be made by processing 2 bulbs of garlic (about 1/4 pound) in a blender with a quart of water and a few drops of liquid soap for 5 to 10 minutes. Strain the solution through cheesecloth to remove solids, then refrigerate. For mildew prevention, dilute the stock solution with 10 times its volume in water before spraying. Use a more concentrated spray to cure established mildew.

HORTICULTURAL AND VEGETABLE OILS

Petroleum-based horticultural oils and vegetable oils, both of which are inexpensive and readily available, can also be used to control some pathogenic fungi. You can either buy a ready-mixed commercial horticultural oil or make your own, less expensive, version (see instructions below).

Commercial horticultural oils, which can be either petroleum- or vegetable-based, are already mixed—emulsified—with water for spraying. Oil sprays are highly effective in protecting roses against powdery mildew, but only slightly effective against rust.

While oils are effective, they may leave a greasy feeling on the leaves. Avoid spraying flowers, and be aware that repeated spraying in the same area may cause oil to build up in the soil; this can be detrimental to plants.

Application: To emulsify mineral oil for spraying, add 0.5 percent by volume of liquid detergent to the oil—about 1 tablespoon per gallon of oil or 1/2 teaspoon per pint. When using petroleum-based horticultural oils or mineral oil on roses, do not spray at concentrations exceeding 1 percent by weight. To make a spraying solution, add about 3 tablespoons of emulsified oil to 1 gallon of water.

The Most Common Fungal Diseases of Roses

The major rose diseases of the home garden are powdery mildew, rust, and black spot. Though these diseases occur throughout the United States, their severity varies with location. Powdery mildew is a problem everywhere, but may be worse on the West Coast; it is also a problem with hybrid teas and some floribundas during the late summer on the East Coast. In the South, black spot is a universal problem, and roses grown there should be chosen for resistance to this disease. Rust is more prevalent on the West Coast than in the Northeast or Southeast.

Powdery Mildew

Powdery mildew, caused by the fungus *Sphaerotheca pannosa* var. *rosa,* forms a white, powdery coating on the tops of leaves and, sometimes, on buds, flowers, and canes. Roses are most susceptible to this disease when rainfall is low or absent, and when cool temperatures and high humidity at night are followed by high temperatures and low humidity during the day. The fungus flourishes only on new growth, so control measures should focus on these vulnerable parts. Because the disease overwinters in plant tissue, remove and destroy infected leaves and canes.

Spraying roses with water under high pressure discourages powdery mildew, but encourages other pathogens, such as black spot. Because there are several types of powdery mildew in the United States, roses that are resistant in one part of the country may be susceptible in other areas. Thus, non-toxic or least-toxic sprays are often needed in areas where powdery mildew is prevalent.

Black Spot

Black spot, caused by the fungus *Diplocarpon rosae,* is characterized by irregularly shaped dark patches—colonies of the fungus—on leaves. The affected leaves then turn yellow and fall off. Young leaves are most susceptible. The disease, which thrives in persistently warm, wet environments, is caused by airborne spores landing on a wet leaf and can be spread by splashing water, insects, and direct contact with infected leaves and tools. The fungus does not survive in soil; contaminated tools are infective for no longer than a month. When pruning infected roses, sterilize your pruners in an alcohol solution after each use.

To combat black spot, plant resistant roses and remove and destroy diseased and fallen leaves. In the South, use preventive spraying. In an experiment in Alabama, mulching with oat straw, pine straw, or pine bark and also spraying with oils and baking soda helped deter the disease. Good ventilation discourages the fungus.

Rust

Nine species of the rust fungus *Phragmidium* are found on roses, but two species are the most common on cultivated roses: *P. mucronatum* and *P. tuberculatum.* The disease appears as yellow dots and mottling—mainly on upper leaf surfaces, but canes can also be affected. Rust-colored pustules eventually develop on the undersides of leaves; late in the season affected leaves may also exhibit black pustules. Rust is spread by the wind and overwinters on fallen leaves. To control rust, remove and destroy infected leaves. Winter pruning also helps to reduce the problem. Rust favors the cool, moist conditions found on the Pacific Coast. High temperatures discourage its development, so preventive sprays should not be necessary in the South. —*W.Q.*

To emulsify vegetable oil, add about 3 tablespoons of oil to 1 gallon of water containing 1/4 to 1/2 teaspoon of liquid soap or detergent to make a 1 percent spray.

NEEM OIL

Fungicidal oils derived from the seeds of the neem tree, native to India, are now commonly available. Commercial formulations include Triact and Rose Defense. Both are labeled for control of powdery mildew, rust, and black spot. Neem oil fungicides contain natural sulfur compounds, which may make them slightly more effective than other horticultural and vegetable oils, but they are much more expensive.

For rust, neem sprays may work better as a preventive than a cure. In roses, some experiments have shown that 1 percent aqueous neem extract was only about 15 percent effective in suppressing rust on the susceptible cultivar 'Mary de Vor'. To prevent rust on roses, neem sprays should be combined with the selection of a rust-resistant species and cultivars (see page 11).

But on powdery mildew, a 1 percent neem extract proved about 75 percent effective in suppressing visual signs of the disease, making it as effective as the fungicide myclobutanil (Rally) 40 W.

Application: To make a 1 percent aqueous neem oil spray, mix 2 1/2 tablespoons per gallon of water. Apply every 7 to 14 days for best results.

POTASSIUM PHOSPHATE SALTS

Potassium phosphate salts will actually cure as well as prevent powdery mildew. About 99 percent of the mildew lesions should disappear as little as two days after beginning foliar spraying, and the effects of each spray last 12 to 15 days. The salts appear to work by stimulating plant metabolism, thereby increasing resistance to diseases. Sprays of potassium phosphate salts are just as effective as the fungicide dodemorph for controlling powdery mildew in roses. The salts can be obtained from chemical supply companies and from some stores that sell fertilizers. They are inexpensive, environmentally safe, and have low toxicity.

Application: For the home garden, add 1 tablespoon of the phosphate salt to 1 gallon of water containing about 1/4 to 1/2 teaspoon of liquid soap or detergent.

SOAPS

Insecticidal soaps are made of fatty acids from plants and/or animals and have been shown to reduce powdery mildew on roses. You can purchase products labeled insecticidal soaps in any garden center, or you can make your own using liquid dishwashing detergent or household soap. Aqueous solutions of about 1 percent liquid soap provide effective control, but may cause some damage to foliage. Some soap formulations are more effective than others.

Application: To make a soap spray, add 2 1/2 tablespoons of liquid soap per gallon of water. Be sure to test a few leaves for the degree of phytotoxicity before general use.

TREATMENT SCHEDULES

Combining several types of treatment can sometimes offer better results in controlling disease than using a single treatment. Combined treatments can be applied simultaneously or sequentially in a planned rotation. Since weekly sprays may be needed to control disease, spray rotations also help reduce the development of disease resistance.

For powdery mildew, studies have shown that a weekly rotation of 0.5 percent potassium phosphate, the fungicide dodemorph, the biocontrol agent *A. quisqualis*, and 0.75 percent horticultural oil gave an average efficacy of 82 percent—compared to 73 percent for the fungicide alone. Mixtures of oil and baking soda are more effective than each used separately. Roses treated weekly with sprays containing about 1 tablespoon baking soda per gallon of water and 3 tablespoons

horticultural oil per gallon of water were protected against rose powdery mildew. Black spot and rust require preventive sprays.

Because diseases and their severity vary with location, each gardener must experiment to find the most effective combinations. With all these least-toxic options, there should never be a need to use toxic sprays, especially when resistant roses and good cultural practices are used to help prevent problems.

William Quarles is managing editor of Common Sense Pest Control Quarterly, *published by Bio-Integral Resource Center (BIRC). This article was adapted with permission from an article in the Spring 1998 issue. For information about BIRC, see "Resources," below.*

Sources

AMPELOMYCES QUISQUALIS

ECOGEN INC., 2005 Cabot Boulevard West, Langhorne, PA 19047. (800) 220-2135; (215) 757-1590.

ANTITRANSPIRANTS

MILLER CHEMICAL AND FERTILIZER CO., P.O. Box 333, Hanover, PA 17331. (800) 233-2040. (Vapor Gard)

WILT PRUF PRODUCTS, P.O. Box 469, Essex, CT 06426. (860) 767-7033.

GENERAL ORGANIC SUPPLIES

GARDENS ALIVE! 5100 Schenley Place, Lawrenceburg, IN 47025. (812) 537-8651. Neem oil, fungicidal soaps and oils. Free catalog.

PLANET NATURAL, 1612 Gold Avenue, Bozeman, MT 59715. (800) 289-6656. *www.planetnatural.com/.* Neem oil, fungicidal soaps and oils. Free catalog.

HORTICULTURAL OILS

JMS FLOWER FARMS, 1105 25th Avenue, Vero Beach, FL 32960. (561) 567-9241.

SUN OIL, 1801 Market Street, Philadelphia, PA 19103. (800) 345-1142.

NEEM OIL

GREENLIGHT COMPANY, P.O. Box 17985, San Antonio, TX 78217. (210) 494-3481. (Rose Defense)

THERMO TRILOGY, 7500 Grace Drive, Columbia, MD 21044. (800) 847-5620. (Triact)

Resources

1999 DIRECTORY OF LEAST-TOXIC PEST CONTROL PRODUCTS by BIRC, P.O. Box 7414, Berkeley, CA 94707. (510) 524-2567.

offshoots

ROCKS AND FLOWERS

by Deborah Ferber

One crucial lesson to learn—in gardening as well as in marriage—is that there is a long stretch between the first romantic visions and what you wind up with in the end. This long stretch is called life. Early in our married life, my husband and I searched for our first house. At the time, I assumed that our visions were identical, or—at least—entirely negotiable on his end. After looking high and low for just the right yard—as well as a suitable house—we discovered the ideal lot: a quarter acre of undeveloped lawn.

Rolling up sod, building raised beds, amending the soil—and walking doubled over the next day with strained backs—we met our challenges side by side. I felt like a heroine from a Willa Cather novel, the wind in my hair as I turned lawn-liberated earth beneath the cornflower-blue sky. When the time for planting came, my wise choice in a partner seemed confirmed when I heard him say, "Plants that come back every year are a good investment." For me, these words meant, irrevocably, that I could buy any perennial that I ever wanted. Later, we would have to come to terms about the risks versus the benefits of holding a spouse to a literal interpretation of a half-formed thought that had been put into words. For the time being, though, I procured plants at a rate that quickly brought into question the necessity of buying dental insurance. Everything—except flowers—was negotiable.

After a year of planning and planting, my husband and I took a stroll around the "back forty" to savor the fruits of our labor. "Look!" I gasped. "My first rose in bloom!" I scrambled to my knees, inhaled the perfume, and felt a rapture that could hardly be communicated. My spouse responded with, "That's nice," as if he were looking at an ordinary flower. The significance of his reaction did not immediately become apparent to me, however.

As my passion progressed into its more advanced stages, I found myself talking about plants to anyone who would listen. Often, this important listening task fell to my husband.

"You know the delphiniums...?" I would begin.

"Hmm," he might respond, "are they the new neighbors down the street?"

At this point I realized that our priorities were diverging. I needed to find people who would understand what I meant when I said, "I just put the corms of that new cultivar of crocosmia in the ground." And, more important, they would *care*. So I called the local garden club chapter one day. In an unusually dramatic display of sarcasm, my spouse grabbed the phone out of my hands. "Quick," he said, "can you send someone over right away? My wife needs someone to talk to about her plants. It's an emergency!"

As is often the case in a long-term partnership, I wasn't the only one with an obsession. One day, upon returning from a road trip, my husband began unloading a carful of rocks: rounded river rocks, columns of basalt, monoliths of granite.

"Where did you get those?" I asked with some trepidation.

"Don't worry, it was perfectly legal—I picked them up from the side of the road. Aren't they magnificent?"

"Well, they're nice," I said, while thinking to myself, "They'll make a good backdrop for the flowers." It was an innocent hobby, I hoped. Little did I imagine that he was perceiving *my flowers* as a backdrop for *his rocks*. Not so slowly, the yard began to fill up with giant nuggets from the earth. A full-blown conflict of interest revealed itself after I discovered a boulder the size of a bulldozer sitting on the spot where my oriental lily shoots were just about to emerge. *Where* and *when* was all of this going to end?

We had a long talk. We had a serious discussion. After we bandaged our wounds, we came back to the table and compromised. The outcome was a bitter pill to swallow: We decided to divide the landscaping—our garden would be half rocks, half flowers.

A good marriage, like a garden, teaches us to grow beyond our unrealistic ideals. In exchange for the romantic notions I once held, I've gained a whole new view outside my window—the beauty of two visions combined. Flexibility is the key, I remind myself, as I observe the lady's mantle adorning—well, actually overgrowing—the inflexible rock anchored at its feet.

Deborah Ferber is a free-lance writer in Seattle, Washington.

gardeners information service

***I have two seven-year-old cherry trees** in my yard that fruit abundantly each year, but when the cherries ripen, many contain small white maggots. How can I eliminate this pest without using chemical sprays, which may kill honeybees?*
—S. N., Alexandria, Virginia

The quarter-inch-long maggot inside your cherries is probably the larvae of the cherry fruit fly, which looks much like a small housefly but has bold diagonal markings on its wings. This fly pupates in the soil beneath cherry trees, emerging in late spring to lay eggs in the fruit. After hatching, the maggots feed and penetrate to the pits, causing fruit rot. Finally, the maggots drop to the ground and bury themselves below the surface. Because cherry fruit flies leave little evidence of their egg-laying, it is difficult for the home gardener to detect their presence until it is too late.

To control the fruit fly, try trapping adults in the spring before they lay their eggs. In late May—or whenever cherry fruits begin to form in your area—hang four to eight red sticky spheres or yellow cards on the branches of each cherry tree. Hang the traps at eye level, about two to three feet from the tips of the branches. Clean off the trapped flies every few days and reapply the sticky coating if necessary.

To reduce future infestations, clean up fallen fruits under the tree daily and destroy them. For severe infestations, you may choose to try botanical insecticides such as rotenone or neem, but as with all pesticides, be sure to follow the manufacturers' instructions for safe use. Many of these organic controls, including the sticky traps, can be found at your local garden center. Two mail-order sources are Gardens Alive! 5100 Schenley Place, Lawrenceburg, IN 47025; (812) 537-8651; *www.gardens-alive.com*; and Planet Natural, 1612 Gold Avenue, Bozeman, MT 59715; (800) 289-6656; *www.planetnatural.com.*

***I am planning a period garden** for our town's sesquicentennial and am trying to find out what vegetables grew in a typical American garden around 1849. Where can I find this information?* *—J.D., Pioneer, Ohio*

There have been so many regional and cultural influences on gardening in America that it is difficult to define a "typical" American garden in the mid-19th century. "The Melting Plot," a two-part article by Susan Davis Price in the March/April and May/June 1998 issues of *The American Gardener* provides an excellent overview of immigrant influences on American garden plants and design.

Your town's historical society may maintain an archive of Civil War diaries and local newspaper clippings. These may provide references to the vegetables that were grown in your area.

The Thomas Jefferson Center for Historic Plants collects, preserves, and distributes plants documented to have been grown in American gardens before 1900. The center offers historic seeds for sale in its catalog. Write to Twinleaf Catalog, P.O. Box 316, Charlottesville, VA 22902, or visit its Web site at *www.monticello.org/shop.*

You may also want to consult *The Field and Garden Vegetables of America* by Fearing Burr, first issued in 1863 and reprinted in paperback by The American Botanist, Booksellers (agbook @mtco.com) in Chillicothe, Illinois, in 1998. Other worthy resources include *Heirloom Vegetable Gardening* by William Woys Weaver (Henry Holt and Co., 1997); *Beautiful American Vegetable Gardens* by Mary Tonetti Dorra (Clarkson N. Potter, 1997); and *A Celebration of Heirloom Vegetables* by Roger Yepsen (for details on Yepsen's book, see page 7). These books can be ordered through AHS's Book Service at (703) 768-5700 ext. 36.

***My indoor garden contains several bromeliads** that don't look happy, but standard houseplant books don't cover these plants in depth. Can you help?* *—D.M., Stonybrook, New York*

The bromeliad family is made up of 2,700 species and thousands of hybrids. Most bromeliads are native to the tropics of Central and South America. Some are grown for their attractive foliage, others for their exotic flower heads. Most bromeliads flourish in bright, indirect sunlight and a humid environment where temperatures remain between 50 and 90 degrees Fahrenheit.

Proper watering is essential. Pour water into the central cup or hollow created where the leaves join the stem; the water will gradually drain into the soil. Keep the soil moist, but never allow it to get soggy. It's also important to keep the water in the cup fresh, so flush the plant frequently to prevent stagnation and build-up of mineral salts—using distilled water will help.

Bromeliads are relatively pest-free, but occasionally they can be attacked by scale or mealy bugs. Most problems are caused by dry air, sun scorch, overwatering, or watering with hard water.

The Bromeliad Society International offers a free brochure titled "Bromeliad Culture." To order, send a self-addressed stamped envelope to BSI at P.O. Box 12981, Gainesville, FL 32604-0981. Or visit BSI's Web site at *www.bsi.org* for more information.

***I have been given an umbrella plant.** It has leafless stems up to about three feet tall, with straplike foliage growing*

For answers to your gardening questions, call Gardeners Information Service at (800) 777-7931 ext. 31 between 10 a.m. and 4 p.m. Eastern time, or e-mail us anytime at gis@ahs.org.

in all directions at the top of each stem. Can you tell me the cultural requirements for this plant? *—R. L., Albany, Georgia*

A member of the sedge family, umbrella plant *(Cyperus alternifolius)* is native to moist habitats in Madagascar. This clump-forming tender perennial produces clusters of three-foot-tall stems topped by spokelike rings of dangling, green, leaflike bracts that gave rise to its common name.

Umbrella plant is marginally hardy in USDA Zone 9, but as a full-time outdoor plant it is more reliable in Zones 10 or 11. Grow yours in a container of soil-based potting mix. If you have a pond in your garden, you can keep the pot immersed in shallow water in the summer; add a thin layer of gravel on top of the soil to prevent it from floating away. You can also grow it outside during the summer, or as a house plant year round. Because umbrella plant requires constantly moist soil, make sure to keep the base of the container immersed in a tray of water at all times. Place it where it will get bright, filtered light and mist the leaves occasionally to maintain high humidity. In the summer, apply a balanced liquid fertilizer monthly. Umbrella plant is easy to propagate—divide and repot plants each spring—and pests are rarely a problem.

Last summer I purchased two miniature roses, approximately the same size, and put them in a planter on the patio. The yellow rose ('Yellow Joy') did not grow much taller, but it did get wider and bushier. The red rose ('Deep Velvet'), however, is now 2 1/2 feet tall and still growing! Its older leaves are still small to medium, but its new leaves are the size of a standard tea rose. I live in Houston (USDA Zone 9), and I was reluctant to prune back the roses because they continued to grow and bloom all winter. Is it common for miniatures to get that big, or is this an aberration? *—A.D., Houston, Texas*

Welcome to the confusing world of roses. Contrary to popular belief, "miniature" does not necessarily indicate a rose's height. According to Stephen Scanniello, rosarian at Brooklyn Botanic Garden, "A miniature rose is one that has smaller flowers and foliage than those found on standard-sized roses. While many miniatures grow eight to 18 inches, some—especially climbers—can grow much taller." Frank Lara, rose propagator and grower of *Rosa* 'Deep Velvet' at Chamblee's Rose Nursery in Tyler, Texas, concurs: "'Deep Velvet' grows up to four feet tall, but its flowers still remain small, or miniature. The leaves of this rose are going to be larger than some of the other two-foot and smaller varieties, but there is no need to be alarmed that the rose is going to 'forget' that it's a mini." However, Scanniello says that because of complex and intensive rose hybridization, it is possible that some miniature plants may later begin to exhibit characteristics of their standard-sized ancestors.

Although your roses continue to grow through your Zone 9 winters, Scanniello highly recommends that you prune them. This should be done in late winter—say, February. "Miniatures are very responsive to pruning," Scanniello explains. "Because they are miniature, the plants can become very crowded. You definitely need to prune to promote good growth."

Prune miniature roses initially by cutting them back to two-thirds of the plant's height. The next season and thereafter, prune canes to three to six inches and remove those from the center to open up the plant. Always remove dead, diseased, or damaged canes.

For more information on growing miniatures, seek out a copy of *Miniature Roses* by Rayford Clayton Reddell (Chronicle Books, 1998).

—Melanie Bonacorsa, Information Specialist

mail-order explorer

WILD EARTH NATIVE PLANT NURSERY

by Christina M. Scott

Wild Earth Native Plant Nursery isn't flashy. You won't find any state-of-the-art greenhouses here. In fact, you won't find any electricity or even a phone. What you will find in this Jackson, New Jersey, nursery is a large selection of eastern native plants—from the well-known pitcher plant *(Sarracenia purpurea)* to the less-common hairy blazing star *(Liatris graminifolia)*—and the former landscape architect who, nine years ago, decided to turn his hobby into a successful career.

Rich Pillar started Wild Earth in 1990, but its real beginnings go back to the early '80s. At the time, he was on the board of directors of the Native Plant Society of New Jersey and a successful landscape architect. He was usually the first person to visit a new job site in order to make an inventory of existing plants. "I could see that much of our natural heritage was being lost to development," he recalls. "And my job gave me the opportunity to be on the front lines of rescuing these plants from the bulldozers."

Most of these salvaged plants were relocated to Pillar's backyard garden. From there, this plant enthusiast—who once propagated plants in his college dormitory and sold them for book money—says his backyard became a giant experiment. "I tried to propagate everything," he says. The plants he succeeded with became the seed sources for many of the nursery's offerings.

A GREAT SELECTION

Much of Wild Earth's success over the years can be traced to the nursery's distinctive stock, composed mostly of plants native to the eastern United States. "Wild Earth fills a niche that isn't being filled commercially right now," says F.M. Mooberry, a retired native-plant consultant living in Kennett Square, Pennsylvania. Carolyn Summers, who grows more than 300 native species in her garden in Hastings-on-Hudson, New York, agrees. While an employee of the New York City Department of Environmental Protection, Summers researched the best sources of natives for restoration projects. Based on her findings, Summers says, "Wild Earth offers things you can't find anywhere else."

Among the more uncommon plants Wild Earth sells are the carnivorous thread-leaved sundew *(Drosera filiformis)* and a small woodland plant, yellow star grass *(Hypoxis hirsuta)*, with tiny yellow flowers that bloom continuously from midsummer to fall—both species Pillar rescued from development sites. Others include Barbara's buttons *(Marshallia grandiflora)*, a rare plant listed as threatened or endangered in several eastern states, and American ipecac *(Porteranthus stipulatus)*, with its wispy, spring-blooming white flowers and finely-cut foliage.

For a catalog, send $2 to Wild Earth, P.O. Box 7258, Freehold, NJ 07728. The nursery is located one mile off Route 537 on Wright-Debow Road in Jackson. Before visiting, call Rich Pillar at (732) 308-9777 to arrange an appointment.

Each year, Pillar works to make even more plants available to the public. Two of this year's more unusual introductions are golden club *(Orontium aquaticum)*, an aquatic plant with fingerlike scapes topped with bright yellow flowers, and puttyroot *(Aplectrum hyemale)*, a native orchid with a single overwintering leaf that disappears before the flowering stalk develops in early spring. The nursery is also offering a number of new ferns, including maidenhair spleenwort *(Asplenium trichomanes)* and crested wood fern *(Dryopteris cristata)*—both native to the eastern states—and the relatively scarce northwestern native, deer fern *(Blechnum spicant)*.

The majority of Wild Earth's offerings are grown from seed gathered by Pillar. "I collect the seeds myself so I know exactly what I'm growing," he explains. Customers appreciate this hands-on approach. "I've never been to any other nursery that has plants that look so perfect," says Summers, who has been buying native plants from Wild Earth for six years.

Robert Swain, a New Jersey landscape contractor who uses Wild Earth's plants in landscape restoration projects, agrees. "Each plant is like his child. He nurtures it, coddles it, and doesn't want to let it go," Swain says. "There's really a kind of rustic romance to his life."

Pillar acknowledges that his work is not easy, but he finds refuge in the nursery. "It's very peaceful here," he says. "The plants attract all sorts of wildlife. Coming here is like entering another world."

Wild Earth founder Rich Pillar (in shed) with some of his staff in one of the nursery's display gardens.

