

March / April 2003

The American GARDENER

The Magazine of the American Horticultural Society

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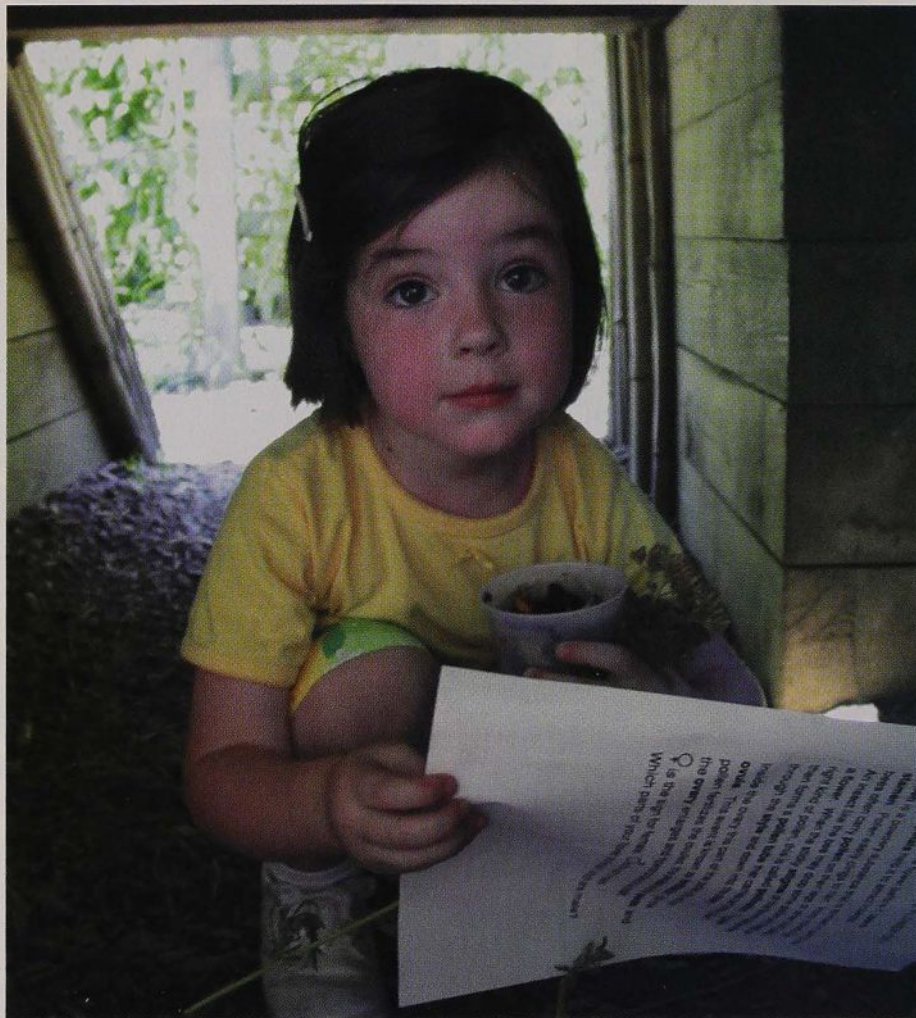
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Sarah Doesn't Care that AHS has been Inspiring and Educating Gardeners for 80 Years.



Sarah isn't all that interested in our 80th Anniversary celebration. Who can blame her? She just planted her first seed and found out that it will need water and sunshine to grow. She also learned that worms are very good for the soil—and a lot of fun to play with. **Sarah is one of many children whose introduction to the joys of gardening happened because of the caring people who have supported AHS for the past 80 years.** Living Lab programs at River Farm, like the one Sarah is involved in, are just a part of our larger mission to educate and inspire gardeners of all ages. We think that's pretty special and want to thank you on behalf of Sarah for being a part of that history. Take our word for it: Your support is very important to her.

She'd tell you herself, but she just spotted a butterfly on a nearby black-eyed Susan and is very busy watching it and wondering what it is doing. Thanks to you, she's about to find out.



If you'd like to make a donation to the American Horticultural Society, please contact Joe Lamoglia at (800) 777-7931 ext. 115, or visit our Web site at www.ahs.org.

contents

Volume 82, Number 2 · March / April 2003



FEATURES

22 FRAGRANT SPRING SHRUBS

BY MARY YEE

Double your garden's sensory appeal by planting spring-blooming shrubs with fragrant flowers.

28 SUBURBAN MAKEOVERS

BY KEITH DAVITT

A landscape designer reveals how he transformed three bland suburban yards into dynamic garden showcases.

34 BLUSHING GREENS

BY RITA PELCZAR

Colorful leafy "greens" are a delicious wake-up call for the spring vegetable garden and the palate.

37 RAINY-DAY GARDENS

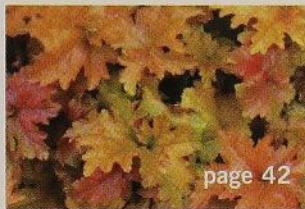
BY MARYALICE KOEHNE

Imaginative plantings that help capture and clean runoff are attracting the attention of home gardeners, landscape designers, and watershed managers.

42 HEUCHERA EXPLOSION

BY CAROLE OTTESEN

Plant breeders have turned a genus of subtly beautiful American woodland wildflowers into a line of wildly popular foliage plants.



48 FERTILE GROUND

BY RITA PELCZAR

Taking care of your soil is the first and most important step toward a successful and healthy garden.

ON THE COVER: The creamy flowers of *Fothergilla gardenii* add a gentle honeylike fragrance to the early spring garden. Photograph by Joseph G. Strauch Jr.

DEPARTMENTS

5 NOTES FROM RIVER FARM

6 MEMBERS' FORUM

7 NEWS FROM AHS

River Farm hosts spring celebration, debut of revised USDA hardiness map delayed, AHS partners with conservation group, River Farm part of Virginia's Historic Garden Week tour.

10 AHS 2003 GREAT AMERICAN GARDENERS NATIONAL AWARD WINNERS

13 EVERYDAY GARDEN SCIENCE

Breeding for less-invasive plants.

14 SMARTGARDEN™

The benefits of soil testing.

16 GARDENER'S NOTEBOOK

Study challenges conventional watering practices, researchers link children's gardening to better child nutrition, new regulations for importing lucky bamboo, new Asian long-horned beetle infestation, decoding supermarket fruit labels.

19 GARDENER'S INFORMATION SERVICE

White-flowering "forsythia," using wood ashes, reusing potting soil, lilacs for the south.

20 PLANTS AND YOUR HEALTH

Herbs instead of hormone replacement therapy.

21 OFFSHOOTS

Haunted by a shrinking pile of dirt.

53 SEASONAL GARDEN GOODS

A selection of natural soil amendments and fertilizers.

54 BOOK REVIEWS

Grounds for Pleasure, *Hope's Edge*, and *The Genus Epimedium*.

57 REGIONAL HAPPENINGS

Earth Day on April 22, trilliums in Virginia.

61 HARDINESS AND HEAT ZONES AND PRONUNCIATIONS

62 PERFECT PLANT COMPANIONS

Winterberry and hellebores.



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To receive an application for the Society's Intern Program, write to Trish Gibson at the address above or e-mail her at tgibson@ahs.org. Intern application forms can be downloaded from the River Farm area of the Society's Web site at www.ahs.org.

RECIPROCAL ADMISSIONS PROGRAM

The AHS Reciprocal Admissions Program offers members free and discounted admission to botanical gardens throughout North America. A list of participating gardens can be found in this year's *AHS Member Guide* and also in the Membership area of our Web site. For more information, call (800) 777-7931 ext. 127.

TRAVEL STUDY PROGRAM

AHS members and friends can visit spectacular private and public gardens around the world through the Society's exclusive arrangement with the Leonard Haerter Travel Company. For information about upcoming trips, call (800) 777-7931 ext. 117 or visit the Events section of our Web site.

WEB SITE: WWW.AHS.ORG

The AHS Web site is a valuable source of information about the Society's programs and activities. It is also an important resource for getting the answers to gardening questions, finding out about gardening events in your area, and linking to other useful Web sites. AHS members can reach the members-only section of the Web site by typing in this year's password: **sunflower**.

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The American GARDENER

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NOTES FROM RIVER FARM

I JUST LOVE EARLY SPRING. It is such a joyful time to be inspired in the gardening world. There are flower shows, special events at garden centers, and, of course, our own AHS Washington Blooms! These early spring events give us the pleasure of experiencing gardens beautifully designed and in full bloom before we are able to get out in the garden ourselves. And they always smell so good!

I don't know what winter has been like where you are, but here at River Farm there has been so much snow that we cannot wait to see in bloom the thousands of new daffodils we planted last fall. They are already popping out of the cold ground.

Speaking of Washington Blooms!, I hope you are able to attend this wonderful new AHS event scheduled for the first week in April to coincide with the National Cherry Blossom Festival. There are so many inspirational activities and programs scheduled that I can't do justice to more than a few in this space, but you can learn more about them on page 7 and on our Web site (www.ahs.org).

In three words, Washington Blooms! will be *inspiration, education, and fun*. For inspiration there will be the amazing living tapestry of flowering bulbs gracing River Farm, the incredible spectacle of the cherry trees blooming in Washington, D.C., and the beauty of all the public and private gardens we will be visiting on tours. In addition, this is a great opportunity to meet 15 American horticultural heroes who will be honored at the Great American Gardeners Award Banquet on Friday April 4. You can read more about them starting on page 10.

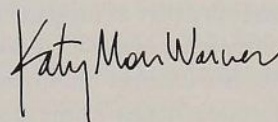
For education, the lineup of exceptional speakers and workshop presenters will include Dr. H. Marc Cathey on container gardening; Brent and Becky Heath on bulbs; Mississippi's own Felder Rushing and AHS Teaching Award winner John Guyton on children's gardening; and Jim van Sweden on landscape design. And, of course, I would love to see you at my own talk kicking off the celebration on March 29!

Two new AHS educational initiatives will be launched during Washington Blooms! The first is The Growing Connection, which connects middle school students in the United States with students in Ghana in a science experiment growing sunflowers and other food plants. The second is an online learning program in which we are partnering with the Horticulture Gardening Institute (HGI) at Michigan State University. Participants in the container gardening workshop on April 2 will automatically be signed up for a one-year subscription to HGI's online learning program. And HGI will be including material from the workshop presentations by Dr. Cathey and AHS award winner Blake Whisenant in their online course on container gardening.

And for fun, Washington Blooms! is an event for the whole family, so there will be entertaining hands-on activities to introduce children (and the child in each of us!) to the wonders of the plant world.

So...if you live anywhere close to River Farm, this is one event you just can't afford to miss. If you live farther away, we'd be happy to help you plan a visit for some part of Washington Blooms! Dr. Cathey, the AHS staff, and I will all be waiting to greet you!

Happy gardening!



—Katy Moss Warner, AHS President



MEMBERS' FORUM

THUMBS UP

The American Gardener seems to improve with each issue. It is several cuts above the average American gardening magazine, which is all how-to-do and glossy pictures. Readers get the sweep of current news, really helpful articles (the one on mulch is of particular interest to me; I like the way it deals with heaped-up mulch, a deplorable practice being used by professional landscapers all around this area). Thank you for such a valuable publication.

Loyce McKenzie
Madison, Mississippi

DISPOSING OF ARSENIC-LADEN FERNS

In an article about using ferns to remove arsenic from soil ("Plants that Heal the Earth," November/December), the author states that once the ferns have absorbed arsenic, "the fronds can be harvested and safely disposed of." What is the safe disposal process?

George W. Gerhardt
Cranberry Township, Pennsylvania

Bruce W. Ferguson, president of Edenspace Systems Corporation in Dulles, Virginia, responds: Arsenic is a chemical element, so it won't decompose or break down when the ferns remove it from the soil. Accordingly, homeowners should dispose of fern fronds with the household trash, rather than with leaf litter or yard waste that will be composted and reapplied to gardens or yards.

IN DEFENSE OF ARUNDO

In "Reedy Weeds" ("Gardener's Notebook," November/December) *Arundo donax* was cited as an invasive throughout the southern United States that promotes erosion because it is shallow rooted and easily undercut.

The variegated form is one of my most valued plants. I have grown it for 30 years in a sandy, rather dry part of my garden, where it definitely is *not* invasive. It does not flower until late October or November and therefore does not have time to set seed in the coastal region of Virginia (USDA Zone 7/8) where I live. It spreads

quite slowly and is maintained as a single clump by removal of surplus roots every second year (a task requiring a pickaxe, a mattock, and a strong back).

It was, however, invasive when planted in the mud of the tidal creek bordering my property. Here it spread 10 feet in two years and had to be removed. I also made the mistake of putting cut-down clumps in a compost heap, where it rooted at the nodes and grew vigorously.

Decisions about invasiveness need to be made locally, and invasiveness is by no means limited to exotic plants. Three of my most invasive species are trumpet vine, cross vine, and pokeweed, all native plants.

Pamela Harper
Seaford, Virginia

GROUNDS FOR CONCERN?

How can we get more information on the study of using caffeine to repel slugs mentioned in "Gardener's Notebook" in the November/December issue? If caffeine is harmful to snails, slugs and frogs, can coffee grounds added to compost be detrimental to some of the good guys? I've always promoted picking up bulk grounds at Starbucks and other coffee shops for composting around here, especially for conifers that prefer more acid soils. I'd hate to be doing more harm than good.