Christina M. Scott is assistant editor of The American Gardener.

conservationist's notebook

APPALACHIAN MOUNTAIN CLUB: MORE THAN JUST HAPPY TRAILS

by Mark C. Mollan

Hunched over an isolated patch of rock-rooted flowers, Kenneth Kimball, research director for the Appalachian Mountain Club (AMC), goes mostly unnoticed by summer vacationers hiking on Mount Washington, deep in New Hampshire's White Mountains. Those who stop for a closer look might wonder why Kimball is clipping flower heads and gently placing them into a small vial. The plant is Robbin's cinquefoil *(Potentilla robbinsiana)*, a small native perennial the U.S. Fish and Wildlife Service proposed downlisting from federally endangered species status to threatened just last year. Upon returning to the AMC research lab at the mountain's base, Kimball will tease out hundreds of minuscule seeds from the fingernail-sized flower heads. Later, horticulturists with the New England Wild Flower Society will germinate the seeds in its Framingham, Massachusetts, greenhouse. After the seedlings mature, Kimball, accompanied by biologists from the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the New England Wild Flower Society will return to Mount Washington to transplant the rare perennials. Because of the efforts of Kimball and others, the population of this plant—known to exist only on the western shoulder of Mount Washington—has increased more than 100 percent since it was placed on the endangered species list in 1980.

TRAILBLAZERS IN CONSERVATION

Best known for maintaining 1,400 miles of trails in the Northeast, including 350 miles of the Appalachian Trail, America's oldest conservation organization formed in 1876, when a small group of hikers dedicated to "the advancement of those who visit the mountains...whether for...scientific research or summer recreation" met at the Massachusetts Institute of Technology in Boston. The club has since grown to 83,000 members and now maintains a series of hiking facilities, education centers, and research laboratories.

When Kimball took charge of AMC's research unit in 1983, he transformed the eight-year-old program from one primarily focused on maintaining trails and composting human waste to a research department that conducts intensive air-quality studies, recommends environmental policies to protect area rivers and regulate car emissions, and monitors the ecological impact of human activity in the northeastern mountains. Today, AMC research on the alpine plants of these mountains is not only unlocking the plants' survival secrets, but is also allowing scientists to study the relationship between the plant communities and the animals of the near-barren mountain peaks.

MAPPING ALPINE PLANT COMMUNITIES

In the Northeast, alpine plants are limited to elevations above 4,000 feet. This amounts to 13 square miles concentrated mainly in the Presidential Range of New Hampshire and on Mount Katahdin in Baxter State Park, Maine. At these elevations, plants such as Robbin's cinquefoil and mountain avens *(Geum peckii)* thrive mainly between

Preserving alpine vegetation such as Robbin's cinquefoil, above, is one of AMC's missions. Left, Bill Brumback of the New England Wild Flower Society looks on as AMC's Melissa Iszard Crowley checks for tiny sprouts from seed sown the previous year. Greenhouse-raised cinquefoil seedlings in pots, foreground, await transplanting.

For more information on Appalachian Mountain Club's facilities, programs, and membership opportunities contact its Boston headquarters at (617) 523-0636 or its offices on Mount Washington at (603) 466-2721, or visit its Web site at *www.outdoors.org*.

rocks or on ridges, protected from the sometimes hurricane-force winds.

Through aerial photography and field mapping of these alpine plant communities, AMC has gained a better understanding of these tough, yet precarious, species. "After mapping the communities, we superimposed other known data, such as locations of ridges and valleys, exposure to wind and snow, and similar factors onto our maps," explains AMC ecologist Doug Weihrauch. The final goal is to develop ways of protecting plants in the face of increased use of hiking trails, as well as provide a model for managing similar alpine areas in the region.

"A better understanding of these plant communities will widen research possibilities in other fields, too," explains Weihrauch. AMC is currently sharing information from this study to help the New Hampshire Audubon Society better understand the habits of the American pipit, the only known bird to breed in the alpine region. And, according to Weihrauch, the completed study will provide a new tool for climate research scientists, who have in the past relied mostly on fluctuations in the tree line to study regional and global climatic changes.

HIKERS TAKE NOTE

Another key AMC project is minimizing the impact of hikers on vegetation around the club's nine huts scattered along the New England trails. The huts offer food and lodging to thousands of vacationers each year. The vegetation monitoring program originated as a requirement by the White Mountain National Forest to allow the club to maintain the huts. But AMC has taken the process a step further by focusing on the flora at greatest risk from hikers.

AMC started tracking such species as mountain avens, silver willow *(Salix argyrocarpa)*, and tea-leaved willow *(Salix planifolia)* early in 1998. After data from the study is collected later this year, AMC scientists expect that defining trail boundaries more clearly and placing detailed information about sensitive plant species in strategic areas will educate hikers to exercise care around these plants. Additionally, some rare disturbance-tolerant or -dependent species such as Boott's rattlesnake-root *(Prenanthes boottii)*, alpine brook saxifrage *(Saxifraga rivularis)*, and northern marsh violet *(Viola palustris)* are being monitored for survival patterns.

CONSERVATION THROUGH EDUCATION

Bringing conservation to the public at the grassroots level is a vital part of AMC's agenda. At its facilities on Mount Washington and in Boston, AMC offers many programs on topics such as geology, forest ecology, and plant identification. Staffers also visit New England schools to introduce conservation and the outdoors to children. At all AMC facilities, staffers practice recycling, composting, and use solar power to show how environmental responsibility can be a part of everyday life. Says Rob Burbank, AMC's public affairs director, "When people learn about and become more comfortable with the outdoors, they become better stewards to the environment."

And of multi-organizational efforts such as transplanting the Robbins cinquefoil seedlings, Kimball says, "By building coalitions with other research and conservation groups, we are in a better position to protect the alpine areas, as well as the whole Appalachian region of the Northeast."

Mark C. Mollan is communications assistant at the American Horticultural Society.

urban
gardener

MAKEOVER IN SEATTLE

by Claire Hagen Dole

On leisurely Sunday mornings, Terri Arnold likes to relax on her deck with the local newspaper. Her backyard is full of distractions, though—such as the Western tiger swallowtails that take nectar from a tall stand of *Verbena bonariensis*. The fluttering of their large yellow wings sometimes casts lively shadows across her paper. At times, a great blue heron that perches high in a nearby Douglas fir glides gracefully toward the beach. In the bog garden below the deck, glossy salamanders wind through the reeds, and azure damselflies hover, their transparent wings illuminated by the sun.

Arnold lives in a 1940s beach cottage that sits on a tiny—about 3,000 square feet—lot on Puget Sound, south of Seattle's historic Alki Point. According to local history, it was at this site the first European settlers stepped off a boat on a raw November day in 1851. The main settlement eventually developed to the east, however, leaving West Seattle to drowse through the next century with often unreliable bridge access across the Duwamish River to the heart of the city.

Although rapid regional growth in the past two decades has since transformed Arnold's neighborhood from a summer playground to an urban community, wildlife sightings in the area are still common. The steep hillside behind Arnold's property adjoins a green belt, which provides shelter to eagles, herons, and raccoons. It offers safe travel for the red foxes that live in nearby Schmitz Park, a 50-acre remnant of old-growth Douglas fir and Western red cedar. Arnold occasionally sees a fox amble past her yard on its way to the beach.

STARTING FROM SCRATCH

When Arnold moved into the cottage in 1987, it was surrounded by uninspired foundation plantings and an unkempt lawn; the only thing worth saving was a mature crabapple tree. An ardent butterfly gardener, Arnold decided to turn the garden into a wildlife haven filled with colorful plantings. She began by removing the foundation shrubs, then smothered the lawn with a thick layer of newspapers. The following year she tilled in compost to amend the soil and spread wood chips several inches deep over the bare ground. This mulch suppressed weeds and, as it decomposed, added organic matter to the soil. Arnold also created an elegant path from flagstones that she had acquired in barter for her services as an arborist. The path winds from the street to the front porch, then curves around the house to the deck and wildlife-friendly backyard.

While the landscaping makeover was in progress, Arnold began acquiring plants and storing them in a holding bed at a friend's yard. After her garden was ready, she transplanted them to their new home. The design is an ongoing process that involves both adding new plants and rearranging established ones.

COTTAGE-STYLE FRONT GARDEN

To give the tiny garden more of a street presence, she installed an arbor at the entry to the flagstone path and planted a climbing rose called 'Aloha'—which has fragrant, peach-colored blossoms—to cover it in summer. Arnold chose a variety of tall perennials to edge the path, giving visitors to her cottage plenty of color at eye level. Pollinators were not forgotten: The fuzzy, pink flowers of *Astilbe simplicifolia* 'Sprite' attract bumblebees, while skippers are drawn to lavender and daylilies. "The entry is the most formal part of my garden," says Arnold, "and I spend the most time on upkeep here, deadheading the climbing rose and keeping perennials in bounds."

Also planted near the gate is purple coneflower *(Echinacea purpurea)*, which attracts a wide variety of butterflies, including swallowtails and painted ladies. The attractive seed heads are left

The tall, graceful perennials Terri Arnold has planted around her beach cottage, left, are in stark contrast to the lawn and uninspired foundation plantings that were there when she first moved in, above.

on the plants into autumn to provide food for foraging birds. An eye-catching anemone *(Anemone hupehensis* var. *japonica)* with pink petals highlighted by yellow stamens stretches up from beside the path. Arnold also has a fondness for oddball plants such as *Cephalaria gigantea*, known as giant scabious because of its close relationship to scabiosas. This lanky eight-foot perennial bears pale yellow flowers that are popular with bees and butterflies. In late summer, its gracefully curving stalks straddle the flagstone path, providing tall perches for seed-hunting birds.

To anchor the front garden, Arnold selected trees and shrubs with interesting bark or foliage, such as snakebark maple *(Acer capillipes)* and coral-bark maple *(A. palmatum* 'Sango Kaku'), as specimen plants. At its place of honor by the front door, *Cornus alba* 'Elegantissima' sports variegated leaves with creamy margins.

Butterflies and bees are also drawn to flowering shrubs such as *Buddleia* 'Lochinch', which has lavender-blue blossoms and fuzzy gray leaves that remain attractive throughout the winter; and *B. globosa*, with balls of golden flowers. To attract red admirals and other late-season butterflies, Arnold deadheads 'Lochinch' in fall to keep it blooming, then prunes hard in early spring. *B. globosa* blooms on old wood instead of new, so Arnold shapes it in late summer.

WILDER IN BACK

The backyard is a natural habitat area that Arnold has allowed to get a little wilder than the front garden. Maintenance consists mainly of pruning and removing invasive exotics such as Himalayan blackberry *(Rubus procerus)*, a weed that arrived a few years back in a neighbor's load of fill dirt. Arnold cuts blackberry vines back in spring and fall, but leaves them during summer to provide birds with a thicket for shelter and safety, as well as a source of food.

One corner of the backyard is naturally boggy, creating a perfect environment for moisture-loving plants such as rushes, snowberry *(Symphoricarpos albus)*, and red-osier dogwood *(Cornus stolonifera)*. Horsetails *(Equisetum* spp.) are tolerated here, though they are too invasive for the rest of the garden. Water splashes over rocks in a whiskey-barrel pond that is camouflaged by irises and an arching doublefile viburnum *(Viburnum plicatum* forma *tomentosum)*. A decorative stone turtle, stretching from its hind legs as it spouts water into the pond, peeks through the foliage of this deciduous, horizontally branched shrub.

In addition to the turtle, whimsical touches abound throughout the garden. Under the crabapple tree, angular pieces of granite rise out of the ground like miniature tombstones. Arnold's tabby cat likes to lounge among the rocks, which also make good perches for birds and basking spots for butterflies. A few feet away, a painted wooden bird patrols the flagstone path. Handmade bird houses—including one made from a gourd—adorn the yard.

The centerpiece of the backyard is a wrought-iron rose tower, created by a local artist. Weathered to a rust-red hue, its posts and a winding branch reach up to a swirling topknot that is distinctively Art Nouveau. Arnold hangs a suet feeder from the iron-branch. "It's too beautiful to cover with a plant, and the birds like the high perch next to the *Verbena bonariensis*," she says.

It's said that the women in that first boatload of settlers who landed here in West Seattle wept copiously as they made rude shelters for protection against the winter rains. Today, while watching a flicker or a wandering fox from the comfort of her snug cottage, Arnold instead reflects on her good fortune to live in this wild pocket of the city.

Seattle resident Claire Hagen Dole is editor and publisher of Butterfly Gardeners' Quarterly. *For more information about this publication, visit her Web site at* www. butterflygardeners.com.

1999 The American TRAVEL

SINCE 1985, the American Horticultural Society (AHS), together with the Leonard Haertter Travel Company of St. Louis, Missouri, has conducted a Travel Study Program to gardens in the United States and abroad. This program offers participants an opportunity to visit exceptional private and public gardens, accompanied by tour leaders and horticulturists well-known in their field. Many of the private gardens included in the programs are open only to AHS tour participants. The American Horticultural Society educates and inspires people of all ages to become successful and environmentally responsible gardeners by advancing the art and science of horticulture.

PHOTOS COURTESY OF FRENCH GOVERNMENT TOURIST OFFICE; BRITISH TOURIST AUTHORITY; ARABELLA DANE; ENTE NAZIONALE ITALIANO PER IL TURISMO

Horticultural Society

STUDY PROGRAM

Destinations for the 1999 Travel Study Program include:

GARDENS OF PROVENCE
June 14–24

GARDENS OF SCOTLAND
(aboard the Royal Scotsman)
July 7–18

GARDENS OF CHINA
July 18–August 2
(first departure)

GARDENS OF CHINA
August 22–September 6
(second departure)

GARDENS OF THE ITALIAN LAKES
September 13–21

GARDENS AND FALL COLORS ALONG THE HUDSON
(aboard the Nantucket Clipper)
October 2–9

GARDENS OF SOUTHERN ITALY
Amalfi, Naples, Rome,
and Islands of Ischia and Capri
October 5–16

SPRING GARDENS OF NEW ZEALAND AND AUSTRALIA
October 6–28

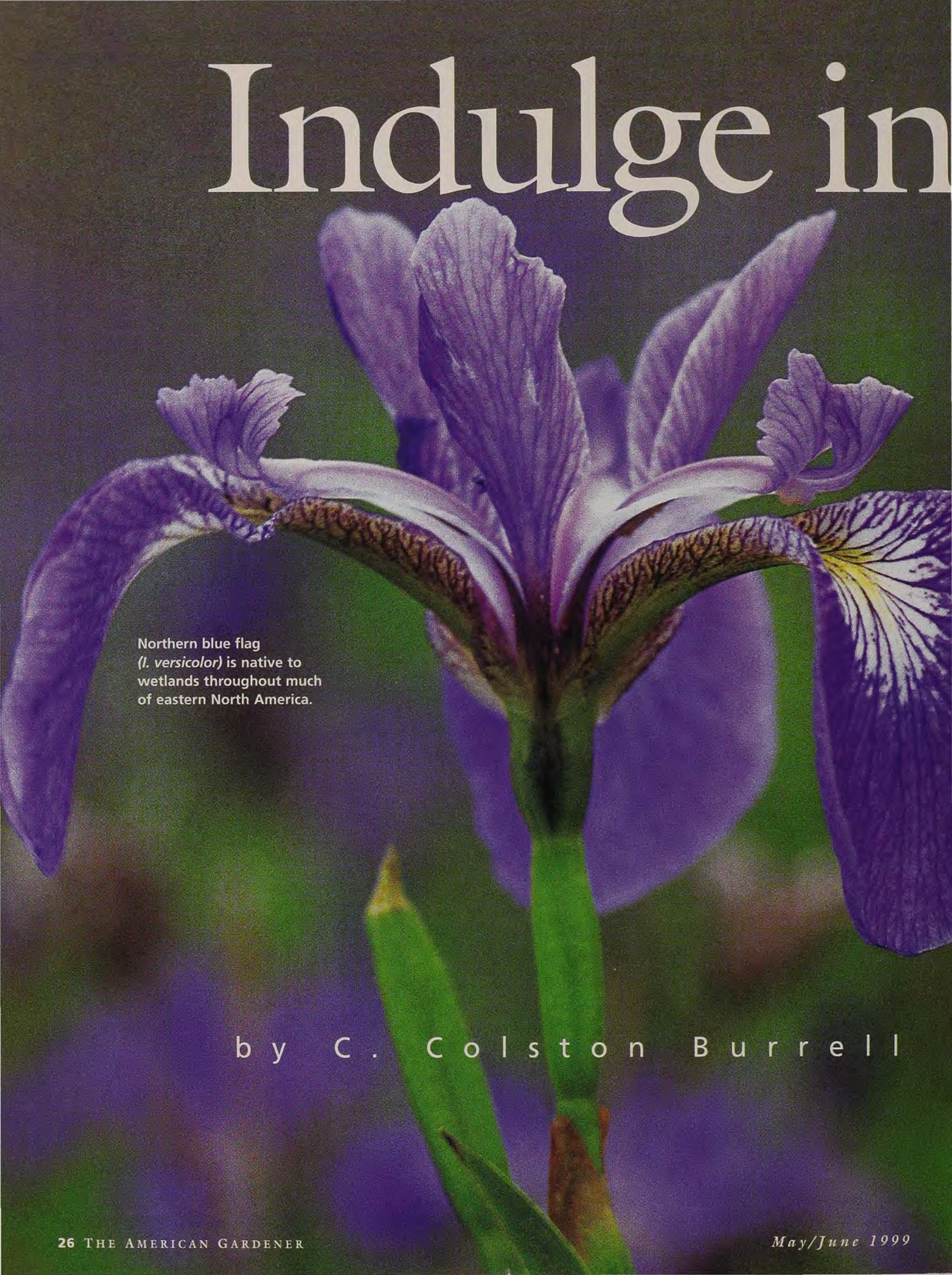
GARDENS OF SAN DIEGO
November 9–14

MILLENNIUM GARDENS NEW ZEALAND CRUISE
(aboard Clipper Odyssey)
December 19–January 6, 2000

For more information about upcoming tours, please contact **Mary Ann Patterson at 1.800.777.7931 ext. 21**

NO MEMBERSHIP DUES ARE USED TO SUPPORT THE AHS TRAVEL STUDY PROGRAM.

Indulge in

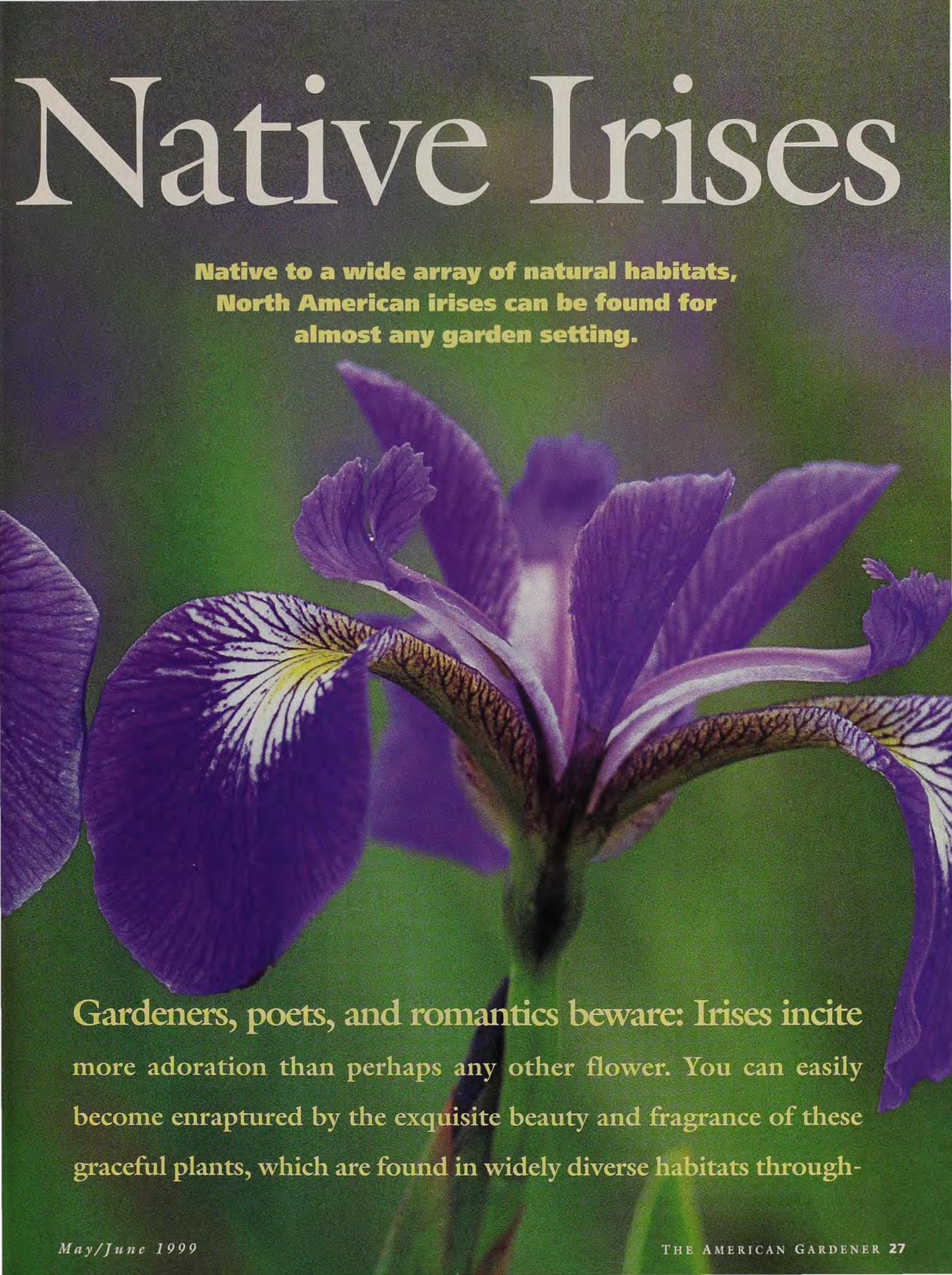


Northern blue flag *(I. versicolor)* is native to wetlands throughout much of eastern North America.

by C. Colston Burrell

Native Irises

Native to a wide array of natural habitats, North American irises can be found for almost any garden setting.



Gardeners, poets, and romantics beware: Irises incite more adoration than perhaps any other flower. You can easily become enraptured by the exquisite beauty and fragrance of these graceful plants, which are found in widely diverse habitats through-

The stylized iris we now know as the fleur de lis *became an icon for nobility in the 1100s when King Louis VII of France adopted the symbol for his banner.*

out temperate regions of the northern hemisphere.

The genus is named for Iris, fleet-footed messenger of Hera, the Greek goddess of marriage. According to legend, Iris descended to earth on rainbows, and from her footsteps sprang flowers arrayed in the seven colors of the rainbow. The Greeks were not the earliest culture to value the iris, however; its symbol has been identified in Egyptian carvings dating to nearly 2000 B.C., and it once adorned the brow of the now deteriorating Sphinx.

In European history, the iris has been prized since at least the 6th century. The stylized rendition of an iris we now know as the *fleur de lis* became an icon for nobility in the 1100s when King Louis VII of France adopted the symbol for his banner.

Because irises proliferate throughout temperate regions of the world, many of the 300-odd species that have so far been classified are adaptable to gardens in various parts of North America. Our continent has its own stock of indigenous irises, however—many of which are worthy garden species that have been overlooked by gardeners confronted by the thousands of hybrids that have emerged in the last century.

The American iris species, though lacking the divine connection of the Greeks, have no less varied a history. The first identified American iris species, the crested iris *(Iris cristata),* was sent to England in the 1730s by botanist John Bartram. Since that time some 30 species and numerous subspecies of iris have been identified in North America. The majority of these are native to either the Southeast or to coastal regions of northern California and Oregon, but species are also found around the Great Lakes and along both sides of the Rockies. Several species are widely distributed within a large geographic region; a few are restricted to a couple of acres or counties.

The 'Red Dazzler' cultivar of the copper iris, above left, has striking brick-red petals with the standards outlined in gold. Above right: An ideal ground cover in partly shaded sites, dwarf crested iris has purple flowers with cream and yellow markings.

Coming to Terms

Iris is the type, or original, genus identified in the iris family (Iridaceae). Botanists define irises as monocots—plants with one seed leaf that are usually characterized by having parallel veins in their leaves and flower parts in threes.

In order to describe the differences between iris flowers, an understanding of some basic terminology is necessary. Iris flowers have a unique configuration with a total of six petals—botanists refer to these as "tepals." Three petals, called the falls, encircle the outside of the flower. These are either held perpendicular to the stem or are reflexed—curved—downward. Each fall has a distinctive, often multicolored blaze of color at its center, or crest. These markings, which are sometimes furry or "bearded," serve to guide pollinating insects into the flower. The variability of colors and textures in the markings on the falls is one important way by which irises are distinguished; it also offers iris breeders a glorious palette with which to experiment.

The inner ring of three petals, called the standards, stands perpendicular to or is slightly elevated above the falls. In addition, a triad of columns containing the male and female reproductive structures curve out from the center of the flower and sit directly over the falls.

In general, irises have flat, straplike leaves that taper to a point at the tip. Iris foliage ranges in color from bright green to blue-green or gray-green and features the characteristic parallel lines mentioned earlier. Leaves and flower stems grow from thick rhizomes that are specialized for water and food storage. As a result, most species—even the wetland types—are drought tolerant.