Pat Hayward
Horticultural Editor, Garden Railways
Masonville, Colorado

Editor's response: In the study mentioned in the article, USDA Agricultural Research Service scientists in Hilo, Hawaii, did not use coffee grounds, but a 2-percent caffeine solution to kill snails. Although we have heard anecdotal information from gardeners who add coffee grounds to their compost heaps, use them with vegetable waste in vermiculture, or apply them as a mulch around acid-loving plants, we have yet to find a thorough study of their use in the garden. The conventional wisdom is that it is best to compost the grounds *before* using them in the garden, as you are doing. We invite reader input on this subject.

LONG LIVE MULLEINS!

After reading Nancy McDonald's article on mulleins (July/August 2002), I thought you might be interested in the latest results of Professor William J. Beal's longterm seed viability study, published in the August 2002 issue of the *American Journal of Botany*.

This study, initiated by Professor Beal in 1879, involves germinating—at fixed-year intervals—selected seeds he buried that year in bottles in sand. In the most recent study in spring 2000, which marked the study's 120th year, we found that buried *Verbascum* seeds were able to germinate and produce normal plants. Over the 120-year span of the study, *Verbascum* seeds have produced reliable results time and time again.

There is no question that *Verbascum* seeds can remain viable in the soil for many years, just waiting for a little sunlight to start growing. Whether you love them for their beauty or dislike them as non-native, potentially invasive weeds, the genus is due respect for its longterm seed viability.

In fact, we were so inspired by its tenacity that in 1998, in celebration of the 125th anniversary of the founding of the W.J. Beal Botanical Garden, we adopted a mullein flower for our logo.

Frank W. Telewski
Associate Professor and Curator
W.J. Beal Botanical Garden
Michigan State University, East Lansing

CORRECTION

In the article on jasmines in the January/February 2003 issue, the cost to receive a catalog from Woodlanders, Inc. nursery in Aiken, South Carolina (www.woodlanders.net), was incorrectly listed. It costs \$3 to receive the catalog.

PLEASE WRITE US! Letters should be addressed to Editor, *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308, or you can e-mail us at editor@ahs.org. Letters we print may be edited for length and clarity.



News

AHS Programs and Events

River Farm is Centerpiece for Washington Blooms!

FOR EVERY GARDENER, spring is a time of anticipation, renewed commitment, and the promise of great things to come. To celebrate this special time of year, AHS is hosting **Washington Blooms!**, a weeklong spring garden extravaganza being held March 29 to April 5 in participation with the 2003 National Cherry Blossom Festival.

If you live anywhere near the Washington, D.C., area, you won't want to miss the opening weekend activities at AHS's River Farm headquarters on March 29 and 30. River Farm has been planted with 20,000 spring-blooming bulbs! Add to that landscape a cornucopia of events, workshops, and hands-on activities geared to entertain and educate visitors of all ages.

Over the course of Washington Blooms!, AHS will unveil several new national gardening programs. Among these is the **Growing Connection**, an exciting new partnership with the Food and Agricultural Organization of the United Nations, NASA, and several other organizations that teaches children around the world about growing food and links them and their communities through information technology. The **Green Garage** is the place for the gardener to discover new earth-friendly products and tools. And in daily demonstrations of AHS's **SMARTGARDEN™** program, AHS Horticulturist **Peggy Bowers** will offer practical tips and techniques to help you meet the challenges of gardening in the 21st century.

If you are looking for something a bit more structured, workshops devoted to some of the hottest topics in gardening will be held at River Farm Monday through Friday. Whether you're interested in container gardening, bulbs, gardening with children, or growing organic fruit and vegetables, our experts will show and tell you everything you need to know.

Several special events are on tap Friday and Saturday, starting Friday morning with a presentation by renowned landscape architect **James van Sweden**, followed by a tour of some of the private gardens he has designed.

On Friday evening, AHS will salute the horticultural heroes of 2003 at our Great American Gardeners award banquet. This is a once-in-a-lifetime opportunity to meet 15 amazing people who are making a difference in American gardening. (Read more about these award winners starting on page 10.)

Enjoy the pageantry of the National Cherry Blossom Parade on

Saturday morning, followed in the afternoon by a behind-the-scenes tour of some of the city's best public gardens. That evening, we invite you to join the AHS President's Council at a special celebration to honor AHS President Emeritus **Dr. H. Marc Cathey** at the Sulgrave Club.

With so many things to do and see, there is sure to be an activity just right for you. Please call (800) 777-7931 ext. 117 to request a brochure or visit our Web site at www.ahs.org.



Bulbs will light up River Farm during Washington Blooms!

Debut of USDA Hardiness Map Delayed

Last-minute technological upgrades needed for the revised and updated 2003 USDA Plant Hardiness Zone Map have forced us to postpone publishing the map in this issue of *The American Gardener*. Instead, look for a special pullout section of the map in the May/June edition of the magazine. That will be—at least for the time being—the only printed version of the eagerly awaited map, although a preliminary digital version of the map will be available on the AHS Web site (www.ahs.org) on March 28. Accompanying the digital map will be a searchable database that will allow users to plug in their zip code to find out if their USDA zone has changed. A state-of-the-art, interactive digital version of the 2003 USDA map will eventually be available on both the AHS Web site and the USDA Agricultural Research Service's Web site (www.ars.usda.gov).

International Master Gardeners in Cincinnati

The 2003 International Master Gardener Conference will be held June 18 to 21 in the greater Cincinnati and northern Kentucky area. AHS is a sponsor of this conference, and Board Chair **Kurt Bluemel** and AHS President **Katy Moss Warner** are also featured speakers. For more information, call (859) 261-7454 or link to the conference Web site through the AHS Web site (www.ahs.org).

AHS Forges Conservation Partnership

PLANT CONSERVATION has always been an important issue for the American Horticultural Society, so the establishment of a partnership with the Center for Plant Conservation (CPC) is an exciting development. "Forging alliances with likeminded organizations is one of the key goals established by the AHS Visioning committee," says AHS President **Katy Moss Warner**, "so we are pleased to be able to support the important conservation efforts of the CPC through this partnership. Gardeners can play a critical role in helping preserve our native flora."

Kathryn Kennedy, CPC president and executive director, says, "On behalf of the Center for Plant Conservation, I am thrilled that the American Horticultural Society is standing strong with us to promote plant conservation."

Headquartered in St. Louis, the CPC is a national network of botanic institutions dedicated to conserving and restoring America's most imperiled native plants. Through its network of more than 30 participating botanical gardens and arboreta, CPC maintains the National Collection of Endangered Plants, a coordinated national program in which more than 600 rare plants are preserved, propagated, and studied off-site.

Affiliation with CPC will enable AHS to keep its members abreast of the latest developments and issues in American plant conservation. A new department focusing on plant conservation will debut in an upcoming issue of *The American Gardener*.

As part of the partnership arrangement, members of CPC will automatically become AHS members. Members of AHS will be given the opportunity to join CPC at a discounted rate of \$25. To take advantage of this offer, contact CPC at (314) 577-9450, or by e-mail at cpc@mobot.org. For more information about CPC's programs, visit www.centerforplantconservation.org.

AHS Spring Plant Sale

FOR THE AHS horticulture staff, spring usually passes in a blur of preparations for the annual Spring Plant Sale, which is one of the most anticipated events of the year at River Farm. The **Alexandria Council of Garden Clubs** and the **Friends of River Farm** are, as usual, partnering with AHS for the sale, which will be held April 24 to 26.

On Thursday April 24, the sale opens with Member's Night from 5 p.m. to 8 p.m. During this special preview, AHS mem-

bers and River Farm volunteers get first crack at the dazzling variety of annuals, herbaceous perennials, shrubs, trees, herbs, vegetables, and hanging baskets available from our many vendors. Our horticultural staff members and expert volunteers will be on hand to answer questions and help gardeners make plant selections.

On Friday and Saturday from 9 a.m. to 3 p.m. the plant sale is open to the public. This year a special "potting service" will be available on those days. Anyone who brings a container can have purchased plants potted up for a nominal fee; an attractive array of containers will also be available for purchase.

At 9 a.m. on Saturday, **Janet Draper**, a horticulturist with the Smithsonian Institution will offer ideas for container gardening that range from the elegant to the whimsical. The fee for this spe-



Visitors at last year's AHS plant sale had plenty to choose from.

cial "Hort-take" workshop is \$8 for AHS members and \$10 for non-members. For more information about the plant sale, visit the River Farm section of the AHS Web site (www.ahs.org).

River Farm Part of Historic Garden Week

NOW IN ITS 70th season, Virginia's Historic Garden Week (April 20 to 27) is the oldest and largest statewide house-and-garden-tour event in the nation. This year, more than 250 outstanding private homes, gardens, and historic landmarks spanning four centuries will be featured on 36 different tours.

On April 26, River Farm will be one of the available stops on a tour of historic estate gardens and Old Town Alexandria gardens. The date coincides with the AHS annual Spring Plant Sale (see story, above), so visitors will also be able to purchase plants. The **Garden Club of Alexandria** and **Hunting Creek Garden Club** are sponsors of the Alexandria-area tour, which lasts from 10 a.m. to 4 p.m.

Proceeds from the tours directly benefit the restoration of historic gardens and grounds throughout the state. For more information regarding statewide tours, call (804) 644-7776 or visit www.VAGardenweek.org. For information about and tick-

ets for the Alexandria tours, contact the Ramsay House Alexandria Visitors' Center at (703) 838-4200.

2003 Youth Garden Symposium

FOR THOSE AHS MEMBERS involved in children's gardens and children's gardening programs, mark your calendars for the AHS National Children and Youth Garden Symposium, which will be held July 24 to 26 at AHS's River Farm headquarters in Alexandria, Virginia. The 11th annual event will feature a stellar cast of speakers, tours of children's gardens at River Farm and other local sites, and many educational and networking programs. More information about the symposium will be available in the next issue of *The American Gardener* and on the AHS Web site (www.ahs.org).

Epcot Festival Celebrates 10 Years

LARGER-THAN-LIFE topiaries of Mickey and Minnie Mouse will greet visitors at this year's 10th International Epcot Flower and Garden Festival at the Walt Disney World Resort in Lake Buena Vista, Florida. Millions of blossoms will create this fantasyland of award-winning floral displays and gardens from April 25 to June 8.

AHS is a sponsor of the Great American Gardeners lecture series at the Epcot festival, which will include nationally acclaimed garden experts **Roger Swain** of PBS's "Victory Garden," **Paul**

Colonial Williamsburg Symposium

If you hurry, there may still be time to register for Colonial Williamsburg's 57th Garden Symposium, to be held April 6 to 8. The American Horticultural Society, *Fine Gardening* magazine, and the Williamsburg Institute are co-hosting the symposium, titled "Garden Earth: A Partnership." Covered topics range from "Unkillable Plants of the South" to "The Pleasures of a No-Lawn Landscape." Lecturers include writer and naturalist **Sharon Lovejoy**, botanist **Arthur O. Tucker** of Delaware State University, AHS President **Katy Moss Warner**, and Mississippi garden writer and AHS Board member **Felder Rushing**. For more information, call (800) 603-0948 or visit www.ColonialWilliamsburg.org.

James of HGTV "Gardening by the Yard," and television gardening pundit **P. Allen Smith**, recipient of AHS's 2003 Horticultural Communication Award (for more on Allen, see page 12).

Children and parents will enjoy Epcot's Kids' Garden, which includes daily butterfly and ladybug releases. In addition, "The Power of Flowers" presented by The Flower Fields will feature more than 60,000 colorful bedding plants.

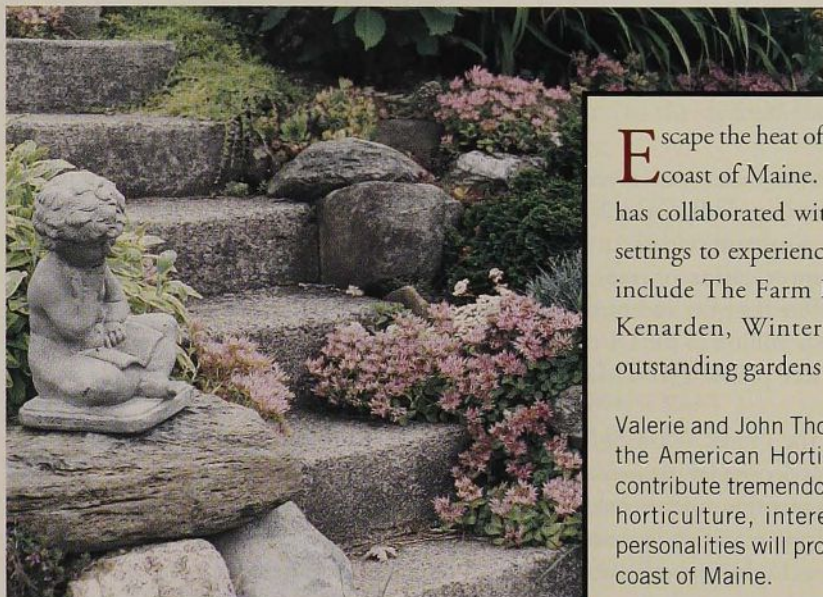
For more information about the festival, log on to Epcot's Web site (www.disney.com).



2003 American Horticultural Society TRAVEL STUDY PROGRAM

Gardens of Coastal Maine

July 8-13, 2003



Escape the heat of midsummer and explore the magnificent beauty of the coast of Maine. This is the second time the Bar Harbor Garden Club has collaborated with AHS to provide a wondrous variety of landscape settings to experience. Some of the distinctive gardens we will be visiting include The Farm House (designed by Beatrix Ferrand), the estate at Kenarden, Winter Cove, the Wild Gardens of Acadia, and several outstanding gardens with panoramic views of Somes Harbor.