The Woodland and Dwarf Species

The cheery dwarf crested iris *(I. cristata)* is perhaps the best-loved of the diminutive woodland species. Hardy in Zones 3 to 8,

Sources

AITKEN'S SALMON CREEK GARDEN, 608 NW 119th Street, Vancouver, WA 98685. (360) 573-4472. *www.e-z.net/~aitken.* Catalog $2.
BAY VIEW GARDENS, 1201 Bay Street, Santa Cruz, CA 95060. (831) 423-3656. Catalog $2.
FORESTFARM, 990 Tetherow Road, Williams, OR 97544-9599. (541) 846-7269. *www.forestfarm.com.* Catalog $4.
JOY CREEK NURSERY, 20300 N.W. Watson Road, Scappoose, OR 97056-9612. (503) 543-7474. Catalog $2.
LOUISIANA NURSERY, 5853 Highway 182, Opelousas, LA 70570. (318) 948-3696. Catalog $6.
SISKIYOU RARE PLANT NURSERY, 2825 Cummings Road, Medford, OR 97501-1538. (541) 772-6846. *www.wave.net/upg/srpn.* Catalog $3.
WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752–9338. (828) 738-8300. *www.we-du.com.* Catalog $2.

Resources

THE AMERICAN IRIS SOCIETY, P.O. Box 55, Freedom, CA 95019. *www.irises.org.*
THE GARDENER'S GUIDE TO GROWING IRISES, by Geoff Stebbings. Timber Press, Portland, Oregon, 1997.
A GUIDE TO SPECIES IRISES: THEIR IDENTIFICATION AND CULTURE, edited by The Species Group of the British Iris Society, Cambridge University Press, United Kingdom, 1997.
SOCIETY FOR PACIFIC COAST NATIVE IRISES, 4333 Oak Hill Road, Oakland, CA 94605.
SPECIES IRIS GROUP OF NORTH AMERICA, 18341 Paulson SW, Rochester, WA 98579.

A thick stand of *Iris setosa,* here represented by the cultivar 'Nana', would grace any garden. This species is distributed in both eastern Asia and eastern North America and will grow in a wide variety of soils.

this plant is fairly common in loamy alluvial soils on floodplains and on rocky slopes and outcroppings above rivers and streams from Maryland and Ohio south to Georgia and Oklahoma. The sky-blue flowers have reclining standards over drooping falls, giving them a somewhat flattened appearance. The crest of the falls is small, orange, and bearded, surrounded by white to pale blue markings. The blossoms are two inches wide and the foliage stands just four to eight inches tall when mature. Plants creep over the ground by slender, nodular rhizomes, eventually forming broad, dense clumps.

I value crested iris's broad mats of tidy foliage and its carpet of flowers in April and May. Place it on a wooded slope, at the front of a bed, along a path, or in a rock garden where it has plenty of room to spread. The plants compete well with established tree roots and thrive even in dry shade, so they can serve as a ground cover under shrubs and flowering trees. Combine them with Jacob's ladder *(Polemonium reptans),* spring beauty *(Claytonia* spp.), wild ginger *(Asarum* spp.), and creeping phlox *(Phlox stolonifera).* Use twinleaf *(Jeffersonia diphylla),* bloodroot *(Sanguinaria canadensis),* Solomon's-seal *(Smilacina racemosa),* merrybells *(Uvularia* spp.), and ferns to add height to the combination.

Plant crested irises in rich, moist, neutral soil where they will be partly shaded; they will bloom more heavily if given some direct summer sun. Divide them in late summer and replant with the top of the rhizome just above the soil surface.

There are a number of named selections of crested iris that vary in size and flower color. My favorite is 'Abbey's Violet', one of the darkest selections with deep blue-violet flowers. 'Alba' is pure white; many white-flowered forms also bear this name. 'Eco Little Bluebird' is a dwarf that grows to four inches tall, with deep blue flowers. 'Shenandoah Skies' has rich sky-blue flowers. 'Summer Storm' has deep blue flowers.

The beguiling dwarf lake iris *(I. lacustris)* is even smaller than the crested iris. The two-inch-wide blue flowers, sometimes marked with white or yellow, are jauntier than those of its cousin; the leaves are very similar, but reach only four to six inches. Blooming in May, this little gem is rare in the wild and has a restricted range on lakeshore dunes and gravel ridges around the western Great Lakes. It is hardy in Zones 4 to 7 and grows well beyond its native range if planted in light, well-drained, limey soil in sun or part shade. The plants spread to form extensive mats and are handsome combined with spring bulbs, primroses, hellebores, and wild geranium *(Geranium maculatum).*

Beachhead iris, *I. setosa* var. *canadensis,* is a small iris with erect, straplike leaves to 10 inches and 2-inch-wide purple-blue or lavender flowers in late spring. It resembles a small Siberian iris and is as easy to grow. Found on rocky headlands, beach dunes, and riverbanks in northern North America, this plant is hardy in Zones 3 to 8. Plant in rich but well-drained soil; full sun for part of the day is necessary for good growth and bloom.

The delicious fragrance of spring or violet iris *(I. verna)* brings many gardeners to their knees. The two-inch-wide, blue-violet flowers with erect standards and orange-blazed falls bloom on four-inch

The Pacific Coast Irises

The West Coast is home to a number of charming and beautiful native irises. Most are tricky to grow outside their native habitat—their evergreen foliage dies at 15 degrees Fahrenheit, and the plants succumb at 5 degrees—but a few are worth trying in the East where summer nights are cool and winters are mild.

Collectively referred to as the Pacific Coast irises, these species grow wild in meadows and along the edges of open woods in northern California and southern Oregon. In cultivation, place them in a rockery, atop a stone wall, or on a gravelly slope where perfect drainage is assured. Summer drought is no problem, but separate them from floppy or fast-spreading plants, because they surrender to competition without a fight.

One of the largest and easiest-to-grow species, Douglas's iris *(I. douglasiana)* has two- to two-and-a-half-foot-tall flower stalks and slightly shorter leaves. Blooming in May and June, the rich blue to creamy white flowers of this species feature flaring standards and broad, spotted falls. It grows best in light, quick-draining soil but appreciates consistent summer moisture. Hardy in Zones 7 to 9.

Two western irises—*I. innominata*, above left, and *I. tenax*, above right.

Growing wild in the foothills and chaparral of southern Oregon and northern California, *I. innominata* has delicate, grasslike foliage and softly colored blue, purple, or yellow flowers with attractive markings. Plants flower at six inches tall and the leaves grow to a foot or more, forming compact mounds over time. They grow best in well-drained soils. Hardy in Zones 7 to 9.

Tough-leaf iris *(I. tenax)* is also a real charmer, featuring medium blue to creamy flowers with pert standards and flat, pointed falls. The flowers on foot-tall stems often nestle within taller foliage. Hardy in Zones 6 to 8, this is the most cold hardy of the Pacific Coast species; it is also the most moisture tolerant.

The popular Pacific Coast hybrids—produced by crossing blue-violet Douglas's iris with other western natives such as yellow *I. innominata* and blue *I. munzii*—are showier than the species, with broad, boldly blazoned falls and erect to spreading standards. The flowers come in white, yellow, blue, purple, and red to near black. Crosses with *I. innominata*—which imparts hardiness and a degree of moisture tolerance—hold the most promise for northern and eastern gardeners.

Maurice Horn of Joy Creek Nursery in Oregon recommends 'Drive You Wild', which has deep red-violet flowers overlaid with rich gold; 'Night Editor', which is ruffled, purple-black; and 'Pacific Rim', which is white with a delicate blue trim to the falls.

Pacific Coast irises have even been crossed with Siberian irises to produce hybrids called Cal-Sibes that grow to 18 inches, with narrow falls and grassy leaves. Terry and Barbara Aitken of Aitken's Salmon Creek Garden in Vancouver, Washington, recommend 'Golden Waves' for its intense yellow color; 'Pacific Star Print', which is royal purple with a black blaze surrounded by a white starburst; and 'Pacific Smoothie', which is dark violet.

—*C.C.B.*

stalks in early spring. The leathery, grasslike leaves elongate after flowering to one foot tall. Plant in well-drained, slightly acidic sandy or loamy soil in full sun or part shade; afternoon shade may be necessary in the south. Hardy in Zones 5 to 9, this iris is native to open, rocky and gravelly slopes and mixed coniferous woods and pinelands from Pennsylvania and Kentucky south to Georgia and Mississippi.

The Wetland Species

The large-flowered blue "flag" iris is a familiar sight in late spring and early summer in the wetlands of the East and Midwest. Most species have bold strap-shaped leaves that may reach three feet long and bright indigo, blue-violet, or purple flowers. The most widespread species is the northern blue flag *(I. versicolor)*, found in wet meadows and prairies, still ponds, shallow marshes, and bogs from Newfoundland and Manitoba south to Virginia and Minnesota. Plants are two to three feet tall with dark-veined, three- to four-inch-wide, sky-blue to indigo flowers held well above the foliage. Numerous cultivars with a wide range of flower colors are available. Hardy in Zones 3 to 8.

Found in low meadows, wetlands, and ditches on the coastal plain from Virginia to Texas, the Virginia iris or southern blue flag *(I. virginica)* is similar to *I. versicolor*, but the flowers are carried even with the top of the two- to three-foot leaves. The tips of the leaves droop downward, giving the clumps a graceful, flowing appearance. *I. virginica* var. *shrevei*, found further inland, is similar in appearance but has more flowers per stalk and larger seed capsules. Among the best of the many named selections that appear from time to time in the trade are 'Contraband Girl', a robust hybrid with lush, wide foliage and blue-purple flowers; and 'Alba', a white-flowered selection. Hardy in Zones 4 to 9.

Native to wet meadows, low woods, and marshes from Ohio and Kansas south to Alabama and Texas, the lamance iris *(I. brevicaulis)* is smaller than other flags. Its deep blue, four-inch-wide flowers are carried on lax, one-foot stalks below the two-foot leaves, creating an overall vaselike effect. It does best in moist to wet, humus-rich soil in full sun or light shade. Hardy in Zones 5 to 9.

The curious copper iris *(I. fulva)* breaks the color barrier with its rich terra-cotta flowers that bloom in June on three- to four-foot stalks above the leaves. The three-and-

a-half-inch flowers have small standards and drooping falls, so they appear flat. Because of its unique color, this species is important in hybridization. Along with several of the southern species, this beauty contributes color and form to a group of hybrids known as Louisiana irises. The least hardy of the eastern American irises, copper iris is native to wet meadows and swamps from Illinois and Missouri south to Georgia and Texas and thrives in Zones 6 to 9.

I. hexagona, often classified with the Louisiana irises, was the first of the flags I grew. Despite its wetland origins, it flourished for years in loamy soil that became quite dry in summer. In June or July, the bright blue to royal purple flowers sport sharply pointed falls with golden yellow blazes. A mature clump in full flower is stunning. The leaves often crinkle as they expand after the flowers fade. Hardy in Zones 7 to 10.

The Louisiana hybrids—produced from hybrids with *I. brevicaulis, I. fulva,* and many other native and exotic species—are especially popular with southern gardeners who must contend with extreme heat. Innumerable cultivars come in a wide range of blues, pinks, and reds, as well as white and yellow. An old but beautiful selection is 'Black Gamecock', which has velvety purple flowers with gold markings. Most cultivars are hardy in Zones 4 to 9.

From the Midwest and Rocky Mountains comes the lovely Missouri or Rocky Mountain iris *(I. missouriensis).* This delicate species—which resembles the familiar Siberian iris—has narrow, strap-shaped leaves up to one to one and a half feet long. Its white to deep blue flowers have slender standards and falls and are carried above the leaves in summer on two-foot stems. Found in the wild in wet meadows, along streams, in seeps, and in seasonally wet areas from South Dakota and British Columbia south to Mexico and California, this iris tolerates dry or wet sites equally well. Hardy in Zones 3 to 8.

I am very fond of the ethereal cubeseed flag *(I. prismatica),* which is found along the eastern coastal plain from Nova Scotia south to the Carolinas. This plant can reach two feet tall when the leaves are fully expanded. With its narrow leaves and delicate violet to pink flowers, this species is sometimes confused with Siberian iris. A compact selection with pale purple flowers, 'Polly Spout', was introduced by We-Du Nurseries. Zones 4 to 9.

Perhaps the least well known of the flags is *I. tridentata.* This slim plant is elegant but sparsely flowered. It reaches one and a half feet tall and has two-inch-wide violet to white flowers with short, erect standards and showy, wide falls emblazoned with yellow. Native to coastal wetlands from North Carolina to Florida, it blooms in late spring. Hardy in Zones 7 to 10.

Plant spring iris *(I. verna),* above left, in acidic soils where it will be partly shaded and receive regular watering in summer. Above right: The Missouri iris *(I. missouriensis)* is found along both sides of the Rocky Mountains from Canada to Mexico.

Wetland Irises in the Garden

Most of the flags do well in pondside plantings, bog gardens, and in low spots with ferns, sedges, grasses and other wetland perennials. They also thrive in formal settings where the soil is evenly moist. Combine their strap-shaped foliage with the airy plumes of astilbe and the bold leaves of plants such as rodgersia, ligularias, and umbrella leaf *(Darmera peltata)* for contrast. In native meadow and prairie plantings, choose cardinal flower *(Lobelia* spp.), swamp milkweed *(Asclepias incarnata),* and ironweed *(Vernonia* spp.). In water gardens, plant them with wild calla *(Calla palustris),* pickerel weed *(Pontederia cordata),* arrowhead *(Sagittaria* spp.), and marsh marigold *(Caltha palustris).*

Plant the wetland irises in evenly moist to wet, humus-rich soil in full sun or light shade. Species such as *I. versicolor* will grow well in as much as eight inches of water.

Pests and Diseases

Irises are generally not affected by major pests or disease problems, but iris borers may infest the rhizomes. The adult moths lay eggs on the foliage and the larvae travel down the leaves into the rhizome where they eat until nothing is left but a hollow shell. They also spread bacterial infections from plant to plant.

Good culture is the best prevention. Remove spent foliage in fall or early spring, and watch for signs of infestation. The young borers tunnel through the leaves, leaving dark streaks in their wake. Remove infested leaves and destroy the borers or squash them in their tunnels with your finger. Dig up infected plants and destroy the fat pink grubs. Replant the unaffected portions and keep a watchful eye for further trouble.

Growing North American native irises may take a little more research and planning than is required for some of the common hybrids, but if you select species based on the habitat you can provide for them in your garden, they will reward you many times over for the effort. Moisture-loving species can camouflage ditches and swales, for example, while crested irises offer a low-maintenance ground cover in shady areas. Given all the native irises to choose from, it should be easy to find room in your garden for at least one species—or several.

Author and landscape designer C. Colston Burrell lives in the Blue Ridge Mountains near Charlottesville, Virginia.

Native Grasses

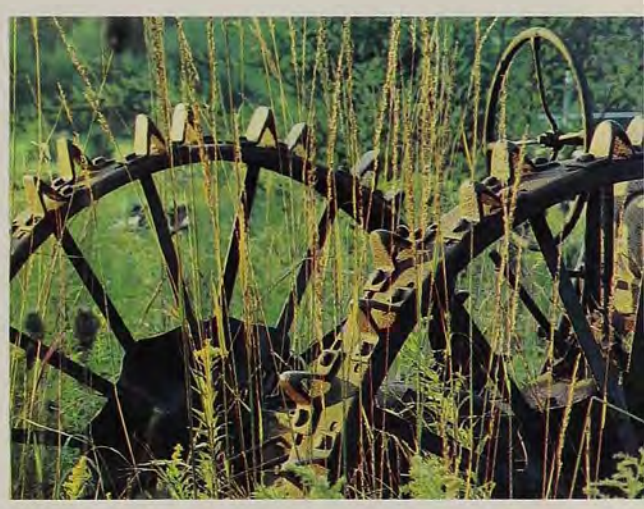
By using native grasses in the landscape, gardeners can reflect the patterns of regional plant communities.

by Rick Darke

Native grasses play many roles in the regional dramas of the North American landscape. In some places, such as the original tallgrass prairie, they are clearly the lead characters. More often, however, grasses are lesser but essential bit players, making subtle but certain contributions to the background and balance of diverse natural landscapes across this vast continent. More and more gardeners are looking for ways to make a connection between their home landscape and the natural plant communities in their region. Incorporating appropriate, regionally native grasses in the garden is a way to subtly create this effect. As a landscape designer, I see the garden as a kind of theater. At its best, a garden designed to reflect the regional flora offers a bow to nuanced performers such as native grasses.

With or without grasses, the making of an evocative regional garden is no mean trick, since it relies on a synthesis of skills and insights from disciplines that are traditionally quite separate. Horticulture, which is rightly focused on the cultivation of plants, seems often to have had the unintended effect of emphasizing and celebrating plants as objects out of context. Landscape design aims for the broad view, but is often unschooled in the complexities and practicalities of the plant palette. The ecological mindset delves deeply into the interrelationships of living communities, yet often perceives itself at odds with art.

Many gardeners are making new—and sometimes conflicting—demands of gardens today. Gardens must be at once inspiring and conserving. They must be high-spirited but also easy to maintain. They must provide an opportunity for creative expression as well as a reverent link to the larger ecology. They must reflect and sustain the practical rhythms of our lives and our homes, yet also speak to us eloquently of the sun and the seasons.



Opposite: Purple needle grass amid a patch of California poppies at the Santa Barbara Botanic Garden. Above: Indian grass offers vertical contrast to the curves of an antique tractor in the author's Pennsylvania meadow garden.

RICK DARKE (2)

Creating Regional Landscapes

Diverse and ubiquitous—not to mention beautiful—native grasses offer a wealth of possibilities for regional gardens, and I know of no better way of seeking inspiration than to study their natural roles in your own locale. In his essay "Mapping the Real Geography," published in the fall 1989 issue of *Orion Nature Quarterly,* Barry Lopez talks about developing an intimacy with place and suggests this knowledge "resides with men and women more or less sworn to a place, who abide there, who have a feel for the soul and history, for the turn of leaves and night sounds." Though I've had the good fortune to

Top: Not all grasses are green. Little bluestem *(Schizachyrium scoparium* 'The Blues')—here flanked by pink asters and black-eyed Susans—has a strong lavender tint. Above: June grass *(Koeleria macrantha),* blooming in combination with another prairie native, purple coneflower, goes dormant in midsummer.

visit and enjoy many exotic landscapes, I remain most avidly a student of my native Northeast and find daily delight in making a garden based upon my observations of the regional flora.

True grasses—members of the grass family (Poaceae), as distinguished from sedges, rushes, and other grasslike plants—are cosmopolitan in distribution, occurring natively from mountain tops to seashores. They are the dominant plants in most open habitats, but are relatively scarce in dense forests. Adept colonizers of open ground, grasses are among the first species to gain a foothold in landscapes cleared by natural cataclysms or human activity. They are often transients in regions such as the Northeast, where successional vegetation has a natural tendency toward trees.

In practical gardening terms, this suggests grasses are sometimes best cast in temporary roles in the regional garden, moving gracefully off-stage before the finale. Though common wisdom recognizes that a garden is rarely if ever actually finished, we still have a long way to go toward embracing the flux that is characteristic of the natural succession of plant types seen in our native landscapes.

The Northeast

My wife Melinda and I garden on one and a half acres at the eastern edge of the Pennsylvania Piedmont, just a few miles from its intersection with Delaware's coastal plain; thus we are influenced by two very different regional native landscapes. Our local Pennsylvania surrounds are mostly deciduous forest—with few native grasses—though many local old fields and roadside rights-of-way have become modern harbors for native grasses, including little bluestem *(Schizachyrium scoparium),* broomsedges *(Andropogon virginicus* and *A. gyrans),* switch grass *(Panicum virgatum),* Indian grass *(Sorghastrum nutans),* and purple love grass *(Eragrostis superba).* Delaware's open coastal lands and naturally moist meadows are home to many more native grasses. To complicate matters, we are directly adjacent to an historic farmstead, and we have no desire to ignore the regional cultural tradition that often puts corn, hay, or winter wheat—all grasses—in our purview.

Our property was a farm field until 50 years ago, and it was still largely lawn a decade ago. Though grasses are evident in our garden, they are not the main motif. We believe a forested landscape is probably the most beautiful and sensible long-term goal for us; but in the meantime we're having fun experimenting with a variety of grasses on our deliberate journey back to the woods.

Grasses have proved superb fillers and quick organizers of space as the lawn gradually gives way to mixed borders. For example, we recently planted a grove of sassafras *(Sassafras albidum)* to greet visitors coming in the drive and to provide partial screening from the road. This deciduous planting is punctuated by our evergreen native red cedar *(Juniperus virginiana).* Local asters *(Aster divaricatus* and *A. cordifolius)* serve as low ground covers beneath various seedlings and cultivars of switch grass, including 'Cloud Nine'. The switch grass provides a quick means of filling the middle level, especially while the trees are small. Eventually the sassafrases will shade out the grass and their trunks will be a sufficient screening presence. In the interim years, we are enjoying the fine texture and billowy translucence of the grass against the colorful autumn foliage of the sassafras and the opaque green of the red cedars, all of which are reminiscent of similar associations in the regional native landscape.

Similarly, in a rear section of our garden, a mass planting of river birch *(Betula nigra* 'Heritage') and native shrubs has shared space with a number of grasses in the past decade, yet only wild oats *(Chasmanthium latifolium)* remains today. This eastern native grass is one of the few that thrives in shade, normally occuring on wooded slopes, moist thickets, and river bottoms. The fine texture of the grass complements the bold trunks of the birches, and in autumn the tawny color of its dangling seed heads is set off dramatically by the vibrant foliage colors of decidous shrubs, including spicebush *(Lindera benzoin),* fothergilla *(Fothergilla gardenii),* and sweet spire *(Itea virginica* 'Henry's Garnet'). Wild oats tolerates the root and moisture competition from the trees and shrubs, perpetuating itself by self sowing modestly into available niches. Modeling after the regional cycles, we've recognized autumn as the naturally most colorful time in our garden. We tend to choose woody plants primarily for their fall foliage display or colorful fruits and use grasses as subtle counterpoints.

Winning Combinations

The flowering of the grasses coincides with that of our many local native asters, goldenrods, Joe-pye weeds, and other members of the aster family (Asteraceae). Many of these forbs—nongrass herbaceous plants—share the grasses' preference for sun, and make sensible, low-maintenance garden companions to the grasses.

We have a small meadow garden nearly of necessity: It occupies the same ground as

our septic field, which must be kept free of woody plants. This area is planted in a mosaic of grasses, including little bluestem, broomsedge, Indian grass, switch grass, and purple love grass. The meadow garden is off the south-facing side of the house, so the translucent qualities of the grasses are accentuated by natural side- and backlighting. This provides an ideal setting for bold sculptural objects, and in the interior of the meadow the thin vertical lines of the grasses play delicately against the dark form of a 1930s-vintage tractor. This rusty relic is there to provide a destination within the meadow, particularly for children, and serves as an allusion to this twilight period for the small family farms that once typified our region. The luminous beauty of the meadow grasses continues well into winter and is made more dramatic by snow and coats of ice.

Sometimes the most subtle gestures tell the surest story of grasses in the regional landscape. I'm particularly fond of purpletop *(Tridens flavus)*, which gets its name from the purple top it puts on eastern old fields and meadows in late summer. Though nearby Winterthur Gardens is renowned for its spring bulb displays and woodland masses of azaleas and rhododendrons, founder Henry Francis du Pont envisioned the peripheral grounds to be an essential part of the garden. Winterthur occupies nearly 2,000 acres on the rolling Piedmont of northern Delaware, and the natural landforms rival any garden artifice. This is especially true in late summer when, due to selective mowing, the hills and slopes are dusted purple by *Tridens flavus*.

While Longwood Gardens in nearby Kennett Square, Pennsylvania, is perhaps best known for its European-inspired eclecticism, there are also a number of places at this venerable showplace where grasses play to the regional character. Longwood's peripheral grounds are home to a few stunning hillside populations of little bluestem, beautifully visible from public thoroughfares. The gardens' managed meadow has been fortified with asters, sunflowers *(Helianthus* spp.), blazing star *(Liatris spicata)*, Joe-pye weed *(Eupatorium fistulosum)*, and other fall-blooming forbs that are particularly effective amidst native sweeps of Elliott's broomsedge *(Andropogon gyrans,* also known as *A. elliottii)*. The Flower Garden Walk, a colorful passage edged with bright exotics, leads visitors to the Peirce's Woods garden, which celebrates eastern woodland natives. Planters in the Peirce's Woods entrance courtyard gracefully make the transition using an artful mix of native flowers and grasses, including wild oats.