Valerie and John Thomas will be hosting this tour. The Thomases live near the American Horticultural Society's headquarters at River Farm and contribute tremendously to many AHS events and activities. Their love of horticulture, interest in children's gardening, and warm and lively personalities will provide a wonderful atmosphere in which to discover the coast of Maine.

For complete details of the exciting 2003 schedule, visit the AHS Web site at www.ahs.org, or call the Leonard Haertter Travel Company at (800) 942-6666.

No member dues are used to support the Travel Study Program.

AHS 2003 GREAT AMERICAN GARDENERS NATIONAL AWARD WINNERS

THE AMERICAN HORTICULTURAL SOCIETY is honored to introduce the recipients of the Society's 2003 national awards. These individuals and companies are truly America's horticultural heroes—each and every one of them has made significant contributions to gardening, plant research, communication, landscape design, horticultural technology, or conservation. We applaud their passionate commitment to gardening and their outstanding achievements within their fields.

The 2003 awards will be presented on April 4 at a banquet being held during Washington Blooms!, the weeklong AHS spring celebration. For information about attending the banquet or participating in other activities associated with Washington Blooms, visit the AHS Web site (www.ahs.org) or call (800) 777-7931 for a brochure.

JANE PEPPER**LIBERTY HYDE BAILEY AWARD**

The American Horticultural Society's highest honor, this award recognizes lifetime achievement in and significant contributions to the following areas of horticultural activity: teaching, research, writing, plant exploration, administration, art, business, and leadership.



Since 1981, Jane G. Pepper has been president of the Pennsylvania Horticultural Society (PHS), where she oversees all the society's activities and programs. She manages the Philadelphia Flower Show, which, under her leadership, has achieved national and international stature.

Pepper has also strengthened other PHS programs, including Philadelphia Green, which works with community groups on greening and urban revitalization projects in low- and moderate-income neighborhoods. The nation's largest such program, it serves as a model for similar programs in the United States.

ANDROPOGON ASSOCIATES, INC.**Landscape Design Award**

Acknowledges an individual or firm whose work has expanded the awareness of horticulture in landscape architecture.

Since 1975, the Philadelphia-based land-

scape architecture firm Andropogon Associates, Ltd., has been a national leader in the field of ecological planning and design, seeking to integrate functional needs and aesthetics to create beautiful and sustainable landscapes. Many of the solutions the firm initially pioneered—including storm water recharge and restoration of native plant communities and habitats—are now commonly accepted industry practices.

Andropogon has created master plans for the Atlanta Botanical Garden, Brooklyn Botanic Garden, Callaway Gardens, and Holden Arboretum, among others.

BETTY BROWN CASEY**Local Horticulture Award**

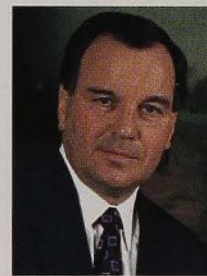
Given to an individual or group who has contributed to the improvement or excellence of horticulture in the host city for the Society's Annual Meeting.

Betty Brown Casey has served as chairman of the Eugene B. Casey Foundation since her husband's death in 1986. Her lifelong appreciation of trees and green spaces influenced her recent decision to donate \$50 million to the District of Columbia's tree planting and maintenance program.

Since the 1970s, Washington's green canopy has declined by 64 percent because of disease, attrition, and neglect. The Garden Club of America is managing the Casey Trees Endowment Fund. Last summer, more than 500 volunteers and Casey Trees staffers conducted an exhaustive inventory of all the trees in the city.

MAYOR RICHARD M. DALEY**Urban Beautification Award**

Given to an individual who has made significant contributions to urban horticulture.



Since Richard M. Daley became mayor of Chicago in 1989, the city has planted more than 250,000 trees and installed landscaped median planters on 37 miles of side streets. A joint program of the Chicago Public Schools, Chicago Park District, and Public Building Commission of Chicago has turned paved school parking lots into landscaped campus parks open to school children and neighborhood residents. Seventy campus parks are completed or underway, with 23 more to go.

Daley has earned a national reputation for developing community-based programs to address crime, education, neighborhood development, and other challenges facing cities today. His innovations have become models for other cities and have won him national honors.

DELAINE EASTIN**Jane L. Taylor Award**

Awarded to an individual, organization, or program that has inspired and nurtured future horticulturists through its efforts in children and youth gardens and gardening.

For the past eight years, Delaine Eastin

served as state superintendent of public instruction for the State of California and championed the statewide "Garden in Every School" initiative. She believes strengthening school nutrition is key to improving a student's ability to learn, and she enlisted California as the first state in the nation to embrace the Team Nutrition program to improve the nutritional value of school lunches.

A native Californian, Eastin received her bachelor's degree from the University of California–Davis, and a master's degree in political science from the University of California, Santa Barbara.

JIM FOLSOM

Professional Award

Given to an individual who makes his/her living as director of an arboretum or botanical garden and whose achievements during the course of his/her career represent a significant contribution to horticulture.



A research botanist with a doctorate from the University of Texas at Austin, Jim Folsom's work has centered on the orchid family, with much of that time spent in tropical

America, but his botanical interests are wide-ranging. As curator of the Botanical Gardens at The Huntington in San Marino, California, he is dedicated to educational programs that increase public interest and understanding of the science, culture, and history of plants and gardens.

Folsom was presented a Professional Citation by the American Association of Botanical Gardens and Arboreta in 1999.

FRANZ FRUEHWIRTH

Luther Burbank Award

Created to recognize extraordinary achievement in the field of plant breeding.

One of the premier poinsettia breeders in the world, Franz Fruehwirth was trained originally as a tailor in his native Germany. He joined the staff of the Paul Ecke Ranch after immigrating to the United States and became a self-taught poinsettia breeder.

His first success was in 1968 with the introduction of the first beautiful, long-



lasting variety. In

1990 he introduced the first yellow poinsettia, 'Lemon Drop'. He participated in the breeding breakthrough that led to the ruffled bracts of 'Winter Rose', introduced in 1998.

Today, poinsettias are synonymous with Christmas and have become the topselling flowering potted plant in the American market, in large part due to Fruehwirth's work.

JOHN WILLIAM GUYTON III

Teaching Award

Recognizes an individual whose ability to share his/her knowledge of horticulture with others has contributed to a better public understanding of the plant world and its impact on man.



John Guyton, 4-H specialist for environmental education at Mississippi State University, likens a school without a garden to a class without a teacher.

His background in science education and experience in education reform contribute to his comfort in, and vision for, school gardens. He has designed interactive nature trails commemorating naturalists and constructed garden elements appropriate to the different ways children learn.