Natural Associations

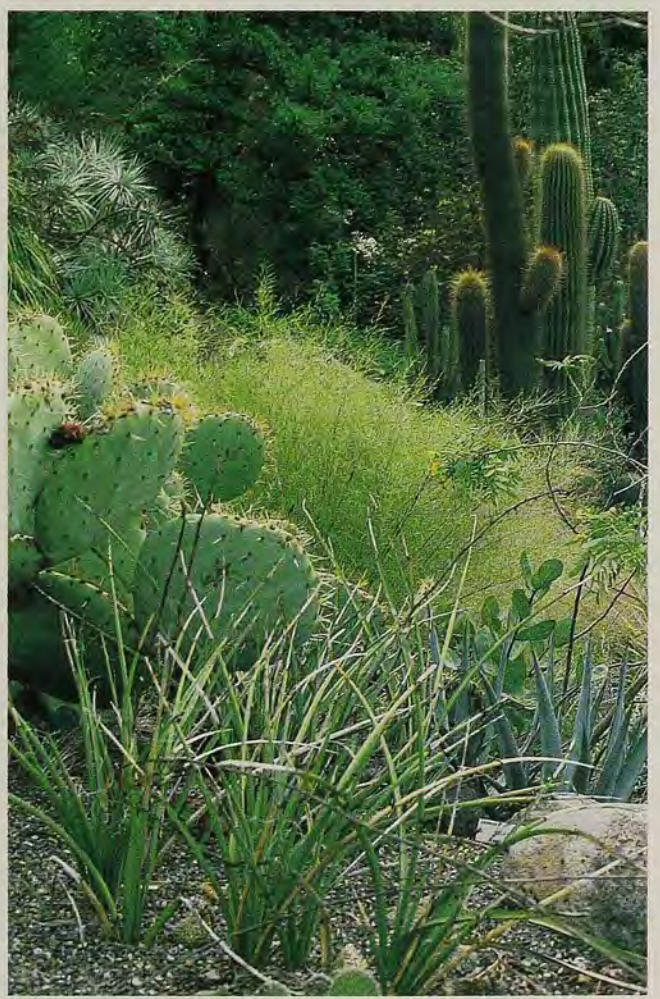
Many regional floras include a wealth of grasses with garden potential just waiting to be recognized. Consulting work for the Delaware Department of Transportation has recently brought me into much closer contact with Delaware's coastal flora. The native grass component of this region includes little-known gems such as plumegrass *(Saccharum contortum)*, split-beard broomsedge *(Andropogon ternarius)*, and coastal switch grass *(Panicum amarum)*. These are frequently seen in populations with native evergreens such as American holly *(Ilex opaca)*, inkberry *(Ilex glabra)*, and colorful-berried shrubs, including winterberry *(Ilex verticillata)*.

North along the coast, in the New Jersey Pine Barrens, one of my favorite natural associations is switch grass *(Panicum virgatum)* growing at the edge of tea-colored pools, surrounded by a mass of golden-club *(Orontium aquaticum)*. The foliage of the switch grass remains standing through winter and into the following spring, providing perfect color and textural contrast with the broad leaves and bright yellow flowers of golden club. Another favorite image is of the chartreuse foliage of manna grass *(Glyceria obtusa)* making broad sweeps across shallow water, with bold orbicular leaves of fragrant water lily *(Nymphaea odorata)* floating nearby. These and other similar combinations of grasses and broadleaved companions could be easily reprised in regional water gardens.

Tallgrass Prairie

The tallgrass prairie continues to be a strong image and inspiration for regional garden designs centered on grasses. Though little of the original prairie remains, restored prairies such as the one at the University of Wisconsin, Madison Arboretum evoke the visual power of these once vast grasslands. They also remind us that grasses are only part of the story.

While prairie grasses such as big bluestem *(Andropogon gerardii)* and Indian grass *(Sorghastrum nutans)* may make up the majority of the matrix, an important part of the secondary interest and diversity is due to the flowering forbs that pepper the prairie. The 10-inch-wide leaves of prairie dock *(Silphium terebinthinaceum)*, for instance, offer dramatic contrast with grasses. The fact that this easy-to-grow plant sends up seven- to 10-foot-tall stalks with bright yellow flowers in summer is merely an added bonus. The closely related compass plant *(S. laciniatum)* and cup plant *(S. perfoliatum)* are similarly stat-



Naturally adapted to similar, arid conditions, bamboo muhly grass and various cacti capture the essence of the southwestern desert landscape in this planting at the University of California–Berkeley Botanic Garden.

RICK DARKE (3)

Sources

FORESTFARM, 990 Tetherow Road, Williams, OR 97544-9599. (541) 846-7269. *www.forestfarm.com.* Catalog $4.
GARDENS NORTH, 5984 Third Line Road North, RR #3, N. Grower, Ontario, K0A 2T0, Canada. (613) 489-0065. garnorth@istar.ca. Catalog $4.
KURT BLUEMEL, INC. 2740 Greene Lane, Baldwin, MD 21013-9523. (410) 557-7229. www.bluemel.com. Catalog $3.
PRAIRIE MOON NURSERY, Route 3 Box 163, Winona, MN 55987-9515. (507) 452-1362. *www.prairiemoon nursery.com.* Catalog free.
PRAIRIE NURSERY, P.O. Box 306, Westfield, WI 53964. (800) 476-9453. *www.prairienursery.com.* Catalog free.
WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752-9338. (828) 738-8300. *www.we-du.com.* Catalog $2.

Resources

AGNES CHASE'S FIRST BOOK OF GRASSES: THE STRUCTURE OF GRASSES EXPLAINED FOR BEGINNERS (Fourth Edition) by Lynn G. Clark and Richard W. Pohl, Smithsonian Institution Press, Washington, D.C., 1996.
GRASSES: AN IDENTIFICATION GUIDE by Lauren Brown, Houghton Mifflin, Boston, Massachusetts, 1979.
MANUAL OF GRASSES Rick Darke and Mark Griffiths, eds., Timber Press, Portland, Oregon, 1994.
TALLGRASS PRAIRIE WILDFLOWERS by Doug Ladd, Falcon Press, Helena, Montana, 1995.
THE COLOR ENCYCLOPEDIA OF ORNAMENTAL GRASSES by Rick Darke, Timber Press, Portland, Oregon, 1999.

uesque. Though I've known the wide-ranging butterfly milkweed *(Asclepias tuberosa)* from its eastern haunts, I've never seen it look so stunning as when it appears as a bright orange dash in a sea of prairie grasses.

Another facet to consider is that not all prairie grasses are late-blooming, warm-season growers. For example, the aptly named June grass *(Koeleria macrantha)* extends the grasses' season of interest, blooming in June along with forbs such as purple coneflower *(Echinacea purpurea)*. A low, bunching grass that grows to two-feet tall, June grass has slender, needlelike leaves and flowering stems that are finely hairy at the base. The delicate greenish flowers are clustered around the top six to eight inches of the flowering stems, tapering to a point at the top. June grass does best in dry, open sites; it is hardy to Zone 4 if developed from northerly seed sources, but not terribly heat tolerant. In warmer regions it may go dormant in late summer and so should be sited where late summer-blooming plants will fill the breach.

One of my favorite private midwestern gardens, the Schuler estate in Lake Bluff, Illinois, has a prairie at its heart. A few deft design elements elevate the landscape from mere restoration to inspired regional artform. The prairie grasses include the usual suspects, mostly propagated from seed of local provenance. A mixture of prairie forbs includes bright summer highlights such as yellow coneflower *(Ratibida pinnata)*. A strip of low turf separates the prairie garden from the more formal area nearest the house, and two elegant stone benches mark the entrance to a network of simple mowed pathways that meander through the grasses. A mammoth oak has fallen at one edge of the planting, and its dark hulk has been left in place as a sculptural piece, shading and sheltering a bench.

Alan Wade, proprietor of Prairie Moon Nursery in Winona, Minnesota, recommends northern or prairie dropseed *(Sporobolus heterolepis)*, a three-foot-tall warm-season grass that will tolerate richer or wetter garden soils better than some other smaller prairie grasses such as little bluestem and sideoats grama *(Bouteloua curtipendula)*. "Northern dropseed is difficult to establish from seed in my area, but transplants well and is hardy into Zone 4," says Wade.

California

Our increased sense of environmental responsibility is partly behind the re-thinking of the garden in dry regions like California, which may have the heat to support year-round flowers but certainly doesn't have the water. This state has an exceptional number of attractive native grasses that are just beginning to make their way into regional gardens.

It's not difficult to understand why they were so long ignored. Much of California's early garden tradition was established by immigrants from the moist eastern states, most of whom found the native cycles of winter flowering and summer dormancy to be incomprehensibly exotic. It has taken generations for gardeners to come to terms with the sere beauty of summer dormant grasses amid manzanitas and other native flowering plants. For today's native-grass enthusiasts, there is much inspiration to be found in the serenely beautiful regional landscape that can be found at the Santa Barbara Botanic Garden.

One of my favorite plant combinations at the Santa Barbara Botanic Garden is purple needle grass *(Nassella pulchra*, formerly *Stipa pulchra)* interspersed with California poppies *(Eschscholzia californica)*. Both were in bloom when I visited the garden in late February. The bright, obvious orange of the poppies carried the combination, but the silver translucency of the long-awned grass added a distinct elegance. This cool-season grass was once a principal constituent of California's native grasslands, but it has largely been displaced by invasive exotic species. It does best in full sun and in well-drained soil but tolerates a fairly wide range of sites. Hardy to Zone 8, it self sows but is not invasive.

Nearby, burnt-orange stalks of southwestern bushy beard grass *(Andropogon glomeratus* var. *scabriglumis)*—still standing from summer—stood side-lit against a foreground of gray-leaved yuccas and distant, dark green live oaks. This clump-forming, warm-season native of moist open sites in the Southwest and California grows to five feet tall and has attractive flowers clustered in dense, bushy bracts.

Visiting the same meadow area in mid-June, I remember marvelling at broad sweeps of gray wild rye *(Leymus cinereus)* in full flower against the mountain backdrop, with the curious seedheads of caterpillar phacelia *(Phacelia cicutaria* var. *hubbyi)* adding interest. Gray wild rye is native to a variety of habitats from Minnesota to British Columbia and south to California. A drought-tolerant, clump-

Leafy reed grass, center, is partnered with a mixture of non-natives in this California hillside garden, but its position on the slope evokes its natural habitat.

Seasonality of Grasses

If you really want your garden to reflect the natural look of your region, it's important to recognize and welcome the characteristic seasonal cycles of the plants you grow. If you're gardening in the central or eastern states, native grasses for the most part can be divided into cool-season and warm-season types.

Cool-season grasses such as crinkled hair grass *(Deschampsia flexuosa)* and June grass *(Koeleria macrantha)*, for example, grow best in temperatures from near freezing to about 75 degrees Fahrenheit. Typically, these grasses will begin growth in late winter and have their best display of foliage and flowers in spring and early summer. They go partly or fully dormant in the heat and humidity of mid- to late summer and may leave a gap in your landscape unless your design includes "follow-on" companion plants that come into their peak in the heat.

Warm-season grasses begin growth in late spring, increasing in vigor as days grow warmer. They revel in intense sun, thriving in areas that have extended periods of temperatures in the 80 to 95 degree range, and usually flower at summer's end or in early autumn. Their blooming is often accompanied by rich fall foliage colors, and most remain attractive even in winter dormancy. The majority of prairie and eastern perennial grasses are warm-season types, including the beardgrasses *(Andropogon* spp.), little bluestem *(Schizachyrium scoparium)*, Indian grass *(Sorghastrum nutans)*, prairie dropseed *(Sporobolus heterolepis)*, and switch grass *(Panicum virgatum)*.

In the Mediterranean climate of southern California, the growing cycles of grasses are governed more by rainfall cycles than by temperature. There, the majority of ornamental native grasses, including most *Calamagrostis, Festuca, Achnatherum,* and *Nassella* (formerly *Stipa)* species, are wet-season growers. They grow during the winter and spring rains, flower in spring or early summer, and go partly or fully dormant in the summer drought. It is often possible to keep these grasses green through summer by artificial watering; however, in addition to consuming large amounts of a scarce natural resource, this practice works against the seasonal rhythms of the region. Even in summer-dry regions, however, there are native grasses such as giant wild rye *(Leymus condensatus)* and deer grass *(Muhlenbergia rigens)* that are adapted to drought and naturally sustain growth through the summer months. Accepting, and even celebrating, these sequences in the garden is part of coming to terms with the larger celebration of place. —*R.D.*

forming grass that does best in areas with low humidity and cool nights, it grows six- to eight-feet tall and quickly outgrows smaller gardens.

Along the path at the periphery of the meadow, leafy reed grass *(Calamagrostis foliosa)* spilled gracefully through rustic fenceposts. Heavy flower heads contribute to this species' distinctly lax habit, which is ideally suited to sloping ground, mirroring its natural habitat of coastal bluffs, cliffs, and scrubby woodland in northern California. The state is home to many beautiful *Calamagrostis* species—including Pacific reed grass *(C. nutkaensis)* and serpentine reed grass *(C. ophitidus)*—which differ significantly in their size, stance, and habitat preference.

Lessons from the Desert

The California and desert sections of the Botanical Garden at the University of California, Berkeley, are also superb places for local residents to learn about native grasses and possible companion plantings. I've visited the California section a number of times in early winter, and have always been struck by the beauty of the dry seed stalks of many grasses such as deer grass *(Muhlenbergia rigens)* catching the low rays of the sun and standing brilliantly against the olive tones of live oaks on the Berkeley hills.

Another inspired regional composition at Berkeley is a mass of winter-green California fescue *(Festuca california)* below the curving mahogany branches of manzanita *(Arctostaphylos manzanita)*. I first saw the Arizona and Mexico native bamboo muhly *(Muhlenbergia dumosa)* in the desert section, planted amongst *Opuntia* cacti and other desert region plants. The lacy, billowing foliage of this unique desert grass made a remarkable contrast to the bold, hard forms of the cacti.

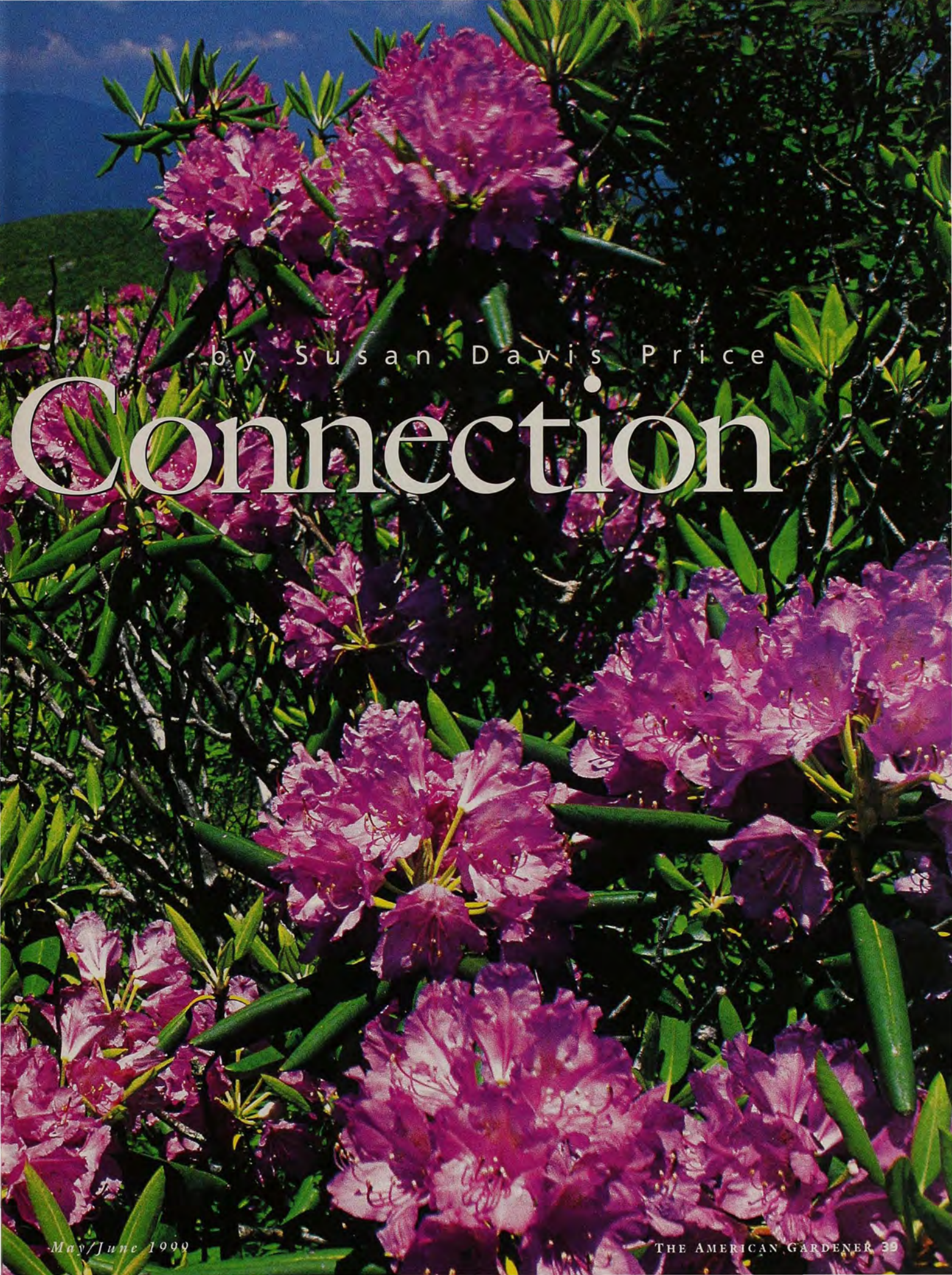
These are but a few of the innummerable grasses amongst our regional floras that have potential for enriching the garden. For example, the *Muhlenbergia* species described above are only two of at least 10 that show great promise for warm regions. Further gains will surely come from cooperative horticultural, artistic, and ecological evaluation of grasses in the larger context.

A writer, photographer, and landscape designer, Rick Darke lives in Landenberg, Pennsylvania. His most recent book, The Color Encyclopedia of Ornamental Grasses, *was published in March by Timber Press.*

When French botanist André Michaux arrived in New York in 1785, his goal was to find American trees that might be acclimated to the French climate and help replenish his homeland's depleted forest resources. During his 11-year stay in America—while his countrymen saw the storming of the Bastille and heard the rise and fall of the guillotine blade echo throughout Paris—Michaux shipped more than 60,000 plants and 90 boxes of seeds from America to France. Michaux did not only take from America, however; he also introduced

The French

French naturalists André and François Michaux set out to reforest France; in the process they launched the forest conservation movement in America.



by Susan Davis Price

Connection

many non-native ornamental plants to the United States.

In the early 1800s, Michaux's son, François André, continued his father's work in America and was one of the first people to recognize that America's trees were being depleted to fuel the needs of the rapidly expanding population. Ironically, François Michaux's expeditions, designed to replenish France's forests, ultimately fostered the early forest conservation movement in the United States. Today, André and François Michaux are inextricably linked to American sylviculture and their surname is memorialized in dozens of plant and place names in this country.

The Gentleman Farmer

The descendent of generations of French farmers, André Michaux was born on March 7, 1746, in the royal shadow of Versailles. By the time he was 20, both his parents had died, leaving him in charge of the family farm and his younger siblings. In 1769 he married Cécile Claye and seemed destined to carry on his family tradition of life as a gentleman farmer. But Cécile's tragic death a year later during the birth of their son, François André, left Michaux in despair and changed the course of his life.

To deal with his sorrow, Michaux threw himself into his work. He soon caught the attention of the king's physician, who offered to guide him in botanical studies. Michaux traveled to Paris to study at the Jardin du Roi (now known as the Jardin des Plantes) and was named a collector for the royal garden. In this capacity, he was sent on brief expeditions to England and Spain, and eventually on a three-year expedition to Mesopotamia and Persia to gather medicinal and ornamental plants.

Top: An illustration of *Pinckneya pubens* from François Michaux's *The North American Sylva;* this rare tree was named by his father, André, who discovered the flame azalea, above, in 1787. Opening spread: The large lilac-purple flowers of the Catawba rhododendron *(Rhododendron catawbiense)* light up the landscape in the southern Appalachian mountains, an area the Michauxs came to love. Inset: This 1819 portrait of François André Michaux is one of the few in existence. There is no known portrait of his father, André Michaux.

In 1785, Michaux returned to France with an impressive collection of seeds and dried specimens. Many of these plants he would later introduce to America, including the camellia, ginkgo, pomegranate *(Punica granatum)*, sweet olive *(Osmanthus fragrans)*, silk tree *(Albizia julibrissin)*, and crape myrtle *(Lagerstroemia indica)*. He may also have been responsible for bringing in the Chinese tallow tree *(Sapium sebiferum)*, which has become highly invasive in the southern United States.

On to America

Soon after Michaux returned from the East, he was named King Louis XVI's botanist and commissioned to explore North America in search of trees to replenish France's depleted forests and interesting plants to showcase the broad reach of French exploration. In November 1785, Michaux, his 15-year-old son François, a trained gardener named Paul Saunier, and a servant landed in New York.

Michaux faced many obstacles upon his arrival. He knew little English, had no permanent lodging or work space, and found that the locals were less than enthusiastic about working for hire. Nevertheless, Michaux botanized in New Jersey and Long Island, amassing five large boxes of plants and seeds for France in just three weeks. His collection included azaleas, "Carolina potatoes" (sweet potatoes), American chestnuts, cranberries, tulip trees *(Liriodendron tulipifera)*, more than 600 sweet gum *(Liquidambar styraciflua)* cuttings, and acorns of red and white oaks. Most of his shipment was headed for Rambouillet, a park King Louis hoped to fill with plants from foreign countries.

Within a month, Michaux had found a spot on the Hackensack River in New Jersey for a nursery to serve as a way-station for the plants headed for Europe. Nicknamed "the Frenchman's garden," this nursery was to become Saunier's life's work. For a year, Michaux made New Jersey his headquarters, venturing into Pennsylvania, New York, Maryland, and Virginia on collecting forays, visiting Benjamin Franklin, George Washington, and American plant explorer William Bartram along the way.

Botanizing in the South

From his first weeks in America, Michaux had longed to see the legendary diversity of flora and fauna of the South. With this in mind, he and François sailed for Charleston, South Carolina, in September 1786. André purchased 111 acres of land just outside the city to serve as a nursery and botanical garden.

He immediately began exploring, spending most days in the forest, where he observed "the most interesting and indigenous trees." His journals describe "forests rich enough in soil and terrain to promise a rich harvest of plants" and the glorious flame azalea *(Rhododendron cal-*

OPENING SPREAD BACKGROUND PHOTO: HUGH AND CAROL NOURSE. PORTRAIT: HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION, CARNEGIE MELLON UNIVERSITY, PITTSBURGH, PA.
OPPOSITE, BOTTOM: JOSEPH C. STRAUCH JR. THE PAGE GALLERY, HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION, CARNEGIE MELLON UNIVERSITY, PITTSBURGH, PA.

***Magnolia cordata*, found by André Michaux and illustrated in *The North American Sylva*, top, is now named *M. acuminata* var. *subcordata*. Michaux sent several shipments of fringe tree, above, to France.**

endulaceum), "the color of fire, deep red in all parts of the flower and even more vivid in shady spots." Along the paths he observed moss-hung forests of live oak, flowering dogwood and myrtle, and swamps filled with cypress and tupelo trees.

Traveling sometimes with his son and sometimes alone, Michaux covered the territory from Hudson's Bay to the Indian River in Florida and from the Bahamas to the banks of the Mississippi River. When possible, he rode on horseback but was often forced to travel on foot. Once, near Augusta, Georgia, his horses were stolen and Michaux was forced to walk, pulling his belongings behind him on a small cart. Shortly into the trip, a wheel broke, putting his travels temporarily on hold. But Michaux's frustration was quickly compensated by his discovery of lady's slipper *(Cypripedium calceolus)* and Carolina allspice *(Calycanthus floridus)* near the area where the wheel had broken.

Michaux returned again and again to botanize in the Appalachians, with its rich store of vegetation. Here Michaux described and named the Catawba rhododendron *(R. catawbiense)*, the delicate fire-pink *(Silene virginica)*, and the fringe tree *(Chionanthus virginicus)*. He discovered the yellow cucumber tree—named *Magnolia cordata* by Michaux but later renamed *M. acuminata* var. *subcordata*—which was not seen again in the wild for another 150 years, and the Piedmont rhododendron *(R. minus)*, with its bell-shaped shell-pink blossoms.

On an icy February day he added to his discoveries the winter-naked yellowwood *(Cladrastis lutea)*, though there were no leaves to provide clues. This rare tree is the only American species of a genus best represented in the highlands of China and Japan. Another discovery, Oconee bells *(Shortia galacifolia)*, was not observed again for 100 years, despite numerous efforts to locate it.

The extent of Michaux's success is evident by the number of plants he described and the large number of plants bearing his name, including the Carolina lily *(Lilium michauxii)*, Michaux's sumac *(Rhus michauxii)*—now an endangered species—and the swamp chestnut *(Quercus michauxii)*. Considering only the plants native to the Carolinas, Michaux is the authority for 26 genera, 188 species, and four varieties. In addition, he named 95 species and varieties that have subsequently been placed in other genera.

A Disappointing End

In spite of his fruitful botanical expeditions, Michaux faced several disappointments late in his career. Throughout his time in America, the botanist had received government subsidies irregularly; after the French Revolution, the payments stopped altogether. During the last two years of his 11-year stay, he couldn't afford to send any botanical specimens to France, but he managed to explore and keep his nurseries in working condition by borrowing on his modest estate. During these final years, Michaux discovered the fever tree *(Pinckneya pubens)*. Restricted to the southeastern United States, this rare plant was originally found by William and John Bartram on the shores of the Altamaha River in Georgia in 1765, but was first described and named by Michaux.

By 1796, Michaux was financially unable to carry on and he sailed for Europe on August 13 (his son François had returned to France five years earlier to finish his education). Off the coast of Holland, his ship ran aground and he was washed ashore—unconscious—along with his records and seeds. Such was his characteristic determination that, as soon as he had regained consciousness, he immediately set about rescuing and drying his collection.

One final disappointment met Michaux upon his return to Paris. The forest of Rambouillet was not, as he had hoped, grown tall with tulip trees, yellowwoods, red buds, and magnolias. The purple rhododendrons and pink azaleas did not bloom in the gardens. In the chaos of the Revolution, France's parks and nurseries had been neglected or destroyed. Of the thousands of plants he had shipped, only a handful survived.

After shaking off this calamity, a few years later, Michaux traveled to Madagascar to start a new botanical garden on the coast as a receiving station for tropical flowers. But in 1802 he contracted yellow fever and died.

Despite his disappointments, André's legacy is enormous. Not only did he introduce European and Asian plants to the United States and those of the New World to Europe, he made extensive records of America's flora. His magnificent volume, *A History of American Oaks*, illustrated by renowned 19th-century botanical artists P.J. and H.J. Redouté, presents descriptions of 20 species and several varieties of American oaks. And his two-volume *Flora Boreali-Americana*, published posthumously in 1803 by son François, was the first comprehensive compilation of North

American flora. Also illustrated by the Redoutés, it is of special interest because it includes only plants that André had seen or gathered. Each description of a plant's habitat thus provides another account of the tireless botanist's trek across the American landscape.

In His Father's Footsteps

By a strange twist of fate, François André, then a trained scientist, was in the United States by assignment of the French government as his father lay dying in Madagascar. François's mission "to study trees that could enrich French forests" might have been unnecessary had his countrymen handled carefully the trees and seeds sent so faithfully by André.

On this expedition—from 1801 to 1803—Michaux botanized in Ohio, Kentucky, and Tennessee, as well as the Carolinas, New York, and New Jersey. As he traveled, Michaux also kept an entertaining account of frontier America and its people. Drinking, he observed, was a favorite pastime. "A passion for spiritous liquors is one feature of the United States," he noted at one point.

But in keeping with his commission, Michaux's focus was on America's trees, and his reports noted all aspects of their growth and usefulness. He was impressed by a plane tree *(Platanus occidentalis)* that measured 47 feet around—more than twice the size of any known today. And he marveled at his journeys in a 24-foot-long canoe that was constructed from a single log. But as he observed the trees and how they were used, Michaux also noticed a growing timber shortage in the East, a topic that he would later revisit repeatedly.

After returning to Paris, Michaux completed an extensive report on the 68 species of North American trees that he felt might grow well in France. So impressed was the French Administration of Waters and Forests that it gave Michaux a major role in reclaiming the sandy wastelands then encroaching on the farmland below Bordeaux. He was instructed "to collect and send to France the forest trees susceptible of being naturalized on wasteland where the native species refuse to grow." Accordingly, in 1806, Michaux sailed once again for America, traveling from Maine to Georgia and shipping back hundreds of seeds and plants. Today, the productive forests south of Bordeaux stand as a testament to Michaux's experience and dedication.

Oconee bells, top, was collected by André Michaux in 1788 and not seen again for nearly 100 years. Michaux reported that his 1796 discovery, yellowwood, above, was a practical source of yellow dye.

The North American Sylva

In 1808 Michaux returned to France and devoted himself to writing the monumental work titled *Histoire des Arbres Forestiers de l'Amerique Septentrionale,* more commonly referred to as *The North American Sylva*. These three volumes, illustrated in color by the Redoutés, describe trees using scientific observations as well as personal comments and lively anecdotes. This grand work, the earliest manual of American trees, is said to have sparked the American forest conservation movement in the 19th century.

In its pages, Michaux wrote in calm, analytical prose about the loss of forest cover in America and suggested ways to remedy the problem. He expressed concern over the enormous fuel consumption in brick kilns, sugar refineries, distilleries, and potteries. Occasionally, he recalled a practice so wanton—the sacrifice of an entire mature cabbage palm *(Sabal palmetto)* for a mere three ounces of its succulent edible heartwood, for instance—that his prose became intemperate. He compared the destruction of the cabbage palm to the "prodigality of the works of nature when early Kentucky settlers killed the buffalo, an animal weighing 1,200 to 1,500 pounds, for the pleasure of eating its tongue."

In 1822 Michaux retired to his country estate in France, where he lived quietly until his death three decades later. Even then, his influence on American forestry continued through a substantial financial legacy to the American Philosophical Society to be used in promoting sylviculture in the United States.

These monies prepared the way for establishing the Pennsylvania Department of Forestry and the acquisition of cut-over—previously logged—land. About 85,000 acres of this land in southeastern Pennsylvania was later named the Michaux State Forest. It was there that America's first nursery used specifically to grow seedlings for reforestation was built, and it was there that the country's first fire-lookout tower was built. Today, almost 150 years after François's death, the Michaux Fund continues to promote research in arboriculture. Small wonder, then, that this Frenchman has been called the "Father of American Forestry."

The spirit of the Enlightenment, and the desire to explore and understand the natural world, motivated the Michauxs, father and son. Both France and their adopted land, America, are the benefactors of their dedicated efforts to observe and conserve plants and forests.

Susan Davis Price is a free-lance writer living in Minneapolis. Her most recent book, Putting Down Roots, *will be published this fall by University of Minnesota Press.*

JOSEPH G. STRAUCH JR. (2)

Rain Lilies

These tough little bulbs offer gardeners serendipitous color in summer borders and containers.

by John E. Bryan

Once little known to gardeners who lived north of USDA Zone 8, rain lilies *(Zephyranthes* and *Habranthus* species) are beginning to extend their range of influence because of their cheery crocuslike flowers and adaptability to container culture.

Most of these diminutive bulbous perennials in the amaryllis family (Amaryllidaceae) are native to tropical and subtropical regions of Central and South America, but several *Zephyranthes* species are native to the southern United States. These small, delicate-looking plants—also known by an array of evocative common names such as fairy lilies, storm lilies, and zephyr lilies—come complete with a built-in hydrologic alarm clock.

Through a process that still puzzles plant physiologists, these sleeping beauties awaken at the kiss of seasonal rains. Most species are triggered by rains in mid- to late summer, but a few come into flower in spring or early fall. Once activated, shoots burst forth seemingly overnight and the brightly colored flowers open within days on five-to-15-inch stems amid a clump of thin, straplike leaves. Moreover, many species rebloom with each successive rain shower.

Most species are easy to grow either outdoors or, where they aren't hardy, in containers protected during winter, and they come in a variety of colors—from gold, yellow, and white to a range of pink hues. For the most part they are heat and drought tolerant, and a few species thrive in swampy, seasonally flooded ground.

Origins

The genus *Zephyranthes*—the name means "flower of the west wind"—consists of about 35 species native from Argentina and Columbia northwards through Central America, the Caribbean, Mexico, and parts of the southern United States. The native range of some six or seven species stretches into the United States, and oth-

Pink storm lilies *(Z. grandiflora)* make a colorful show in terra-cotta containers beneath planters of geraniums.

Sources

BRENT AND BECKY'S BULBS, 7463 Heath Trail, Gloucester, VA 23061. (877) 661-2852. *www.brentandbeckysbulbs.com.* Catalog free.
PLANT DELIGHTS NURSERY, INC., 9241 Sauls Road, Raleigh, North Carolina 27603. (919) 772-4794. *www.plantdel.com.* Catalog: Send 10 first-class stamps or a box of chocolates.
WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752-9338. (828) 738-8300. *www.we-du.com.* Catalog $2.
YUCCA DO NURSERY, Route 3, Box 104, Hempstead, Texas 77445. (409) 826-4580. yuccado@nettexas.net. Catalog $4.

Resources

BULBS (two volumes) by John E. Bryan. Timber Press, Portland, Oregon, 1989.
GARDEN BULBS FOR THE SOUTH by Scott Ogden. Taylor Publishing Company, Dallas, Texas, 1994.

ers have been cultivated in the South for so long, they have naturalized widely. *Zephyranthes* are generally found in moister habitats than *Habranthus,* inhabiting stream banks and shady upland forests.

The genus *Habranthus* includes some 10 species that are native to temperate areas of central and southern South America and Mexico. The genus name translates to "delicate flower." *Habranthus* species are generally not as hardy as *Zephyranthes,* with a center of diversity deeper into South America than the latter genus. *Habranthus* also tend to do best in drier sites than *Zephyranthes,* often growing among rocks and in gravelly soils.

Telling Them Apart

At first glance, the two genera are quite similar in appearance. For instance, *Z. grandiflora*—which sometimes goes by the common name of pink storm lily—is often mistaken for and sold as *H. robustus.*

It's easiest to tell plants of the two genera apart when they are in bloom. *Zephyranthes* flowers face directly upward and have stamens of equal length, while the flowers of *Habranthus* sit at an angle on the stem and their stamens are not all the same length. *Habranthus* flowers are generally solitary, but very occasionally two blooms may form on a stem, while *Zephyranthes* flowers are always solitary. The rootstock of both genera is a rounded, true bulb with a relatively long neck. The bulbs are covered in a brown tunic and look somewhat like those of snowdrops *(Galanthus* spp.).

The taxonomy of rain lilies is rather murky and, over the years, quite a number of species have been transferred from *Habranthus* to *Zephyranthes* and vice versa. Species of both genera have also been placed in, or moved from, other genera in the amaryllis family, including *Rhodophiala, Hippeastrum, Pyrolirion, Cooperia, Argyropsis,* and *Haylockia.*

Growing Needs

While plants of both genera have fairly similar cultural needs, their growing requirements differ in one important way: *Habranthus* species should be planted with the neck of the bulb just showing at the surface of the soil, but *Zephyranthes* bulbs should be buried to about two or three times their diameter.

Most species in the two genera are reliably hardy only in Zones 8 to 11, but several *Zephyranthes* species can take temperatures in the upper 20 degree Fahrenheit range and will grow into the southern part of Zone 7.

Brent and Becky Heath, owners of Brent and Becky's Bulbs, a mail-order nursery in southern Virginia specializing in summer-flowering bulbs, say *Z. candida* is the hardiest species for them, but they also grow *Z. citrina* and *H. robustus* there and are testing several other species.

This difference between the hardiness of the genera can be at least partly attributed to the bulbs of *Zephyranthes* being buried deeper in the soil. A light winter mulch will help protect the tender bulbs in areas where they are borderline hardy. In regions with colder climates, both genera can be grown in containers and then moved indoors or to a frost-free area when temperatures drop.

A few species, such as *Z. atamasca, Z. reginae,* and *Z. candida* thrive in moist or wet soils, but for the most part rain lilies do best in moisture-retentive soils that drain freely, especially in winter. In the eastern states, this can be accomplished by planting them in a very free-draining soil mixture composed of a blend of sharp sand and organic matter. Spring-flowering species tend to grow best in areas with dry summers.

Despite being very heat tolerant, rain lilies grow well in part shade or filtered sunlight, so they can be grown beneath trees as long as they are not in direct competition with tree roots for water.

Rain lilies are also quite heavy feeders, thriving on an annual application of organic soil amendments or balanced slow-release fertilizers. These should be added after the blooming season has ended and while the foliage is still in active growth.

Fortunately, rain lilies have few pest or disease problems. Slugs and snails may damage foliage or flowers, but they can be deterred by controls such as copper barriers or the classic beer trap.

Propagation can be by offsets of the parent bulbs, separated after growth has finished. However, it is best to allow the plants to become well established before lifting and dividing them. Seed can also be sown in the spring using a potting soil mixed with additional sharp sand. Transplant groups of seedlings into individual pots when they are large enough to handle. Rain lilies will often seed themselves when well established.

Containers

Almost all rain lilies will do well in containers providing the soil mixture is free-draining. A blend of one-third top soil, one-third coarse sand, and one-third vermiculite is suitable. While their foliage is growing they can be watered regularly, but stop watering as soon as growth slows down. Much like amaryllis, rain lilies thrive and bloom best when they are crowded in a container, so don't divide and repot unless the bulbs are starting to literally squeeze themselves out of their container.

Carl Schoenfeld, owner of Yucca Do Nursery in Hempstead, Texas, recommends starting with about five bulbs in a eight-inch pot. About two weeks after each flowering cycle, harvest the ripened seeds and spread them around on the surface of the container, where they can germinate and form new bulblets. "In several years you will have 60 or more mature bulbs blooming all at once after each rain shower—a memorable sight," notes Schoenfeld.

Schoenfeld also emphasizes that rain lilies in containers thrive on neglect. "Rain lilies are very carefree and put on the best show when you ignore them. All of a sudden it will rain—and the pot will erupt with flowers," says Schoenfeld. If the normal bloom time for a particular species arrives but no rain comes to trigger their flowering, Schoenfeld says the spectacle can be induced with a soaker hose or watering can.



Left: Naturalized in the South, white rain lily *(Z. candida)* is distinguished by its tapered foliage and starry white flowers. Center: *H. robustus* has outward facing flowers with petals that are bright pink, fading to white at the mouth of the flower cup. Right: Native to moist woodlands and grasslands of the Southeast, the Atamasco lily bears fragrant white flowers in March or April.

Containers can be moved indoors or into a cold frame during winter.

Worthy Rain Lilies

The following rain lilies are those most available in the trade and easiest to grow in the home garden.

South and Central American Zephyranthes. Perhaps the best-known rain lily—and one of the easiest to grow—is *Z. candida,* sometimes called the white rain lily. A garden escape in Louisiana, Texas, and Mississippi, its native habitat is stream and river banks in Argentina and Uruguay. According to botanical lore, a Spanish explorer was so taken with the broad sweeps of these starlike, silvery-white flowers he saw growing along the banks of a majestic Argentine river that he named the river Rio de la Plata (river of silver).

Z. candida forms dense clumps of semi-evergreen, tapered, rushlike foliage up to 12 inches long. The flowers, which bloom from mid- or late summer through fall, close in the evening or if shaded. White rain lily will tolerate a range of soils, from clay to sand, and will grow in swampy or boggy areas. (USDA Zone 7–11, AHS Zone 12–9)

Native to the Yucatan peninsula and the Caribbean, *Z. citrina* has crocuslike, bright golden yellow flowers up to one and a half inches in diameter. Ideal for naturalizing, *Z. citrina* does best in drier sites and flowers in late summer to early autumn. A cultivar, 'Ajax', an apparent hybrid between *Z. candida* and *Z. citrina,* has pale, primrose-yellow or even pinkish yellow flowers with a green eye. (Zones 7–9, 9–7)

Touted by Plant Delights Nursery in Raleigh, North Carolina, as "one of those can't miss plants for the blackest of thumbs," *Z. flavissima* has inch-wide star-shaped golden flowers that bloom with the rains from early summer through early fall. A native of Argentina and Brazil, it does best in rich, moist soils and will even grow in shallow water. (Zones 7–9, 9–7)

Some botanists believe *Z. grandiflora,* sometimes called pink rain lily, may actually be a hybrid of wild rain lilies selected by the indigenous inhabitants of the Yucatan Peninsula or more southerly regions of Central America. Whatever its true origins, it has become naturalized in many warm regions around the world, including much of the Gulf Coast. It is arguably the prettiest member of the genus, featuring delightful large, rose-pink flowers with a white throat and prominent yellow stamens in midsummer through early fall. Under ideal conditions—moist, rich soil and part shade—it forms foot-diameter clumps of foliage that produce up to 20 flowers at a time. This is one of the most commonly mislabeled rain lilies, and is often mistaken for the smaller-flowered *Z. rosea* or for *Habranthus robustus.* (Zones 7–9, 9–7)

Mexican and Southwestern Zephyranthes. Widely distributed from central Texas into eastern New Mexico and south through the deserts and scrubland of northern Mexico, *Z. drummondii* has fragrant flowers that open in late afternoon on stems four to six inches tall. This species has twisted, intensely blue foliage that emerges before the flowers and often lies limply on the ground. (Zones 7–9, 9–7)

Another evening-blooming species, *Z. chlorosolen* is mainly distributed from Louisiana west through Texas, Oklahoma, and Mexico to New Mexico, but is also known from the highlands of Brazil. Its 15-inch-tall flower spikes bear fragrant creamy white flowers that open in late afternoon during late summer. (Zones 7–9, 9–7)

Discovered just a few years ago at about 4,000 feet on steep slopes in the Mexican highlands, *Z. macrosiphon* has rich, rose-pink flowers that bloom from mid-spring through late summer. In seeming contradiction of its subtropical provenance, *Z. macrosiphon* has remained evergreen at Yucca Do Nursery despite temperatures dipping to 17 degrees. In the garden it does best in moist, fertile soils with afternoon shade. (Zones 8–11, 12–8)

Named after the location in Mexico where it was first identified, the Valles yellow rain lily *(Z. reginae)* has clear yellow flowers that bloom off and on through mid- and late summer. It thrives in any well-drained soil. (Zones 7–9, 9–7)

Z. traubii, an August-flowering rain lily, has delicate, star-shaped white flowers. It is

Where to Plant Rain Lilies

There are enough species of rain lilies blooming at different times of the year that, with a little forethought, gardeners can have rain lilies blooming from spring through fall.

Because they are low growing, try to plant rain lilies where they can be easily seen and appreciated, such as along a path, in the front of a border, or on the top of a wall where they can be seen at eye level. Avoid planting them beneath the eaves or anywhere where they will not be in position to take advantage of rainfall for their serendipitious displays. Because of their diminuitive stature and intermittent blooming patterns, they produce the greatest effect when massed. Plant them in groups of at least 10 to 20, each bulb spaced two to four inches apart.

Rain lilies resent disturbance and thus should be planted in a location where they are likely to remain for a number of years. They are ideal for naturalizing but will resent the compaction of soil caused by frequent foot traffic, so plant them off the beaten path.

Camouflage the foliage of rain lilies—and prevent weeds—by planting them beneath such low-growing plants as border carnations, grasses, or perennials such as *Heuchera* or *Armeria* that offer interest when not in flower but could use some help at certain times. In his book *Garden Bulbs for the South,* author Scott Ogden suggests planting rain lilies beneath non-aggressive ground covers such as sweet alyssum *(Lobularia maritima),* creeping thyme *(Thymus glabrescens),* or germanders such as *Teucrium aroanum* and *T. chamaedrys.* Various low-growing sedums also make good companions and are comparably heat and drought tolerant. Rain lilies can also be planted in front of shrubs or taller perennials to offer seasonal color.

Containers

Rain lilies can be planted by themselves in a container, but because many species produce foliage and flowers intermittently, it will look rather bare at times. For added interest, try planting them with low-growing or trailing annuals, or around the base of small, upright shrubs. *—J.E.B.*

native to dry, hot desert sites, so is drought tolerant. (Zones 8–10, 11–9)

Yucca Do nursery owner Schoenfeld and his former partner, John Fairey, discovered *Z.* 'Labuffarosa' in 1990, growing on granite outcroppings beneath evergreen hollies in the Mexican highlands. "It's really the most attractive of all the rain lilies we grow," says Schoenfeld. "It multiplies rapidly, forming dense clumps that look not unlike liriope." The slightly drooping petals are clear pink, with the color intensifying toward the edges of the petals. Unlike most rain lilies, *Z.* 'Labuffarosa' thrives in deep shade, where its light pink, late summer flowers stand out nicely. (Zones 7–10, 11–8)

Southeastern Zephyranthes. One of the only "true" North American species is the Atamasco or swamp lily *(Z. atamasca).* This species is native to damp pine woodlands and meadows from Virginia south to Florida and west to Mississippi; it is now, unfortunately, rare in the wild. The fragrant flowers are white with a green throat, sometimes lightly tinged with pink or red; the species name is derived from a Native American word meaning "stained with red." Atamasco lilies flower between April to June for about four to six weeks. In the garden, they do best planted beneath deciduous trees in moist, acidic soil. (Zones 7–11, 12–8)

Closely related to the Atamasco lily is *Z. treatiae,* confined in the wild to Florida and Georgia. The flowers of this species are white when they first open in February to May, taking on a pink hue with age. (Zones 7–9, 9–7)

Habranthus. The foliage and flowering stems of *H. brachyandrus,* a native of southern Brazil, are up to 12 inches in length. The flower petals, pink suffused with lavender, deepen to burgundy as they curve downward into the throat of the flower. *H. brachyandrus* blooms in mid- to late summer. (Zones 9–11, 12–9)

The creamy or greenish white flowers of *H. concolor,* a spring-flowering species from Mexico, appear before the foot-long, strap-like, grayish foliage. Native to the deserts of Mexico, *H. concolor* flowers best if kept dry during the winter months, so either grow this species in containers and bring it inside in winter, or plant in very well-drained, sandy soil. (Zones 10–11, 12–10)

As its name suggests, *H. robustus* is a vigorous rain lily that forms established clumps of its greenish-gray straplike foliage in the right garden setting. It is native to Argentina and southern Brazil. Sometimes confused with *Z. grandiflora* or sold as *Z. robusta,* its flowers are pink with darker veining and can reach up to three inches long and as wide when fully open. It blooms consistently throughout the summer and is regarded as an excellent container plant. (Zones 9–11, 12–9)

Native to Argentina and Uruguay, *H. tubispathus* pops out of the ground—seemingly overnight—after a good rain in mid- to late summer. The one-inch-diameter, copper-colored flowers bloom about six inches above the ground. The foliage begins to emerge as the plant is in flower. Several selections have been named: 'Aureus' has golden flowers; 'Roseus' has pink flowers. (Zones 9–11, 12–9)

There is some disagreement about the genesis of a botanical variety, *H. tubispathus* var. *texensis,* which appears to either be native to Texas or a garden escape. Either way, this plant, locally known as Texas copper lily, is easy to grow and produces small yellow-orange flowers that have a brown throat and coppery veins on the outside of the petals. It grows along the roadsides of central Texas, where it blooms in late summer to fall. In the garden it requires a well-drained site but otherwise thrives on drought and neglect. (Zones 9–11, 12–9)

For the Future

Avid rain lily fans are already stretching the traditional hardiness limitations that have been placed on these tender plants, and it seems only a matter of time before breeders take it upon themselves to develop hardier varieties for northern gardeners.

In the meantime, intrepid nursery owners, such as Schoenfeld of Yucca Do and Tony Avent of Plant Delights Nursery, continue to seek out garden-worthy species in the mountains of Mexico. Some of these newer selections are showing great promise and more may be introduced as they emerge from nursery trials. "We hope in the future hardier rain lilies will be available to gardeners," says Schoenfeld.

Don't wait for that to happen; try growing some rain lilies this year, even if you live north of Zone 7.

An internationally known bulb specialist and writer, John E. Bryan lives in San Francisco, California.

English Borders, Texas Style

Native and adapted exotic plants form colorful mixed borders at a Texas nursery.

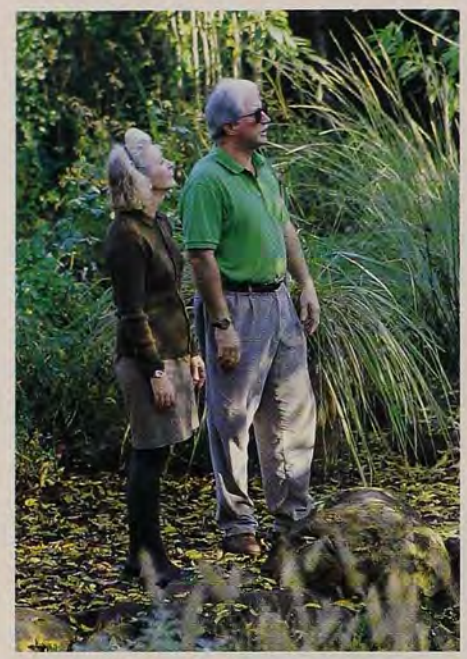
by Lana Robinson

Doing what comes naturally seems to be, well, natural for Randy and Sue Weston. This philosophy governs both their gardening preferences and the lifestyle they have chosen for themselves and their seven-year-old son, Jackson. Fifteen years ago the Westons pulled the plug on fast-paced corporate careers—he as a manager of a major accounting firm and she as a successful certified public accountant—to found Weston Gardens in Bloom, Inc., a retail nursery in Forth Worth, Texas. There they have found fulfillment showing north central Texas gardeners how to make successful gardens using an eclectic blend of plants native to the South and non-natives adapted to the region's hard-baked clay soils and drastic fluctuations in temperature and rainfall.