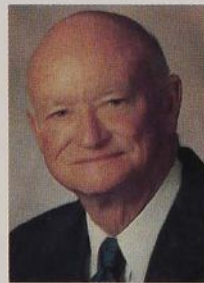
He believes the garden holds great potential for students and teachers to work and learn together about successfully growing food, maintaining healthy lifestyles, and building self-esteem.

MICHAEL T. LYNCH and ROBERT WHISENANT for EARTH BOX™

G. B. Gunlogson Award

Given for the creative use of new technology to make home gardening more productive and enjoyable.

Introduced in 1995, the Earth Box™ provides the perfect containerized growing



environment for vegetables, especially tomatoes. A built-in water reservoir and fertilizer band replace water and nutrients as they are used by growing plants.

The concept was the brainchild of Florida farmer Robert Blake Whisenant (top), who began research on the Earth Box™ prototype in 1990. The development and manufacturing of the Earth Box™ was the work of



Michael T. Lynch (bottom), president of Laminations, Inc., a manufacturing firm in Scranton, Pennsylvania, that develops plastic products for use in a variety of industries and applications.

GARY MANGUM

Paul Ecke Jr. Commercial Award

Given to a person, who, because of his/her commitment to the highest standards of excellence in the field of commercial horticulture, contributes to the betterment of gardening practices, everywhere.



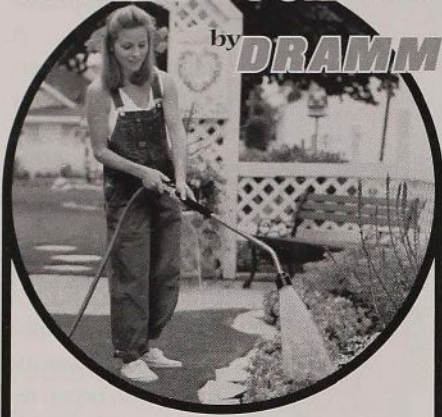
Co-owner of Bell Nursery in Burtonville, Maryland, Gary Mangum has been responsible for many of Bell's innovative programs, including the Bell Nursery Grower

Network, which helps local farmers make use of under-utilized land. Currently, more than 20 Maryland farms provide over 12 acres of production for Bell Nursery use. The grower network allows family farmers to diversify and enhance their income in a way previously unimagined.

Eighty percent of Bell production goes to the retail segment, primarily Home Depot and Cosco Home Stores. Mangum's program with Home Depot has put highly trained sales people on the chain's "green" floor space. Bell sales of Maryland-grown plants is estimated to be nearly 25 million dollars this year.

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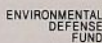
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JANET MARINELLI

Horticultural Writing Award

Given to a person whose excellence in writing has made a significant contribution to horticulture.



Janet Marinelli, director of publishing at Brooklyn Botanic Garden (BBG) for the past decade and editor of BBG's acclaimed series of gardening handbooks, is a leader in the eco-

logical revolution that is transforming gardening techniques, style, and philosophy.

She is a founding member of the board of the Center for Urban Restoration Ecology. This collaboration between Rutgers University and Brooklyn Botanic Garden is the first scientific initiative in the United States established to study and restore human-dominated lands. She has also pioneered efforts to educate the public about invasive plants.

Marinelli has written three books to date, including *Stalking the Wild Amaranth: Gardening in the Age of Extinction*.

EGON MOLBAK

Meritorious Service Award

Awarded to a member or friend of the Society to recognize outstanding and exemplary service in support of the Society's goals, services, and activities.



After studying floriculture in Denmark, Egon Molbak came to the United States in 1948 as an exchange student in greenhouse management.

In 1966, Molbak and his family opened a small retail shop, Molbak's Nursery in Woodinville, Washington, and began retailing on a large scale. By 1976, Molbak's had expanded into an innovative indoor and outdoor garden center that included specialty shops for floral design, fine gifts, garden furniture, and a Christmas shop. It has since become a model for retail nurseries nationwide.

Molbak is past president of the Professional Plant Growers Association, and

he was inducted into the Society of American Florists' Hall of Fame in 1991. An active member of the AHS Board of Directors for many years, Molbak received the American Horticultural Society's Commercial Award in 1990.

NORA POUILLON

Catherine B. Sweeney Award

Given for extraordinary and dedicated efforts in the field of horticulture.

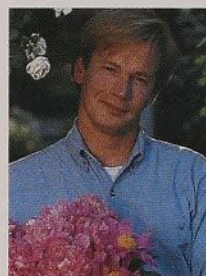
Nora Pouillon, chef and owner of two of Washington, D.C.'s most popular restaurants—Nora and Asia Nora—is a true believer in a sustainable lifestyle and a longtime champion for organic foods. In April 1999, Nora became the first USDA-certified organic restaurant in the country.

Pouillon supports organic farmers and is also an advocate for cleaner oceans, the preservation of our fish population, and other environmental issues. Proving that organic food can be of the highest quality, in 1998 she was named Chef of the Year—Award of Excellence by the International Association of Culinary Professionals.

P. ALLEN SMITH

Horticultural Communication Award

Recognizes effective communication using media and research techniques for the purpose of expanding horticultural awareness.



Garden designer P. Allen Smith studied garden history and design in England. Today this fourth-generation nurseryman is a national television personality, author of *P.*

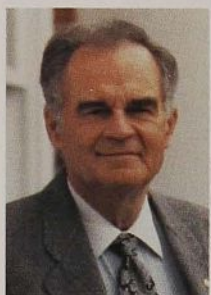
Allen Smith's Garden Home, a contributing garden editor for *Woman's Day* magazine, and host of a gardening Web site, *pallensmith.com*. He is also a spokesperson for The Flower Fields line of nursery products.

Smith hosts "P. Allen Smith Gardens," a nationally syndicated 90-second television news insert broadcast weekdays to 80 percent of American households. A regular guest on television's "CBS Early Show" and the Weather Channel's exclusive gardener, Smith will soon be seen in Public Television's new "P. Allen Smith's Garden Home," which will debut in April.

Good Breeding Curbs Invasiveness

by Dr. H. Marc Cathey

THE NUMBER of seed catalogs filling our mailboxes at this time of year attests that seed production of horticultural crops is big business. Yet not every plant we grow in our gardens is capable of producing viable seeds. For instance, New Guinea impatiens, a



series of hybrid impatiens originally introduced in the mid-1970s, are sterile and have to be propagated by cuttings or other vegetative means.

The progress that has been made in growing organisms from a single cell, or cloning, has recently been the subject of major coverage in the media. I first encountered this challenge in the early 1950s, when I was working on my doctorate at Cornell University in the laboratory of Professor F. C. Steward. At that time, Steward was attempting to grow a carrot plant from a single cell in the laboratory. When he succeeded, the carrot made botanical history as the first plant cloned from a single cell.