At their home, directly across from their 10-acre nursery, the Westons have created a series of demonstration gardens, including several English-style mixed perennial borders for sun and shade, water features, and collections of antique roses. Vestiges of the formal grounds created by the former owners of the 1930s-era estate remain, but naturalistic areas resplendent with native Texas plants and highly acclimated non-natives are now its hallmark. A stroll through the extensive demonstration gardens, traversed by a small creek and graced by shallow pools, peaceful grottos, and serpentine paths, is a scintillating walk on the wild side.

It wasn't always this idyllic, though. Randy and Sue admit that both they and their plant business struggled until they struck upon their native and adapted plant niche. "We started in 1984, when the economy was totally in the dumpster," Randy, now in his mid-forties, recalls. "We really had to stretch to keep things going." Sue says she and Randy were often sorely tempted to return to their "real" jobs. "Finally we had to say, 'Forget the education, forget it all'. We were able to shut that door and make a commitment to

This sunny border at the Westons' home features Russian sage, purple coneflower, and Drummond's sundrops.



Sue and Randy Weston stroll among ornamental grasses planted in one of the demonstration gardens they have created at their home.

make things work here," she says. "We changed our game plan: We knew we couldn't compete with the chains, so we decided to offer something totally different. And that's how we got started with perennials and our 'Texas-Tough' natives." And, she might add, that was the beginning of Weston Gardens' success.

For the Westons, mixed borders, which incorporate annuals, perennials, shrubs, and ground covers, are the essence of the English-style-meets-Texas-climate look they are trying to show their customers. Coming up with the right combinations of plants to achieve that goal has presented both challenges and rewards. "Clumpy, clay soil is pretty much a given in this area. We choose plants that will cope with the extremes of our weather—from drought to deluge," says Randy, noting that his gardens endured 100 consecutive days without rain from July through early October in 1997. "There is no *normal* weather here," Randy points out. "You can depend on only one thing: In Texas it's going to be hot."

Informality Rules

The fact that English-style borders are often informal and spontaneous in appearance makes them particularly well suited to laid-back Lone Star gardeners, and the Westons' personal philosophy is that gardening should be a leisure activity, not hard work. Sue suggests that a garden should be a stress-free environment for all who enter, especially for those who tend it. "We always promote the outdoor experience of gardening," says Sue. "People should be able to listen to the birds, see the butterflies, and enjoy their surroundings. That's what it's all about."

Although it sounds strange coming from a Texas nurseryman, Randy is a proponent of English garden designer Gertrude Jekyll, who pioneered the idea of blending annuals, perennials, and shrubs in a mixed border to create a seamless array of textures and colors throughout the growing season. "I'm more of a naturalist," says Randy. "I like drifts of plants instead of clipped, formal gardens."

The Westons also feel strongly that putting together a garden is a way for people to find a creative outlet for artistic talents that are often suppressed by the demands of modern life. "Beyond the pure enjoyment involved, gardening appeals to our artistic side—*all* of our senses become involved," says Randy. "Many people are not attuned to that until they're shown some of these things."

Randy's own awakening to the wonders of nature occurred in childhood growing up on the Texas plains. "My maternal grandmother was an avid flower gardener. As a small boy, I would help her garden, and that is my link. Once you introduce children at an early age to the outdoors and nature, it never leaves the senses. Sue and I both grew up on farms, and it's something that has stuck with us."

Adapting the English Style

Randy favors the look of random plantings in a garden design, but his methods for establishing a romantic, English-style border are quite deliberate. In seminars held at Weston Gardens, he advises gardeners to take at least a year before planting to pinpoint areas of sunlight and shade within the space to be used and to mull over the fate of existing elements.

"A mixed border offers diversity with different layers, textures, and sizes of

Westons' Top Picks for "Texas-Tough" Plants

SUN

NATIVES

Autumn sage *(Salvia greggii)*
Black-eyed Susan *(Rudbeckia* spp.)
Calylophus *(Calylophus drummondianus, C. hartwegii)*
Coneflowers *(Echinacea purpurea E. pallida)*
Coreopsis *(Coreopsis verticillata* 'Moonbeam')
Flame anisacanthus *(Anisacanthus quadrifidus* var. *wrightii)*
Gaura *(Gaura lindheimeri* and cultivars)
Rock rose *(Pavonia lasiopetala)*
Texas aster *(Aster oblongifolius)*
Texas lantana *(Lantana horridula)*
Wild petunia *(Ruellia* spp.)
Winecups *(Callirhoe involucrata)*

NON-NATIVES

Butterfly bush *(Buddleia* spp.)
Russian sage *(Perovskia atriplicifolia)*
Sedums *(Hylotelephium* and *Sedum* spp.)
Veronica *(Veronica* spp.)
Wall germander *(Teucrium chamaedrys)*
Wormwood *(Artemisia* 'Powis Castle')
Yarrow *(Achillea* spp.)

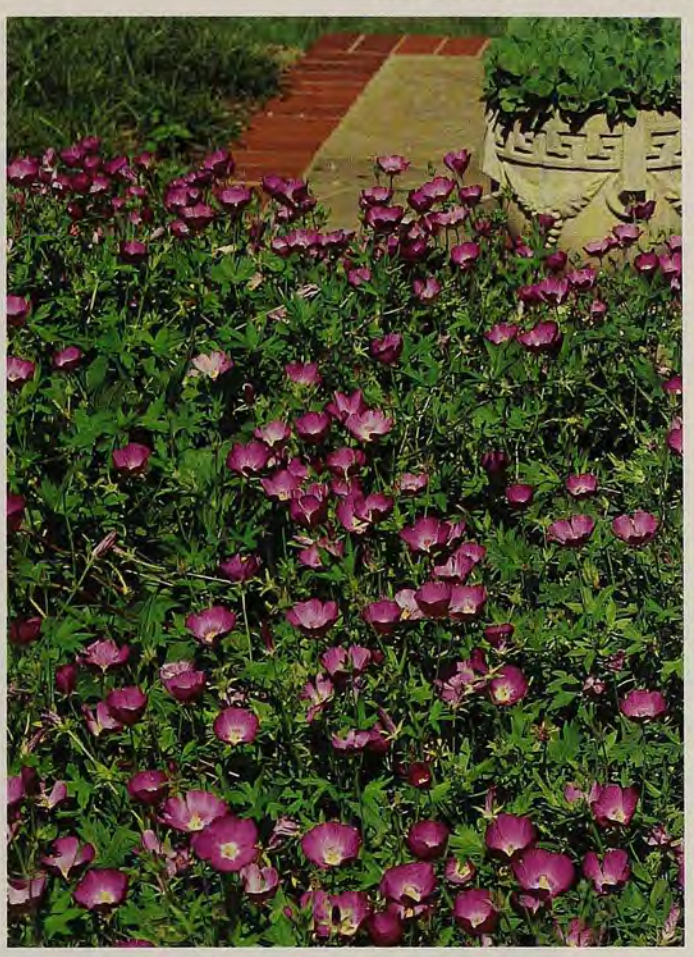
SHADE

NATIVES

Columbines *(Aquilegia canadensis, A. longissima)*
Coral bells *(Heuchera* spp.)
Irises (Louisiana and bearded)
Lyre-leaf sage *(Salvia lyrata)*
Pigeonberry *(Rivina humilis)*
Southern wood fern *(Dryopteris ludoviciana)*
Turk's-cap *(Malvaviscus arboreus* var. *drummondii)*
Violets *(Viola* 'White Czar')
Wild oats *(Chasmanthium latifolium)*
Wild petunia *(Ruellia* spp.)
Woodland phlox *(Phlox divaricata, P.* 'Chattahoochee', *P. pilosa)*

NON-NATIVES

Cast-iron plant *(Aspidistra elatior)*
Hostas *(Hosta* spp.)
Japanese holly fern *(Cyrtomium falcatum)*
Japanese painted fern *(Athyrium niponicum* 'Pictum')
Rain lilies *(Zephyranthes* spp.)
Strawberry begonia *(Saxifraga stolonifera)*
Tassel fern *(Polystichum polyblepharum)*



Above left: *Calylophus hartwegii,* a member of the evening primrose family, is native to the Southwest and western Texas. This spreading perennial flowers from spring to fall. Above right: A planting of *Callirhoe involucrata*—appropriately known as winecups—lends brilliant color to a sun-drenched patio in the demonstration gardens.

plants," says Randy. "It's important to research the water requirements of plants and to identify your competing species. Find out which is your aggressive grower. You start with the right plants, look at factors such as sun, shade, root competition, and cultural requirements, and then group them accordingly. It's more of a challenge than arranging them in neat little rows, but part of the fun is finding combinations that work together." Other important considerations, obviously, are flower colors and bloom times. "If you plan those right, there's something that looks good all year long."

Creating Structure

In Randy's view, creating a sense of enclosure—be it masonry walls, lines of shrubs, or vine-covered fences—is an important element of the design. Partitions of old brick or stone, such as the 1930s-era ironstone retaining walls at Weston Gardens, are worth consideration. Boxwoods and other classic English hedging plants are not suitable in Texas, but Weston recommends evergreens such as junipers, arborvitae, Chinese photinia *(Photinia serratifolia),* or holly. Even a full-canopied tree with sheltering branches, such as a mature cedar or elm, can produce the desired effect.

"Trees are the most important elements of any garden," Randy emphasizes. "If you don't have trees, you don't have structure." Trees also are one of the few plants that offer interest in winter, which is why Randy says he chooses his trees in the winter months to better see how they will look. In a shade garden, he recommends adding understory trees to create vertical interest. Ornamentals such as the fragrant Mexican plum *(Prunus mexicana),* possumhaw holly *(Ilex decidua),* Texas kidneywood *(Eysenhardtia texana),* and smoke tree *(Cotinus obovatus)* are handsome, hardy Texas natives.

Highly acclimated non-natives such as chaste tree *(Vitex agnus-castus),* with its aromatic foliage and azure flowers, and the ever-popular heat-tolerant crape myrtle *(Lagerstroemia* spp.) do well in Texas, also.

Sunny Borders

In the Fort Worth area, April through May is the peak time for gardens. Most annual and perennial plantings tend to struggle during the heat of July and August and rebound in the cooler fall. Gardeners striving to mimic the English look can choose from a lively array of perennials the Westons have found will do best in their climate. Among the plants that Randy recommends for sunny borders is flame anisacanthus *(Anisacanthus quadrifidus* var. *wrightii),* an irregularly branched shrub that grows two to four feet tall. Native to Texas and Mexico, it bears spikes of red to orange tubular flowers in midsummer.

Calylophus *(Calylophus drummondianus),* also known as Drummond's sundrops, is a spreading ground cover native to Texas and New Mexico. Closely related to evening primrose, this drought-tolerant perennial is ideal for rock gardens and along walls, where its cheery yellow flowers bloom in clusters. *C. hartwegii* also has yellow flowers but is a shorter species.

Another adaptable ground cover favored by the Westons is winecups, or purple poppy mallow *(Callirhoe involucrata).* Na-

Sources

ANTIQUE ROSE EMPORIUM, 9300 Lueckemeyer Road, Brenham, TX 77833. (409) 836-9051. Catalog $5.
FORESTFARM, 990 Tetherow Road, Williams, OR 97544-9599. (541) 846-7269. *www.forestfarm.com.* Catalog $4.
PLANT DELIGHTS NURSERY, 9241 Sauls Road, Raleigh, NC 27603. (919) 772-4794. *www.plantdel.com.* Catalog: Send 10 stamps or a box of chocolates.
WOODLANDERS, INC., 1128 Colleton Avenue, Aiken, SC 29801. Phone and fax: (803) 648-7522. Catalog $2.
YUCCA DO NURSERY, Route 3, Box 104, Hempstead, TX 77445. (409) 826-4580. yuccado@nettexas.net. Catalog $4.

tive to Texas, New Mexico, and much of the central United States, this fast-spreading perennial has rich purple, cup-shaped flowers that bloom from June until frost. The box on page 48 lists other plants the Westons recommend for sunny borders.

Plants for Shade

For the shady border, the Westons have put together a list of heat-tolerant native and non-native perennials (see box on page 48). Natives include lyre-leaf sage *(Salvia lyrata),* which offers spikes of pale blue to violet blossoms in midsummer; Turk's-cap *(Malvaviscus arboreus* var. *drummondii)*—a super hummingbird attractor, and wild oats *(Chasmanthium latifolium).* Native ferns the Westons have found adapted to the Texas heat include Southern wood fern *(Dryopteris ludoviciana),* and holly fern *(Cyrtomium falcatum).* The non-native Japanese painted fern *(Athyrium niponicum* 'Pictum') and tassel fern *(Polystichum polyblepharum)* also work well in Texas.

Adding Color and Texture

In the sunny border, annuals that work well to provide a smattering of additional color to an English-style border include gomphrena *(Gomphrena globosa* and cultivars), cosmos *(Cosmos bipinnatus),* and Texas bluebells *(Lupinus texensis).*

Randy also packs his borders with leafy, textured plants to provide contrast to the brightly colored flowers and to offer interest when the flowering plants are out of bloom. Although its foliage is somewhat unruly, oakleaf hydrangea *(Hydrangea quercifolia)* offers appeal through at least three seasons with its cinnamon-colored bark in winter, showy white spring flowers, and burgundy to purple fall color. The non-native heavenly bamboo *(Nandina domestica)* provides a striking vertical effect through its straight stems. Heavenly bamboo also brings fall and winter interest with its attractive red berries and fall color. To bridge the gap between late winter and spring, Weston also uses adapted non-natives that bloom in early spring, such as forsythia *(Forsythia* spp.), flowering quince *(Chaenomeles japonica),* and spirea *(Spiraea* spp.) in his plant collages.

For gardeners seeking low maintenance,

In the nursery's shade garden, a hand-hewn bench provides a vantage point for viewing assorted grasses, lyre-leaf sage, wormwood, and other plants.

texture, and virtually nonstop blooms, Sue recommends antique bush roses. Cultivars such as 'Petite Pink Scotch', 'Duchesse de Brabant', 'Fairy', and 'Mutabilis' top her list because of their durability and heat tolerance. She also steers customers toward climbing varieties such as 'Old Blush', 'Cécile Brunner', 'Lady Banks', 'Seven Sisters', and 'Mermaid', which can beautify even the plainest of fences.

In addition to wild oats, a number of other ornamental grasses are used to add texture to the Westons' English-style borders, as well as provide winter interest. Randy sells 55 different selections at the nursery, most grown on site. Among these are tall and elegant Lindheimer's muhly grass *(Muhlenbergia lindheimeri)*, characterized by blue foliage and silvery flower spikes that bloom from September through December. This grass is both a texturizer and an outstanding specimen plant. Little bluestem *(Schizachyrium scoparium)* is not as big but is, nonetheless, beautiful—with teal-blue blades that turn bronze in the fall. Weston says shorter grasses, such as purple muhly *(Muhlenbergia capillaris)*, black fountain grass *(Pennisetum alpecuriodes* 'Moudry'), and wild oats make nice plumes among his flowering plants.

Though many gardeners rely on rather bland ground covers such as ivy, pachysandra, and vinca, the Westons recommend trying such colorful flowering selections as germander *(Teucrium chamaedrys)*, creeping thymes *(Thymus* spp.), strawberry begonia *(Saxifraga stolonifera)*, calylophus, and 'Moonbeam' coreopsis to their customers. "Remember, it's the overall look that counts, so be creative," says Randy.

The Westons' gardening philosophy has been successful both for their business and their customers. Visitors flock to the nursery throughout the growing season to view the display gardens and take ideas—and often plants from the nursery—home with them. Using the Westons' "Texas-Tough" natives as a starting point, many central Texas gardeners are putting together mixed borders of which even Gertrude Jekyll would be proud.

Lana Robinson is a free-lance writer who gardens in Waco, Texas.

Getting There

Weston Gardens in Bloom, Inc. is at 8101 Anglin Drive in Fort Worth, Texas 76140. The nursery's four acres of demonstration gardens include lily ponds, antique roses, and mixed perennial borders. In addition to offering plants for sale, the nursery provides landscape planning services and often hosts lectures and workshops by prominent regional gardeners and horticulturists. Scheduled for July 10 and 11 are workshops on "Best Plants for Summer" and "Ornamental Grasses." Nursery hours are 9 a.m. to 6 p.m. Monday through Saturday in summer. For more information about the nursery or workshops, call (817) 572-0549 or visit the nursery's Web site at *www.westongardens.com*.

book reviews

- ***cottage gardening***
- ***butterfly gardening***
- ***women and gardening***
- ***herbs***

PLEASURES OF THE COTTAGE GARDEN.

Rand B. Lee. Friedman/Fairfax Publishers, New York, 1998. 144 pages. 10" × 10". Publisher's price, hardcover: $27.50. AHS price: $19.25.

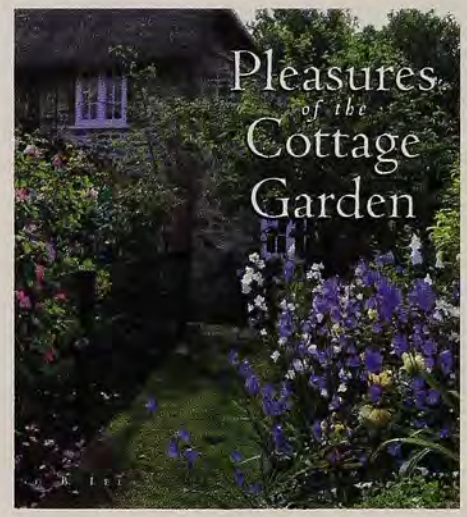
When this 10-inch-square book with its glossy jacket picturing the ideal cottage garden crossed my desk, my initial thought was, "Oh no! Another English book depicting gardens that we can't grow in this climate." Upon reading the book, however, I was pleasantly surprised to find I was wrong. Lee is a native son who has created cottage gardens in some very difficult gardening environments. Starting in Connecticut, he then jumped to Key West, Florida, followed by Cork County, Ireland. For the last 10 years he has been settled in Santa Fe, New Mexico.

The diversity of his gardening experience is clear throughout the book, as when he states that "one must accept one's limitations and the limitations of one's ecosystem." Lee advocates the use of locally adapted or native plants, which can provide you with the "look of artificial chaos" that he espouses as the principal design element for a cottage garden. "Learning the plants that will thrive in your area and planning your cottage garden around them will make your life much easier," he says.

The book is organized to discuss plants and design principles that will help not only the interested amateur, but will be of use to professionals. Beginning with the author's own cottage gardening chronology, the book then progresses to a brief but interesting history of the cottage garden. The ensuing chapters discuss specific topics related to his design process, including color, fragrance, edible plants, and gardening in difficult sites. Each chapter opens with a quote and closes with a very useful—although specific and, therefore, somewhat limited—list of plants pertaining to the topic. One exception to this format comes in the chapter on edible plants, which is missing what could have been a very useful plant list. Also, the chapter on difficult sites closes with a mere list of fragrant daylilies. The appendix—which contains lists of resources arranged by topic, a bibliography, and a list of plant societies—is one of the most useful parts of the book.

The biggest disappointment for me was the photographs. The images of individual plants do enhance the text, but the photographs of the gardens—while beautiful—are mostly British. They could easily lull unsuspecting readers into unrealistic expectations for the Southwest. The book would be far more valuable if the author's own experiences were chronicled not only in words, but in pictures.

Despite this caveat, the book is full of good gardening information presented in an entertaining style. And although it could easily sit on a coffee table, it is worthy of becoming one of the references you keep near your gardening journal.



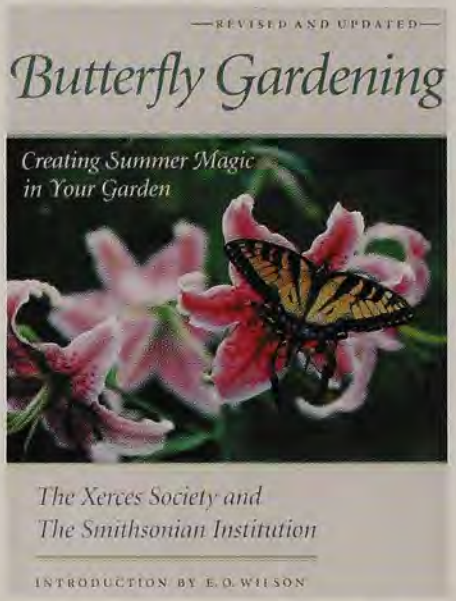
—David T. Scheid

David T. Scheid has been involved in public horticulture for more than 20 years. Currently, he is program director for horticulture at the Northern Virginia Community College in Sterling, Virginia.

BUTTERFLY GARDENING: CREATING SUMMER MAGIC IN YOUR GARDEN.

The Xerces Society in association with the Smithsonian Institution. Sierra Club Books, San Francisco, 1998. 208 pages. 7¼" × 9¼". Publisher's price, softcover: $24. AHS price: $19.20.

Most American gardeners like butterflies, perhaps in part because the overwhelming majority of our native species do not destroy the plants we love. As a result, we are free to admire a giant swallowtail swerving through an opening in the trees, a red admiral flickering among the composites in a flower border, or a monarch gliding purposefully across a broad sweep of lawn.



The authors of *Butterfly Gardening* hope to persuade you to make your garden a place where the swallowtails and red admirals thrive. Under the sponsorship of the Xerces Society, a group dedicated to the conservation of insects and other invertebrates, 13 biologists, gardeners, photographers, and nature writers have contributed 17 short chapters on how to attract butterflies to your garden and how to appreciate them when they arrive.

On the attraction front, you will learn which plants provide nectar or larval food that certain butterflies find especially appealing, as well as how to increase the diversity and number of your butterfly visitors. In addition to sample garden designs and lists of butterfly-attracting plants, you will find information on such important topics as suppliers of seeds of native plants.

On the appreciation front, several of the authors describe the delights they have derived from their butterfly gardens. Their

enthusiasm is contagious, and in the process of sharing their experiences you will learn something about the natural history of butterflies and be better able to fully enjoy these gorgeous insects.

One of the contributors, photographer Edward S. Ross, offers a brief guide to butterfly photography, a challenging and enjoyable activity. The book itself is liberally and beautifully illustrated with Ross's wonderful color photographs and those of other gifted photographers. Close-ups of the adult great purple hairstreak or the chrysalis of the Mexican fritillary will soften the heart of the most die-hard insect hater.

An underlying theme is that by making our gardens more butterfly-friendly, we will also promote insect conservation. In an increasingly urbanized and agriculturalized world, many butterflies—and other insects—need our assistance. If you want to learn how to become a butterfly watcher, a butterfly photographer, or a butterfly conservationist, this fine book is for you.

—John Alcock

John Alcock is a professor at Arizona State University and author of In a Desert Garden, *a book about the insects he has attracted to his unconventional landscape.*

EARTH ON HER HANDS.

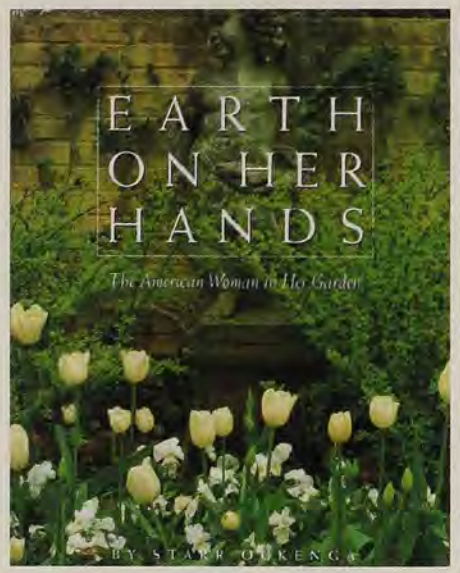
Starr Ockenga. Clarkson N. Potter, New York, 1998. 239 pages. 9" × 12". Publisher's price, hardcover: $55. AHS price: $40.

This book's designer couldn't be more appropriately named, because Kayo Der Sarkissian has produced an absolute knock-out. The book profiles 18 American women with fabulous gardens who have done all or most of the work with their own hands. The author and photographer, whose work has appeared in museums and galleries throughout the world, provides both long sumptuous color views and close-ups of every garden, and there are watercolor plans of each landscape to help orient the reader. You meet each gardener—dressed to go to work with trowel or trug or tractor—in a full-page sepia portrait. At both the front and the back of the book are sepia close-ups of plants held by grubby, gnarled hands with broken fingernails—the proud badge of the lifelong gardener.

The energy levels of the profiled gardeners sometimes seem superhuman. One gardener has battered her hands shaping 600 feet of stone walls. One grows 93 vegetable varieties from seed. Another—with her husband—has laid cement reflecting pools, walkways, bridges, and a patio.

Bear in mind, though, that these are not gardens that those of us who live in suburban tract houses can even begin to imagine. A few of these gardeners inherited sizeable properties. Others came of age long before gorgeous views made property valuable. Although there are a couple of properties of only an acre or so, one encompasses a mind-boggling 425 acres. And while these hands may be covered with dirt, for the most part the fingernails didn't have to be presentable at an office Monday through Friday. These gardens can be tough to relate to if you have to squeeze your gardening time in on weekends and between the end of a commute and cooking dinner.

Fortunately, the author and editors have made sure there is something here for everyone. Each profile contains a sidebar of useful information: native ground covers; favorite roses or clematis or fruit trees; plants suitable for bonsai; or how to make cedar troughs for alpines. The text entries themselves, while chatty, are full of more little throw-away tips. Ever have the urge



to make your own stone wall? Here's how to do it, complete with a suggested soil mix for those planting pockets. Are your gravel paths slipping down a bank? Here's a tip for stabilizing them.

Readers will have to beware of regional differences, however. The fruit tree recommendations may not translate from Illinois to your own orchard or garden, and of course the native trees and shrubs for southern gardens won't work too well in North Dakota. The areas most heavily represented are the upper Midwest, New England, Northwest, and mid-Southeast.

But of course, what books like this really come down to are the things we all have in common. Huge trees fall, deer ravage our yews, and birds purloin our berries. There are reflections on those calamities, and on why it's all worthwhile. From

Louise Allen in Atlanta: "Digging in the earth takes my mind off difficult things." Hattie Purtell of Milwaukee, who comes into the garden at dawn to work and listen to the birds and insects, finds it "more beautiful than any cathedral."

No matter where we live, and no matter how compact our gardens or how crunched our time, we gardeners tend to speak a universal language. And every reader can take comfort in noting that some of these women are well into their 80s. Granted enough energy of our own, there may yet be time for that big dream.

—Kathleen Fisher

Kathleen Fisher gardens in a suburban tract house in Alexandria, Virginia.

TYLER'S HONEST HERBAL, 4TH EDITION.

Steven Foster and Varro E. Tyler. The Haworth Herbal Press, Binghamton, New York, 1999. 442 pages. 6¼" × 8¾". Publisher's price, hardcover: $49.95. AHS price: $45.

With the ever increasing interest in herbal remedies, more gardeners are growing their own herbs. But before you begin boiling water for an herbal tea or other concoction, take a look at the updated fourth edition of *Tyler's Honest Herbal.* First published in 1981, this book is considered by experts to be one of the most reliable sources of information on herbal medicines.

Foster and Tyler—leading authorities in the study of natural products for medicinal use—analyze and report on the most current scientific research and clinical data for more than 100 popular herbal remedies, including St. John's-wort, echinacea, ginseng, and ginkgo, to support or disprove the purported uses of each plant. The authors' evaluations are objective and straightforward, noting the chemical constituents in each plant and their efficacy in preventing or treating ailments. Safety is also addressed, with warnings of possible side effects and potential drug interactions. Each entry is followed by a list of references, allowing interested readers to study the scientific data themselves.

For ease of use, entries are arranged alphabetically by each plant's common name. A thorough index makes it a snap to locate information on many topics, including toxic plants, plants used to treat certain symptoms or illnesses, and FDA regulations.

Tyler's Honest Herbal offers an informed and serious evaluation of herbal remedies; it is recommended reading for anyone considering the use of these products.

—Christina M. Scott

Christina M. Scott is assistant editor of The American Gardener.

gardeners' books

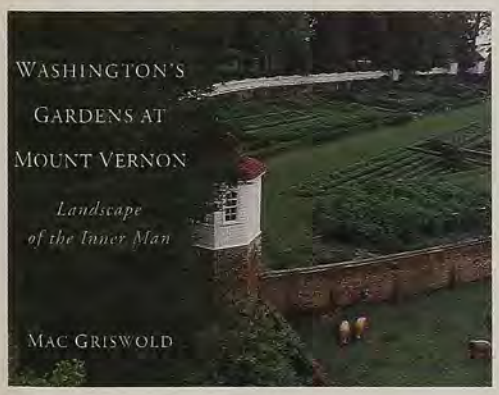
To better serve our members, AHS has teamed up with Amazon.com. We can now offer better discounts on most titles, faster deliveries, more inventory, and improved access to hard-to-find titles. The books listed here are based on perceived reader interest, unusual subject matter, or substantive content. To order, or for information about other gardening books, please call Trish Gibson at (800) 777-7931 ext. 36 or visit our Web site at www.ahs.org *and link to Amazon.com.*

GARDEN HISTORY

KNOT GARDENS AND PARTERRES.

Robin Whalley and Anne Jennings. Barn Elms Publishing, London, 1998. 160 pages. Publisher's price, hardcover: $45. AHS price: $31.50.

This book is a treasure trove of information about the development of knot gardens throughout history. On the more practical side, the authors explore different methods of creating and using knots as a garden feature and describe systematically the process of planning, planting, and maintaining a knot garden. This is a great book for anyone interested in garden history or who wants to replicate historical designs. The many color photographs of knot gardens are sure to inspire any gardener.

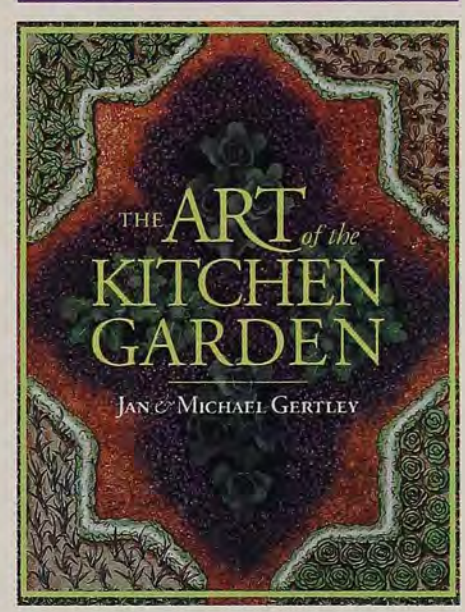


WASHINGTON'S GARDENS AT MOUNT VERNON.

Mac Griswold. Houghton Mifflin Company, Boston, 1999. 192 pages. Publisher's price, hardcover: $40. AHS price: $28.

This year, the 200th anniversary of George Washington's death, is the perfect time for release of this compilation of archival material highlighting Washington's achievements as a gardener, landscaper, and farmer. With information garnered from Washington's memos, diaries, garden plans, and plant lists, the author reveals how this famous statesman gathered seeds and transplanted and pruned trees. Griswold also shows how Washington designed a kitchen garden, pleasure garden, and botanical garden that have been restored at Mount Vernon.

DESIGN



THE ART OF THE KITCHEN GARDEN.

Jan and Michael Gertley. The Taunton Press, Newton, Connecticut, 1999. 151 pages. Publisher's price, hardcover: $29.95. AHS price: $27.

If you are no longer satisfied with growing vegetables in neat little rows, then this is the book for you. The authors discuss new ways to lay out a garden so it is both functional and aesthetically pleasing. Included are detailed designs of quilt-block gardens, Japanese family-crest gardens, and Celtic knot gardens. The book is illustrated with 134 color photographs and 29 color drawings.

REFERENCE

GARDENING BASICS.

Ken Beckett, Steve Bradley, Noel Kingsbury, and Tim Newbury. Sterling Publishing Co., New York, 1999. 276 pages. Publisher's price, hardcover: $29.95. AHS price: $21.

Step-by-step instructions and thousands of photographs and illustrations make this book an informative reference for both beginning and experienced gardeners. The authors guide the reader through all stages of gardening, including design, plant selection, and maintenance for both ornamental and vegetable gardens. Concise instructions are provided for projects such as building ponds, pergolas, decks, and fences, as well as explanations on how to lay hard surfaces such as concrete, paving slabs, and stone. An appendix includes seasonal calendars for ornamental and edible gardens.

QUICK AND EASY CONTAINER WATER GARDENS.

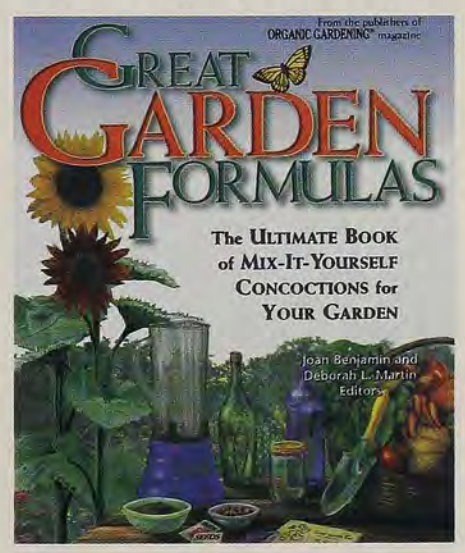
Philip Swindells. Storey Books, Pownal, Vermont, 1998. 128 pages. Publisher's price, hardcover: $22.95. AHS price: $16.25.

Container water gardens offer versatility for gardeners who don't have time or space for conventional water features. Swindells, a water garden expert, provides complete step-by-step instructions for creating more than 25 easy and affordable water gardens for both indoors and out, proving that water features are not just for large, extravagant gardens. Each project is illustrated with detailed color photographs. An encyclopedic list of largely trouble-free aquatic plants is included to help you choose plants suitable to your climate. The care of water plants, fish, and snails is also discussed. The book includes more than 100 color photographs and illustrations.

GREAT GARDEN FORMULAS.

Joan Benjamin and Deborah L. Martin, editors. Rodale Press, Emmaus, Pennsylvania, 1998. 342 pages. Publisher's price, hardcover: $27.95. AHS price: $19.75.

This useful collection of more than 350 mix-it-yourself concoctions for your garden provides explicit, cookbook-style in-



structions on how to make everything from compost to natural herbicides and pest repellants. Most of the recipes use ingredients readily available at the local gar-

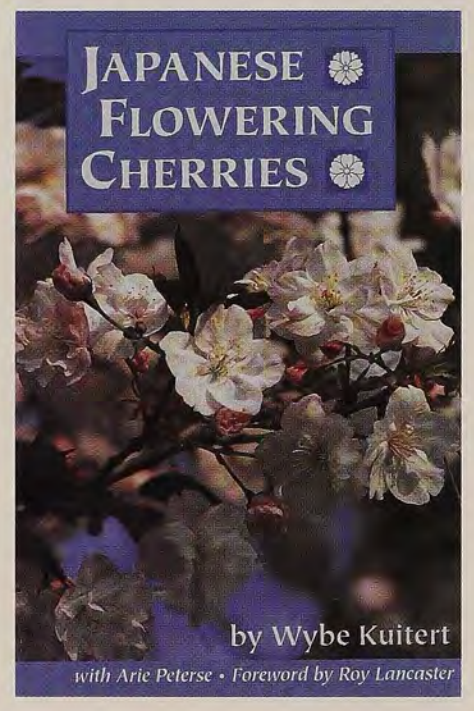
den center or grocery store. The book includes a large list of sources for information and supplies, a bibliography of recommended reading, metric conversion tables, and a complete index.

PLANTS

JAPANESE FLOWERING CHERRIES.

Wybe Kuitert with Arie Peterse. Timber Press, Portland, Oregon, 1999. 395 pages. Publisher's price, hardcover: $39.95. AHS price: $28.

Kuitert's extraordinary book on Japanese flowering cherries includes a detailed account of their history and complete information for their cultivation and propagation. A professor of landscape architecture at the Kyoto University of Art and Design, Kuitert also disentangles the confusing mixture of Japanese and English plant names that have long plagued nurseries, collectors, and amateur gardeners. In addition, Dutch plant breeder Arie Peterse contributes a complete botanical key to the classification of Japanese cherries. More than 100 color photographs of cherries in flower, along with rare period artwork, complete this practical handbook for selecting and growing these aristocratic flowering trees.



MISCELLANEOUS

PAPERMAKING WITH PLANTS.

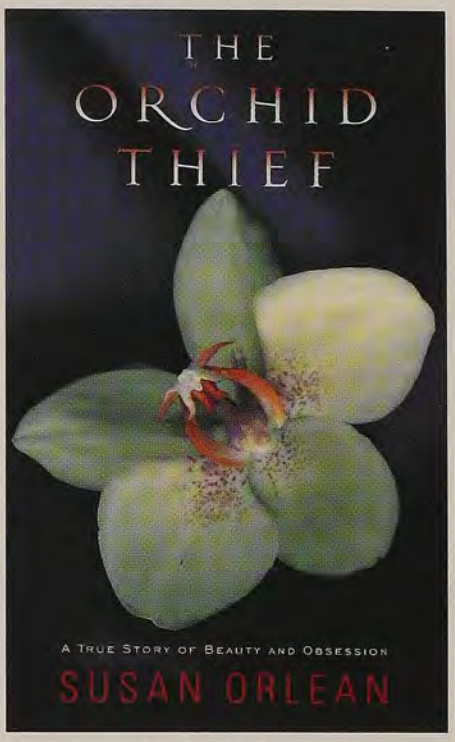
Helen Hiebert. Storey Books, Pownal, Vermont, 1998. 112 pages. Publisher's price, hardcover: $24.95. AHS price: $17.50.

A papermaker and artist, Hiebert shares the techniques she uses to create unique sheets of paper from plant materials gathered from the wild or the garden. Hiebert provides step-by-step instructions on setting up a studio, collecting plants and preparing the fibers, and ultimately, making your own paper. The book includes color illustrations, an appendix, glossary, and resource guide.

THE ORCHID THIEF.

Susan Orlean. Random House, New York, 1998. 284 pages. Publisher's price, hardcover: $25. AHS price: $17.50.

The fascinating true story of a man whose obsession with orchids takes him on a quest into the wild swamps of southern Florida. Arrested after stealing rare orchids, renegade plant dealer John Laroche and three Seminole Indians become embroiled in an odd legal controversy involving environmentalists, Native American activists, and devoted orchid collectors. The result is a tale that is strange, compelling, and at times hilarious. Woven through the story is a wealth of botanical information about wild orchids, all checked for accuracy by the American Orchid Society. This book supports the old adage that truth can indeed be stranger than fiction.



AHS HORTICULTURAL BOOK SERVICE ORDER FORM

SHIP TO: Name _____

Address _____

City _____ State _____ Zip _____

Daytime phone ( ) _____

Book Title	Qty.	Price Each	Total
		Subtotal	
		Virginia residents: Add 4.5% sales tax	
		Postage & Handling (see chart)	
		Total	

CHOOSE PAYMENT METHOD:

❑ Check enclosed. Amount: $ _____

❑ Charge to: ❑ VISA ❑ MasterCard

Account # _____

Exp. date _____

Signature _____

STANDARD SHIPPING	SECOND-DAY AIR	NEXT-DAY AIR
$3 per shipment plus 95¢ per item	$6 per shipment plus $1.95 per item	$8 per shipment plus $2.95 per item

Mail completed form to: AHS Horticultural Book Service, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.
Or call toll-free (800) 777-7931 ext. 36.

Prices in effect until June 30, 1999. After expiration date, orders will be filled pending availability. Please allow four to six weeks for delivery. Prices subject to change without notice.

Like The Home You Grew Up In...Only Better.

The Family Homes Collection.

A portfolio of house plans that update yesterday's charming home styles...with today's family in mind. $35 plus $4.50 shipping and handling. ***By John Tee, AIA • 2,000-3,400 square feet.***

1-800-755-1122 ***to order***

Southern Living
http://southernliving.com/hp

SL-9812-570

regional happenings

a look at what's happening around the nation

AHS Events

Events sponsored or co-sponsored by AHS are indicated by this AHS symbol. An expanded and updated Regional Happenings listings can be viewed on the Society's Web site at *www.ahs.org*.

MID-ATLANTIC

THROUGH MAY 31. *From Botany to Bouquets: Flowers in Northern Art.* Art exhibit. National Gallery of Art, Washington, D.C. (202) 737-4215.

AHS MAY 12. *The Capitol Grounds: Yesterday, Today, and Tomorrow.* Friends of River Farm lecture series. George Washington's River Farm, Alexandria, Virginia. (703) 768-5700 ext. 10.

MAY 12. *Preservation Garden Party.* Woodrow Wilson House, Washington, D.C. (202) 387-4062 ext. 15.

MAY 13–15. *Mayfair Art and Garden Show.* Alumni Hall, University of Virginia, Charlottesville, Virginia. (804) 979-8460.

MAY 14–16. *Middleburg Garden Market.* Community Center Grounds, Middleburg, Virginia. (540) 687-TOUR.

AHS MAY 15. *Bugfest '99.* Displays and demonstrations on a wide variety of insects, spiders, millipedes, and crustaceans will be sponsored by the U.S. National Museum of Natural History's (NMNH) Department of Entomology, U.S. National Fish and Wildlife Foundation, and AHS. The National Mall, Washington, D.C. (703) 768-5700 ext. 10.

MAY 15 & 16. *Spring Plant Sale.* William Paca Garden, Annapolis, Maryland. (410) 267-6656.

MAY 22. *51st Annual Virginia Peninsula Rose Society Rose Show.* Coliseum Mall, Hampton, Virginia. (757) 851-5122.

MAY 22. *Green Spring Gardens Day Plant Sale.* Green Spring Gardens Park, Alexandria, Virginia. (703) 642-5173.

MAY 23. *Plant Propagation Workshop.* Field Studies Institute. Wintergreen Resort, Wintergreen, Virginia. (804) 325-8172.

JUNE 5 & 6. *7th Annual Hosta Cut-leaf Show.* Phipps Conservatory, Pittsburgh, Pennsylvania. (412) 622-7363.

JUNE 10–12. *Native Plants in the Landscape.* Conference and plant sale. Millersville University, Millersville, Pennsylvania. (717) 872-3030.

JUNE 12. *Gardens Since Eden.* Lecture. U.S. National Arboretum, Washington, D.C. (202) 245-2726.

JUNE 12 & 13. *Blue Ridge Garden Festival.* Historic exhibit gardens, workshops, and plant sale. Explore Park, Roanoke, Virginia. (540) 427-1800.

AHS JUNE 17. *Creating Sanctuary—A New Approach to Gardening in the Washington Metropolitan Area.* Friends of River Farm lecture series. George Washington's River Farm, Alexandria, Virginia. (703) 768-5700 ext. 10.

JUNE 24. *Free Day and Community Open House.* Garden and nature trail walks. Brandywine River Museum, Chadds Ford, Pennsylvania. (610) 388-2700.

AHS JULY 7. *Floral Designing for Summer.* Friends of River Farm lecture series. George Washington's River Farm, Alexandria, Virginia. (703) 768-5700 ext. 10.

JULY 23. *3rd Annual Conference on Woody Plants.* Swarthmore College, Swarthmore, Pennsylvania. (610) 388-1000 ext. 507.

NORTH CENTRAL

THROUGH JUNE 20. *Butterflies in Wonderland.* Krohn Conservatory, Eden Park, Cincinnati, Ohio. (513) 352-4080.

MAY 14 & 15. *40th Annual Hyde Park Garden Fair.* Hyde Park Shopping Center, Chicago, Illinois. (773) 493-8882.

JUNE 13. *White River Gardens Grand Opening.* White River Gardens, Indianapolis, Indiana. (317) 630-2010.

JUNE 19. *Garden Walk '99.* Private garden tour. Quad City Botanical Center, Rock Island, Illinois. (309) 794-0991.

JUNE 19–27. *Boerner in Bloom.* Boerner Botanical Gardens, Hales Corners, Wisconsin. (414) 529-1870.

JULY 8–11. *International Lily Show.* Wisconsin-Illinois Lily Society. Chicago Botanic Garden, Glencoe, Illinois. (847) 835-5440.

NORTHEAST

MAY 14 & 15. *May Market.* Plant sale. Hill-Stead Museum, Farmington, Connecticut. (860) 677-4787.

MAY 19. *Play and Nature in Childhood Development.* Symposium. Rusk Institute of Rehabilitation Medicine, New York, New York. (212) 263-6058.

MAY 29. *Celebration of Spring.* Flower show. Unitarian Memorial Church, Fairhaven, Massachusetts. (508) 979-4085.

MAY 29. *Herb and Plant Sale.* Shaker Museum and Library, Old Chatham, New York. (518) 794-9100.

JUNE 1. *Pruning Trees and Ornamentals.* Workshop. UMass Extension Center, Waltham, Massachusetts. (413) 545-0895.

JUNE 5. *Unusual Annuals.* Garden seminar and plant sale. Basin Harbor Club, Vergennes, Vermont. (802) 475-2311.

AHS JUNE 9–12. *AHS Annual Conference.* Workshops, lectures, and tours with nationally recognized gardening experts. Fairmont Copley Plaza, Boston, Massachusetts. (703) 768-5700 ext. 10.

Birthday for Bartram

Philadelphia, Pennsylvania, will host a trio of events celebrating the 300th anniversary of the birth of John Bartram, America's first botanist and founder of America's oldest botanical garden. American historian David McCullough will give the keynote address at "Bartram 300: A Gathering," a symposium examining Bartram's influence on 18th-century science and exploration. From Wednesday, May 19 through Friday, May 21, historians, editors, and educators from the United States and Canada will meet at the Academy of Natural Sciences in Philadelphia to offer analytical accounts of Bartram's contributions to American and European botany, his role in the demystification of the American frontier, and his scientific legacies in the 20th century and beyond.

The 18th-century Bartram house.

On Saturday and Sunday, May 22 and 23, Historic Bartram's Garden will host "Bartram 300: Living History Festival." John Bartram and Benjamin Franklin re-enactors will be accompanied by period crafters demonstrating and selling traditional wares on Bartram's 45-acre national landmark homestead along the banks of the Schuylkill River. Bartram's historic botanical garden and house will be open for formal tours and musical and dance performances. Children's events and entertaining exhibits by other Philadelphia museums and cultural institutions are also scheduled.

Additionally, as part of the Bartram celebrations, Historic Bartram's Garden is conducting the first census of *Franklinia alatamaha*, a tree native to Georgia. All franklinias today are descended from those grown by Bartram and his family, who are credited with saving it from extinction. Census results will be announced during the May festivities.

For more information on the Bartram celebrations, contact Historic Bartram's Garden at (215) 729-5281, or visit its Web site at *www.libertynet.org/bartram*.

Wild for Wildflowers

On Saturday, June 12, gardeners from throughout the Northeast will descend on Garden in the Woods in Framingham, Massachusetts, to celebrate the 25th anniversary of New England's largest wildflower sale. More than 10,000 propagated native plants—encompassing 250 species and varieties—will be on sale at the New England Wild Flower Society's annual extravaganza. Among the offerings will be yellow lady's-slippers, trilliums, bleeding hearts, phlox, and columbines. Plant experts will be on hand to answer questions and to assist with plant selections.

Wildflower seed giveaways, gardening raffles, a silent auction, children's activities, and free demonstrations on a variety of gardening-related topics will round out the anniversary celebrations. Since 1974, the New England Wild Flower Society has raised more than $500,000 for native plant conservation through its annual sale. For more information, contact the society at (508) 877-7630 or visit its Web site at *www.newfs.org*.

—Mark C. Mollan, Communications Assistant

JUNE 12 & 13. *Webster Arboretum Horticulture Faire.* Webster Arboretum, Rochester, New York. (716) 872-2911.

JUNE 18–20. *Rose Weekend at Elizabeth Park.* Friends of Elizabeth Park. Hartford, Connecticut. (860) 242-0017.

JUNE 19 & 20. *Marchand International Horticulture Conference.* Buffalo Museum of Science, Buffalo, New York. (716) 825-5200 ext. 310.

JUNE 25–27. *8th Annual Flower Festival.* Whiskers Field, Stowe, Vermont. (800) 247-8693.

NORTHWEST

MAY 21–SEPT. 30. *Butterflies & Blooms.* Exhibition. Woodland Park Zoo, Seattle, Washington. (206) 684-4800.

MAY 22. *Whidbey Island Garden Tour.* Private garden tour. Freeland, Washington. (360) 678-6105.

JUNE 5. *11th Annual Bamboo Festival and Plant Sale.* Pacific Northwest Chapter of the American Bamboo Society. Washington Park Arboretum, Seattle, Washington. (206) 543-8800.

JUNE 26. *Alaska Botanical Garden Fair.* Alaska Botanical Garden, Anchorage, Alaska. (907) 265-3165.

SOUTH CENTRAL

MAY 12. *Harvesting and Drying Herbs for the Home.* Workshop. McAshan Herb Gardens at Festival Hill, Round Top, Texas. (409) 249-5283.

MAY 22 & 23. *Everything's Coming Up Roses.* Rose show. Herman, Missouri. (800) 932-8687.

MAY 22 & 23. *St. Louis Horticultural Society Show and Sale.* Missouri Botanical Garden, St. Louis, Missouri. (314) 577-5100.

JUNE 28–JULY 2. *Herbal Odyssey.* Workshop. Heritage Herb Gardens, Ozark Folk Center, Mountain View, Arkansas. (800) 264-3655.

SOUTHEAST

JUNE 6. *Seasons Garden Celebration.* Grand opening of Dogwood Garden and Woodland Sculpture Trail. Cheekwood Botanical Garden, Nashville, Tennessee. (615) 356-8000.