CLONES IN HORTICULTURE

Although carrots can be readily propagated from seed, Steward's achievement had major implications for the horticultural industry. Up to that point, sterile plants had to be propagated by vegetative methods such as cuttings, grafting, or layering. These techniques, although reliable, often took a considerable amount of time, space, and labor. Once cloning became an option, however, the number of plants that could be reproduced was seemingly endless, and the space required to get them started, minimal.

Today, many garden favorites, including some of the heucheras that you can read about on pages 42 to 47, are being ef-

ficiently produced this way. We are entering the 21st century with a greater number of plant varieties in cultivation than ever before, as well as the technology that can bypass many fertility problems.

BREEDING FOR INFERTILITY

Yet there are some cases where the breeder or plant selector's goal is to reduce fertility rather than enhance it. While most garden plants are well behaved, in a few cases, popular garden plants introduced into a new region have shown a tendency to produce so much viable seed that they threaten to overtake native species and are considered invasive.

Perhaps the best known example of this is purple loosestrife (*Lythrum salicaria*), a beautiful perennial that unfortunately has become widely invasive in northern regions of the United States and Canada. Yet in the southeastern United States, where the environment is less favorable to its rampant spread, pur-



A new lantana cultivar, Patriot Pillar 'Marc Cathey' from American Daylily and Perennials, was bred to be sterile.

ple loosestrife is a controllable and eagerly sought-after flowering perennial.

A loosestrife cultivar called 'Morden's Pink', derived from a male-sterile mutant of a closely related loosestrife (*L. virgatum*) is often described as sterile, but seed set does occur on a tiny percentage of plants. Even at this low level of fertility, the loosestrife can spread rapidly in favorable environments. The problem is exacerbated if 'Morden's Pink' hybridizes with wild species, as it has been shown to do.

Several species of lantana, a popular tender perennial often grown as an annual in temperate gardens, have also appeared on lists of invasive plants. Breeders recently released two new lantana cultivars—Patriot Pillar 'Marc Cathey' (white flowered) and Patriot Pillar 'Deen Day Smith' (pink flowered)—that have been developed specifically both for their ornamental appeal and for low fertility, so they don't become a nuisance in the garden or escape into uncultivated areas. Perfect for attracting butterflies, these new cultivars are hardy in USDA Zones 10 and 11 and heat tolerant in AHS Zones 12 to 1.

If you grow either of these lantana cultivars in your garden this year, I would appreciate hearing your experiences with them. They should be fruitless, so keep an eye out for black fruits forming on your plants. Please send your observations about these plants—or even photographs—to me at the American Horticultural Society, 7931 East Boulevard Drive, Alexandria, VA 22308, USA, or by e-mail to mcathey@ahs.org.

With sufficient evidence from a variety of growing regions, we can determine if the fertility of these cultivars is low enough to make them worthy of inclusion in gardens all over the country. ☪

Dr. H. Marc Cathey is president emeritus of the American Horticultural Society.

SMARTGARDEN™ — Testing Your Soil

The only way you can be sure of your soil's fertility is to have it tested.

Soil provides plants with both physical support and nourishment. Roots grow through the soil, anchoring the plant and searching for food and water. But how can you be sure that your soil contains everything your plants need and in the right amounts? Soil tests can provide important insights about the health of your soil.

BEGIN WITH OBSERVATION

Healthy, vigorous plants are the best evidence that your soil is complete and well-balanced. Because organic matter is continuously being consumed—by soil organisms—and removed—by harvesting crops, raking leaves, pruning shrubs—its replacement on a regular basis is critical for maintaining a favorable chemical and biological balance and a continuous supply of nutrients.

A dark color and a loose and crumbly texture are further evidence of a healthy soil. Such favorable soil structure, or tilth, is closely linked to the soil's biological conditions: As organisms consume organic matter, they produce humus, which aids soil aggregation, improving structure, water retention, and drainage.

On the other hand, if your garden plants fail to thrive even though there is no apparent sign or symptom of pests or infectious diseases, perhaps the problem lies in the soil. Conditions such as poor drainage or soil compaction are relatively easy to diagnose. Other problems are less apparent: There may be a nutrient deficiency or toxicity; the pH (degree of acidity or alkalinity) may be too high or too low; overfertilization may have led to a buildup of salts; overuse of pesticides may have killed off the organisms responsible for decomposing organic matter. A soil test may offer clues.

TIME FOR A TEST

A new garden often calls for a soil test. If your topsoil has been removed, as it commonly is during construction of a new home, a soil test may be necessary to find out just what you've got to work with. Furthermore, different plants have different nutritional needs, so if you are planning a vegetable garden or a new flower bed in an area that was previously lawn, a soil test may reveal that amendments are called for to make the transition successful.

Many factors contribute to the availability of nutrients (see "Fertile Ground," page 48). Chemical and biological soil tests reveal details that cannot be observed with the naked eye. By using these tests in combination with your observations about the soil's physical structure, a fairly complete understanding of your soil will emerge.

STANDARD (CHEMICAL) SOIL TESTS

Standard soil tests primarily examine the soil's chemistry, specifically nutrient levels and soil reaction (pH). Because it influences nutrient availability as well as the soil's biological makeup, pH is an important factor in maintaining a healthy balance. (For more about pH, see the SMARTGARDEN™ column in our March/April 2000 issue, also available on our Web site at www.ahs.org).

The results of standard soil tests identify the soil pH and the amount—usually in parts per million (ppm)—of plant nutrients in an available form. To assist in interpreting these numbers, labs generally characterize the amount as very low, low, medium, high, or very high. Because its levels fluctuate dramatically from one rainfall to the next, the amount of soluble nitrogen (N) is usually omitted unless specifically requested.

Standard soil test labs usually provide fertilizer recommendations for growing the plants you indicated on your sample form. Typically, chemical fertilizers are recommended. Other soil testing labs offer fertilizer recommendations specifically for organic growers.

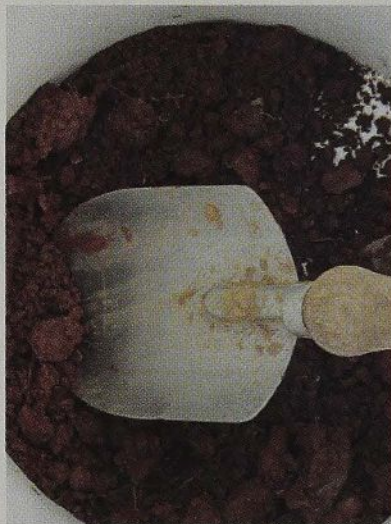
Standard soil testing is available through many Cooperative Extension

Service offices, as well as from private soil test labs. Soil test kits can also be purchased for home use; these are available in a range of prices and levels of sophistication.

For a list of alternative soil testing labs and sources for soil-testing supplies, visit the contents page for the March/April 2003 issue on our Web site (www.ahs.org).