JUNE 12. *Hemerocallis Show.* Atlanta Botanical Garden, Atlanta, Georgia. (404) 876-5859.

JUNE 12. *Irises for the Garden.* Lecture. Tryon Palace, New Bern, North Carolina. (800) 767-1560.

JUNE 18. *Hardy Geraniums.* Lecture. Georgia Perennial Plant Association. Atlanta History Center, Atlanta, Georgia. (770) 955-1303.

JUNE 30. *Garden Gambol.* Garden tour.

Lompoc Flower Festival

If you enjoy smelling the sweet fragrance of knee-high sweet peas as they bloom, or capturing the beauty of vivid zinnias, marigolds, petunias, sunflowers, and other blossoms with your camera, then visit the Lompoc Flower Festival, held annually the last weekend in June (June 23 to 27 in 1999). This wind-swept section of southern California has been the flower seed capital of the nation since the early 1900s, when seed companies started raising sweet peas and other cool-weather flowers in the chilly, moist climate of the Lompoc Valley. For the past 47 years the festival has celebrated the opening of the June-through-August blooming season by offering self-guided tours through miles of flower fields. This brings on-lookers up-close and in sniffing distance of a host of colorful flowers, including asters, cosmos, larkspur, marigolds, stocks, and zinnias. An old-fashioned carnival and barbecue kick off the weekend's activities, followed by a floral parade and an arts and crafts fair in Lompoc's Ryon Park. For details, contact the Lompoc Valley Festival Association, P.O. Box 505, Lompoc, CA 93438, or call (805) 735-8511. *—Karen L. Dardick, special from Los Angeles*

Daniel Stowe Botanical Garden, Belmont, North Carolina. (704) 825-4490.

JULY 1–31. *Azaleas Bloom.* Callaway Gardens, Pine Mountain, Georgia. (800) 225-5292.

SOUTHWEST

MAY 8. *11th Annual Herb Fair.* Tucson Botanical Gardens, Tucson, Arizona. (520) 326-9686.

JUNE 6. *Colorado Water Garden Society Plant Sale.* Denver Botanic Gardens, Denver, Colorado. (303) 755-1885.

WEST COAST

MAY 15. *Perfect Perennials.* Lecture. Fullerton Arboretum, Fullerton, California. (714) 278-3404.

MAY 15 & 16. *Geranium Plant Show and Sale.* San Diego Geranium Society. Casa Del Prado, Balboa Park, San Diego, California. (619) 469-8936.

MAY 16. *25th Annual Plant Sale.* Huntington Botanical Gardens, San Marino, California. (626) 405-2100.

MAY 29–31. *Tour of Getty Museum.* Sponsored by Ruth Bancroft Garden. Walnut Creek, California. (510) 210-9663.

JUNE 16–JULY 5. *Gardens of the Golden State.* Flower and garden show. Del Mar Fairgrounds, Del Mar, California. (619) 755-1161.

JUNE 25 & 26. *Silver Jubilee Gardens' Faire.* The Gardens at Heather Farm, Walnut Creek, California. (925) 947-1678.

JULY 3 & 4. *Cactus and Succulent Society of America Show.* Huntington Botanical Gardens, San Marino, California. (626) 405-2141.

CANADA

JUNE 4–6. *Van Dusen Flower and Garden Show.* Vancouver, British Columbia. (604) 257-8671.

JULY 9–11. *Victoria Flower and Garden Festival.* Royal Roads University, Victoria, British Columbia. (250) 881-7469.

classifieds

a look at current offerings from the marketplace

CLASSIFIED AD RATES: *All classified advertising must be prepaid. $2 per word; minimum $50 per insertion. Copy and prepayment must be received on the 20th of the month three months prior to publication date. Send orders to: AHS Advertising Office, 4350 DiPaolo Center, Suite B, Glenview, IL 60025, or call (847) 699-1707.*

KAREN L. DARDICK

GREENHOUSE PLASTICS

BOB'S SUPER-STRONG GREENHOUSE PLASTIC—Pond Liners. Resists hailstones, yellowing, leafburning. Samples: 2 stamps appreciated. Box 42AG, Neche, ND 58265; 204-327-5540 daily.

Catch the Sunshine!
- Hobby to Commercial
- Affordable & Fully Warranteed
- Free color brochure and *"Practical Guide to Greenhouse Selection"*

Gothic Arch Greenhouses
Box 1564-AG •Mobile, AL 36633 • 800/531-GROW

HOSTAS

HOSTA SPECIALISTS—Field grown, large choice selection including species, classics, new and exclusive varieties. Descriptive catalog, includes color, $3. SAVORY'S GARDENS, INC., 5300 Whiting Avenue, Edina, MN 55439-1249.

PEONIES

BEAUTIFUL JAPANESE/CHINESE TREE PEONIES. Wide variety of exotic, INEXPENSIVE peonies available. Catalog $3. All plants 3 years old and older. SMIRNOW'S SON'S PEONIES, Dept. AG, 168 Maple Hill Road, Huntington, NY 11743. Phone: 516-421-0836.

SEVALD NURSERY
PEONIES
4937 3RD AVE. SO.
MPLS., MN 55409
COLOR CATALOG $1.00
(REFUND WITH ORDER)

SEEDS

UNCOMMON SEEDS for exceptional gardens: hard-to-find ornamentals, unusual perennials, flowery vines, antique annuals, rare alpines, trees, tropicals, wildflowers, herbs, heirloom vegetables. Catalog $1. HUDSON SEEDS, SR2, Box 337-AG, LaHonda, CA 94020.

HARDY MAINE PERENNIALS
We provide your garden with only the best!!
Many new and hard to find.
Descriptive catalog listing over 900 varieties $2.50
www.FieldstoneGardens.com
Fieldstone Gardens, Inc.
620A Quaker Lane
Vassalboro, Maine 04989-9713
Ph/Fax:(207)923-3836

Grow Faster Perennials

Discover the concentrated growing power of Etera Perennials. Shop online at **www.etera.com** or call for a free catalog featuring 280 varieties and 19 garden plans.
Toll-free: 1.888.840.4024
Etera
Products for Gardeners

Get Your Copy Today!
André Viette Farm & Nursery
Perennial Handbook and Mail Order Plant Catalogue.
54 New Perennials Available for 1999 plus thousands of "perennial favorites" and over a hundred color photos to help make your choices easier. Also, detailed planting instructions and tips.
This is a "must have" for only $5.00.
André Viette Farm and Nursery
P. O. Box 1109. Dept. AG
Fishersville, Va. 22939
1-800-575-5538

SPRAY MATE
Home & Garden Sprayer
- Rugged design
- Easy to use
- Adjustable nozzle
- 1-gallon capacity

only $16.99
+ Shipping & Handling

To order by credit card visit
www.sprayersdirect.com
or call
(888) 434-8811
Quality Spray Products, Inc.

DRIP IRRIGATION • POND LINERS
Highest Quality, Best Selection, Low Cost!
DripWorks
Your Source For Drip and Micro Irrigation
231 E. San Francisco St.
Willits, Ca 95490
FREE Catalog
800•616-8321
email: dripwrks@Pacific.net

EarthCo Soil Analysis

✔ **Basic Test ($15):** pH, organic matter, phosphorous, potassium, magnesium, calcium+ recommendations
✔ **Advanced Test ($30):** basic test + micronutrient analysis
✔ **Complete Test ($40):** advanced test+ soil classification (% sand, silt & clay)

A detailed graphical report will provide easy-to-read recommendations. Send a soil sample (2 cups), name, address, phone number & crop/plant being grown along with check to: EarthCo, Dept. AG, P.O. Box 50084, St. Louis, MO 63105 (314) 994-2167.

MOVING?
Don't miss a single issue of THE AMERICAN GARDENER. *Send an old address label and your new address to: AHS, Address Change Dept., 7931 East Boulevard Drive, Alexandria, VA 22308-1300. Please allow 4 weeks notice.*

Wilkerson Mill Gardens
Growers of the uncommon and hard to find.
Catalog $3
9595 Wilkerson Mill Rd.
Palmetto, GA 30268
www.hydrangea.com

THE NEW YORK BOTANICAL GARDEN
School of Professional Horticulture, Academic and practical training, two year program.
Write: School of Professional Horticulture, NYBG, Bronx, NY 10458 or phone (718) 817-8797 for information.

NEW ZEALAND - AUSTRALIA
GARDEN, BOTANICAL, WILDLIFE & WALKING TOURS FOR GROUPS & INDIVIDUALS
1999–2000
Oct. Roseweek Australia Rose Garden Tour *with Dr. Tommy Cairns*
Oct. Australia Spring Garden Tour *with Jim Wilson*
Nov. New Zealand Spring Garden Tour *with Bill Aldrich, for the California Arboretum Foundation*
Feb. Australia Dahlia Gardens *with Les Connell*
(650) 595–2090
PACIFIC PATHWAYS
Experience the Best of New Zealand and Australia

Our Rivers are dying for more trees.

You can breathe new life into this precious resource. Trees that filter and clean polluted water are in decline. Help plant 20 million trees for our streams and rivers. $10 plants 10 hard-working, water-cleaning trees. Call **800/545-TREE**, or visit our website: www.amfor.org.
It's amazing what grows when you plant a tree.

AMERICAN FORESTS GLOBAL RELEAF 2000

AMERICAN FORESTS, Washington, DC 20013-2000

hardiness and heat zones

For your convenience, most of the cultivated plants featured in this edition of the magazine are listed here with their USDA Plant Hardiness Zones and AHS Heat Zones. If 0 is listed in place of USDA hardiness zones, it means that plant is a true annual—it completes its life cycle and dies in a year or less. Tropical plants that require minimum temperatures warmer than 40 degrees Fahrenheit—the minimum average temperature in USDA Zone 11—will be listed by minimum average temperature rather than by zone numbers.

A–C

Andropogon elliottii USDA 2–7, AHS 7–1
A. glomeratus var. *scabriglumis* 2–7, 7–1
A. gyrans 2–7, 7–1
A. ternarius 2–7, 7–1
A. virginicus 2–7, 7–1
Anisacanthus quadrifidus var. *wrightii* 9–10, 10–8
Aplectrum hyemale 4–8, 8–3
Asplenium trichomanes 5–8, 8–4
Bouteloua curtipendula 5–9, 9–4
Calamagrostis foliosa 5–9, 9–4
Callirhoe involucrata 4–6, 6–1
Caltha palustris 3–7, 7–1
Cephalaria gigantea 3–7, 7–1
Chaenomeles japonica 5–9, 9–3
Chionanthus virginicus 5–9, 9–4
Cypripedium calceolus 3–7, 7–1
Cyrtomium falcatum 6–10, 10–6

D–K

Darmera peltata 5–9, 9–5
Dryopteris cristata 6–8, 8–6
D. ludoviciana 6–10, 11–6
Eragrostis superba 9–11, 12–9
Festuca californica 4–8, 8–4
Fothergilla gardenii 5–9, 9–5
Glyceria obtusa 5–9, 9–5
Gomphrena globosa 11, 12–1
Habranthus brachyandrus 9–11, 12–9
H. concolor 10–11, 12–10
H. robustus 9–11, 12–9
H. tubispathus var. *texensis* 9–11, 12–9
Hypoxis hirsuta 5–8, 8–5
Iris brevicaulis 5–9, 9–3
I. cristata 3–8, 8–1
I. douglasiana 7–9, 9–7
I. fulva 6–9, 9–5
I. hexagona 7–10, 10–8
I. innominata 7–9, 9–7
I. lacustris 4–7, 8–1
I. missouriensis 3–7, 8–1
I. munzii 7–9, 9–7
I. prismatica 4–9, 9–3
I. setosa var. *canadensis* 3–8, 8–1
I. tenax 6–8, 9–7
I. tridentata 7–10, 10–7
I. verna 5–9, 9–6
I. versicolor 3–8, 9–1
I. virginica 4–9, 9–6
I. virginica var. *shrevei* 7–9, 9–7
Koeleria macrantha 6–9, 9–6

L–O

Leymus cinereus 4–9, 9–3
Liatris graminifolia 6–9, 9–6
Lilium michauxii 7–8, 8–7
Lobularia maritima 11, 12–1
Lupinus texensis 5–8, 8–5
Magnolia acuminata var. *subcordata* 4–8, 8–1
Malvaviscus arboreus var. *drummondii* 9–11, 12–9
Marshallia grandiflora 5–7, 7–5
Muhlenbergia dumosa 8–10, 10–8
M. lindheimeri 8–10, 10–8
M. rigens 8–10, 10–8
Nymphaea odorata 4–11, 12–1
Orontium aquaticum 5–9, 9–5
Osmanthus fragrans 9–10, 10–9

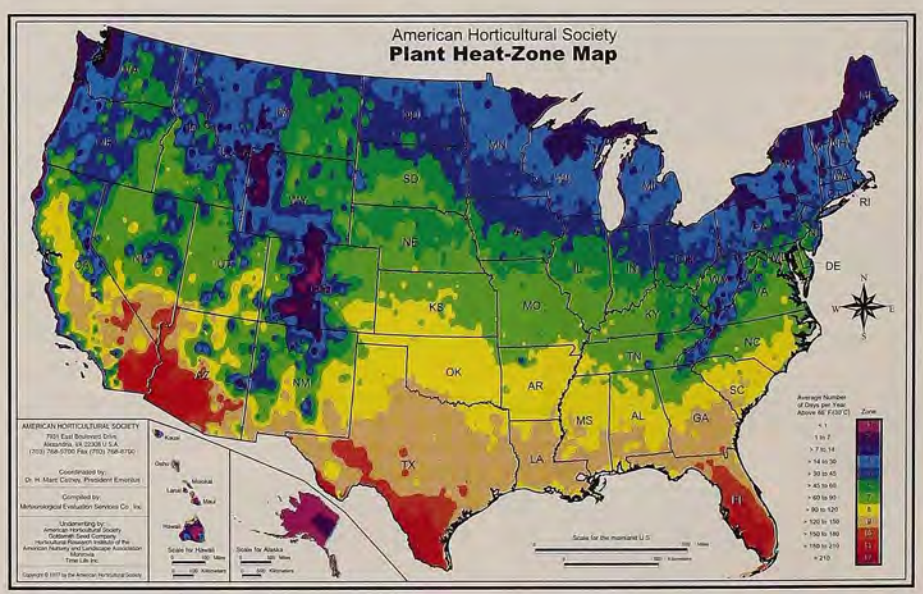
P–R

Panicum amarum 5–9, 9–5
P. virgatum 5–9, 9–5
Pavonia lasiopetala 61–64°, 12–9
Phacelia cicutaria var. *hubbyi* 10–11, 12–10
Phlox divaricata 4–8, 8–1
Photinia serratifolia 7–9, 9–7
Platanus occidentalis 5–8, 8–5
Polemonium reptans 4–8, 8–1
Polystichum polyblepharum 6–9, 9–6
Punica granatum 8–10, 10–8
Quercus michauxii 7–9, 9–7
Rhododendron calendulaceum 5–9, 9–5
R. catawbiense 4–8, 8–1
R. minus 5–9, 9–5
Rivina humilis 11, 12–7
Rubus procerus 6–9, 9–4

S–Z

Saccharum contortum 9–11, 12–9
Salix argyrocarpa 5–8, 8–4
S. planifolia 1–7, 7–1
Sarracenia purpurea 2–8, 8–1
Sassafras albidium 5–8, 8–4
Saxifraga stolonifera 6–9, 9–6
S. rivularis 2–5, 5–1
Schizachyrium scoparium 5–9, 9–5
Silphium laciniatum 5–9, 9–5
S. terebinthinaceum 3–7, 7–1
Sorghastrum nutans 5–8, 8–5
Sporobolus heterolepis 3–9, 9–1
Teucrium aroanum 7–11, 12–7
T. chamaedrys 5–9, 9–5
Thymus glabrescens 6–9, 9–6
Viburnum plicatum forma *tomentosum* 4–8, 8–1
Zephyranthes atamasca 7–11, 12–8
Z. candida 7–11, 12–9
Z. chlorosolen 7–9, 9–7
Z. citrina 7–9, 9–7
Z. drummondii 7–9, 9–7
Z. flavissima 7–9, 9–7
Z. grandiflora 7–9, 9–7
Z. macrosiphon 8–11, 12–8
Z. reginae 7–9, 9–7
Z. treatiae 7–9, 9–7

The codes above are based on a number of commonly available references and are likely to be conservative. Factors such as microclimates, plant provenance, and use of mulch may affect individual gardeners' experiences. To purchase a durable two-by-three-foot poster of the AHS Heat-Zone Map, call (800) 777–7931 ext. 45.



pronunciations

a simple speaking guide to plants found in this issue

Acer capillipes
AY-sur kuh-PIL-ih-pees
A. glomeratus **var.** *scabriglumis*
A. glom-uh-RAY-tus var. skay-BRIG-lu-mis
Anemone hupehensis **var.** *japonica*
uh-NEM-o-nee hu-pay-EN-sis var. jah-PON-ih-kuh
Anisacanthus quadrifidus **var.** *wrightii*
uh-nis-uh-KAN-thus kwad-RIF-ih-dus var. RIGHT-ee-eye
Aplectrum hyemale
uh-PLEK-trum hy-em-AY-lee
Arctostaphylos manzanita
ark-toh-STAFF-fil-os man-zuh-NEE-tuh
Blechnum spicant
BLEK-num spih-KANT
Bouteloua curtipendula
boo-teh-LOO-uh kur-tih-PEN-dyew-luh
Calamagrostis foliosa
kah-luh-mah-GROS-tiss fo-lee-O-suh
C. nutkaensis
C. noot-KAY-en-siss
C. ophitidus
C. o-FEE-tih-dus
Callirhoe involucrata
kah-LIR-o-ee in-vol-yew-KRAY-tuh
Calylophus drummondianus
kal-ih-LO-fus drum-mon-dee-AN-us
Chaenomeles japonica
kee-NOM-ee-leez jah-PON-ih-kuh
Cyrtomium falcatum
sur-TOH-mee-um fal-KAY-tum
Eschscholzia californica
es-SHOLTZ-zee-uh kal-ih-FORN-ih-kuh
Eysenhardtia texana
eye-sen-HART-tee-uh tek-SAN-uh
Habranthus brachyandrus
hab-RAN-thus brak-ih-AN-drus
Hypoxis hirsuta
hy-POK-siss her-SOO-tuh
Iris brevicaulis
EYE-riss brev-ih-KAW-liss
I. innominata
I. ih-no-men-AY-tuh
I. lacustris
I. lah-KUS-tris
Koeleria macrantha
kel-LEE-ree-uh muh-KRAN-thuh
Liatris graminifolia
ly-AY-triss grah-min-ih-FO-lee-uh
Lilium michauxii
LIL-ee-um mih-SHO-ee-eye
Lindera benzoin
lin-DAIR-uh BEN-zoh-in
Lobularia maritima
lob-yew-LAIR-ee-uh muh-WRIT-ih-muh
Malvaviscus arboreus **var.** *drummondii*
mal-vuh-VISS-kus ar-BOR-ee-us var. drum-MON-dee-eye
Muhlenbergia dumosa
mew-len-BUR-jee-uh doo-MO-suh
Nymphaea odorata
nim-FEE-uh o-doh-RAY-tuh
Orontium aquaticum
o-RON-tee-um ah-KWAT-ih-kum
Perovskia atriplicifolia
peh-ROF-skee-uh at-rih-plih-sih-FO-lee-uh
Photinia serratifolia
fo-TIN-ee-uh seh-rat-ih-FO-lee-uh
Phytolacca americana
fy-toh-LAK-uh uh-mair-ih-KAN-uh
Pinckneya pubens
PINK-nee-uh PYEW-benz
Polystichum polyblepharum
pah-LISS-tih-kum pah-lih-BLEF-ah-rum
Porteranthus stipulatus
por-tur-AN-thus stih-pyew-LAY-tus
Prenanthes boottii
Pren-ANTH-eez BOOT-ee-eye
Rhododendron calendulaceum
ro-doh-DEN-dron kuh-len-dew-LAY-see-um
R. catawbiense
R. kuh-taw-be-EN-see
Rubus procerus
ROO-bus pro-SAIR-us
Rivina humilis
riv-VY-nuh HEW-mih-lis
Saccharum contortum
sak-AH-rum kon-TOR-tum
Schizachyrium scoparium
skits-ah-KEER-ee-um sko-PAR-ee-um
Silphium laciniatum
SIL-fee-um lah-syn-ee-AY-tuh
S. terebinthinaceum
S. tair-uh-bin-thin-AY-see-um
Sorghastrum nutans
sorg-ASS-trum NOO-tanz
Sporobolus heterolepis
spor-OB-o-lus het-ur-o-LEP-iss
Symphoricarpos albus
sim-fo-rih-KAR-poz AL-bus
Teucrium aroanum
TOO-kree-um ah-RO-uh-num
T. chamaedrys
T. KAM-ee-drees
Tridens flavus
TRY-denz FLAY-vus
Viburnum plicatum **forma** *tomentosum*
vy-BER-num ply-KAY-tum forma toh-men-TOH-sum
Zephyranthes atamasca
zef-ih-RAN-theez at-uh-MASS-kuh
Z. chlorosolen
Z. klor-O-so-len
Z. flavissima
Z. fluh-VISS-ih-muh
Z. reginae
Z. reh-JEE-nee
Z. sulfurea
Z. suhl-FEW-ree-uh
Z. traubii
Z. TRAW-bee-eye

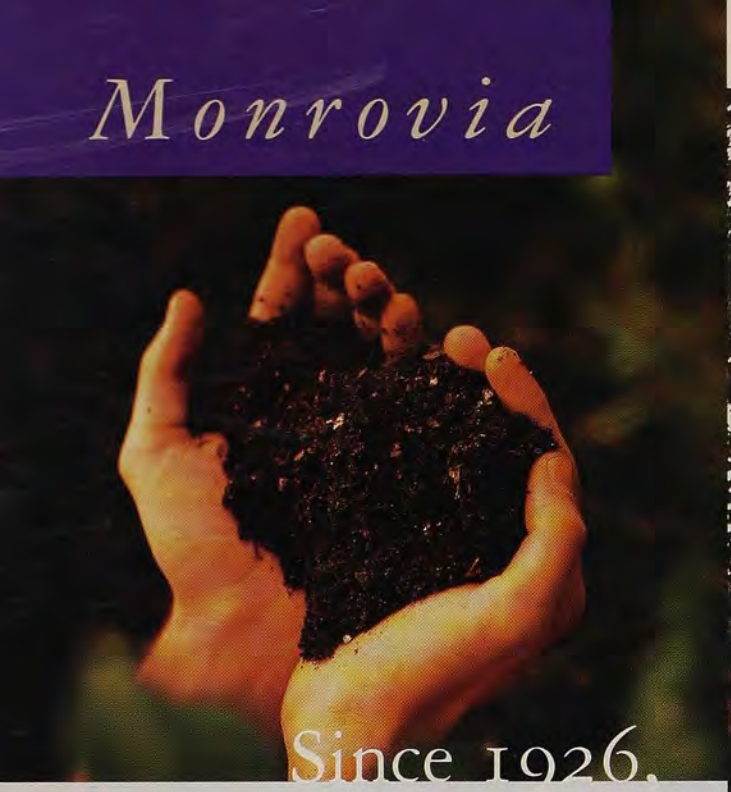
What's in a Name: *Sporobolus*

Part of the grass family (Poaceae), the genus *Sporobolus*—commonly known as dropseed—contains more than 100 annual and perennial species distributed widely around the world. Some 35 species are native or naturalized in North America, but only two—prairie dropseed *(S. heterolepis)* and alkali dropseed *(S. airoides)*—are commonly grown as ornamentals.

Native Americans once made a flour from the seeds of prairie dropseed, which is one of the characteristic plants of the once vast North American tallgrass prairie region. Its natural habitat is now widely scattered from central and eastern Canada south through the central United States to Texas and Colorado.

The genus name is formed from the Greek words *spora*, which means "seed," and *ballein*, "to throw." As with the genus's common name, dropseed, this refers to the way the seeds readily fall from their hulls when ripe. The species name of prairie dropseed means "diversely scaled"—an allusion to the papery scales that enclose the seeds.

Monrovia



Since 1926.

growers of *Distinctively Better plants,* cultivated in our exclusively formulated nutrient rich soil that provides the healthiest, hardiest, *and* most beautiful plants available at fine garden centers. Look for our *Audubon Habitat Collection,* an alliance between Monrovia and the National Audubon Society. It features a special collection of plants that attract birds, butterflies, and other backyard wildlife. Watch for upcoming special Monrovia theme collections and continuous new and exclusive Monrovia plant introductions.

Monrovia... impacting the North American landscape for more than seventy years with the highest quality plants and the newest ideas in horticulture. From *our* growing fields to *your* garden,

We care for *your* plants.

MONROVIA®

HORTICULTURAL CRAFTSMEN SINCE 1926

Look for Monrovia plants at fine garden centers.
For the location nearest you, call toll free 1-888-Plant It!