BIOLOGICAL SOIL TESTS

The presence of adequate nutrient levels does not necessarily mean your soil is garden-ready. A diverse population of beneficial soil organisms and regular additions of organic matter help maintain the balance necessary to sustain healthy plants.



Soil for laboratory testing should be collected from several different spots within the area you want to garden.

Biological soil tests examine the living components of the soil. Many also provide an account of available nutrient levels and organic matter. Biological assays reveal total numbers as well as diversity of various microorganisms, including: bacteria, fungi, (often with specific tests for mycorrhizal fungi), protozoa, nematodes, etc. Such population counts can provide insight into nutrient availability and retention as well as imbalances in the soil chemistry. Results usually include specific recommendations for types and amounts of soil amendments and for cultivation practices to help achieve and maintain a dynamic and robust soil environment.

HOW TO TAKE A SOIL TEST

Although a soil test can reveal a great deal about your soil, the results will only be as good as the sample you supply. Take your sample when the soil is slightly moist, but not wet; wait a few days if it has recently rained.

If you plan to garden in different areas of your yard where conditions or previous treatments vary, obtain separate soil samples from each area. Indicate on the sample form the type of plants that you intend to grow in the tested area—lawn, vegetables, herbaceous perennials for sun or shade, etc. This way, specific recommendations can be made.

For a Standard Soil Test: After removing the surface debris,

extract a slice of soil with a trowel or spade to a depth of about six inches and place it in a clean plastic bucket. Do not use a metal container because some cause false readings for metals that may skew results. Gather soil from a dozen or so locations within the garden area to ensure an accurate sample and mix the combined samples thoroughly. Let the soil air dry at room temperature and out of bright sunlight for a day or two. Then place about a pint of the blended soil in a plastic bag and deliver or mail it to the test laboratory as soon as possible.

For Biological Soil Tests: Because biological tests measure the living portion of a soil, a slightly different approach to sample collection is required. Remove several one-inch cores of soil from the upper three inches throughout the garden area. Mix these together in a clean plastic container and immediately place about a pint in a plastic bag and seal. Be sure to indicate the date the sample was collected. Deliver or mail (next-day delivery) the sample promptly. Time your collection so that the sample does not arrive at the lab on a weekend or holiday. The sample must arrive for testing within three days of collection, or it will not provide accurate results. Additional instructions may apply for specific tests, so be sure to check submission requirements with the lab you plan to use.

Rita Pelczar, Associate Editor

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Horticultural News and Research Important to American Gardeners

Study Challenges Watering Practices

Maybe getting up early in the morning in summer to water isn't necessary after all. A new study indicates watering in the early afternoon is a better strategy for containerized plants.

Since the 1980s, when research demonstrated that applying water in two or more applications resulted in better water retention and less water needed, cyclic irrigation has been standard practice in the containerized plant production industry. The conventional wisdom used by nursery owners—and adopted by home gardeners—was that the watering should be done early in the day to reduce evaporative losses. “Most growers apply water early morning or before dawn,” says North Carolina State University horticulture professor Stuart Warren, whose research focuses on the containerized plant industry.

Warren decided to put conventional wisdom to the test. He and colleague Ted Bilderback experimented with growing container plants using three periods of irrigation spaced

out at different times of the day: at 3, 4, and 5 a.m.; at 6 a.m., noon, and 6 p.m.; at 6 a.m., 9 a.m., and noon; and at noon, 3 p.m., and 6 p.m. “We thought watering at different times of the day was probably worth looking at,” says Warren,

but the results came as a complete surprise. “We discovered that irrigating in the afternoon in summer made a fantastic difference in plant growth—it caused a 60 to 70 percent increase.”

The researchers conclude that plants watered before dawn or in the morning experience a mild water stress in the heat of the afternoon that adds up over time, resulting in less growth. “Watering during the day was always better than pre-dawn,” says Warren.

Warren says home gardeners should be able to benefit from switching to afternoon watering, too. “That’s the best part of research like this—it helps people,” he says. Warren and Bilderback’s study was published last year in the *Journal of Environmental Horticulture*.



2003 PERENNIAL OF THE YEAR

Often called “the best daisy ever,” Shasta daisy ‘Becky’ (*Leucanthemum xsuperbum* ‘Becky’, USDA Zones 5–8, AHS Zones 8–5) has been named the Perennial Plant of the Year 2003 by the Perennial Plant Association. A passalong plant that’s been traded and shared by southern gardeners



because it performs well in heat and humidity, it was named for landscape designer Becky Stewart of Decatur, Georgia. The fresh, yellow-eyed white daisy flowers are set off by deep green, evergreen foliage.

(For information about plants that have received regional awards or recognition in 2003, visit the contents page for this issue on the AHS Web site and click on the link for “Regional Plant Awards.”)

FOOD FOR THOUGHT

Children who grow vegetables themselves are more likely to want to eat them. That’s what Sandra Lorenz and fellow researchers at the Texas A&M University in College Station discovered after spending 30 minutes a week for eight

weeks tending a vegetable garden with 22 four- and five-year-olds.

The children planted bell peppers, green beans, cherry tomatoes, and radishes. They watered them, weeded them, and were involved in composting. “They showed very enthusiastic ownership over the garden harvest,” says Lorenz, who adds that familiarity enhanced preference. “We tested children’s preference before gardening by having them rank the vegetables from most to least liked.” After gardening, the children’s preference for green beans demonstrated “a statistically significant improvement.”

In addition to being exposed to different kinds of vegetables, the children who participated in the study learned that produce doesn’t sprout directly in the grocery

store. "Gardening provides children with the opportunity to make a connection between their food and where it comes from," says Lorenz, who presented the researchers' findings at the 85th Annual Meeting of the American Dietetic Association, held in Philadelphia last fall.

NO FREE RIDE FOR LUCKY BAMBOO

"Lucky bamboo" is the trendy name given to cuttings of the ribbon plant (*Dracaena sandersoniana*), a familiar houseplant that has undergone cosmetic surgery. Shorn of roots, trimmed back to single bamboolike stalks, and propped up in a container of gravel, sand, or water, it is sleek, chic, and one of the hottest items in today's interior decorating circles. Tough as nails, this plant tolerates low light levels and can live in water, easily forming roots.



And therein lies a problem.

"Before October 2002, we were treating it as a cut plant or greenery, which is usually not capable of propagation," says Sue Challis, a public relations specialist with the USDA's Animal and Plant Health Inspection Service (APHIS). Now, because the cuttings frequently root in transit, APHIS has determined that lucky bamboo

must meet the stricter requirements for nursery stock, including an import permit and a phytosanitary certificate.

Lucky bamboo comes from China, where it is associated with good luck. Despite its common name, the plant is a member of the agave family and not a bamboo, but it has proven lucky for cut-flower exporters from China, Taiwan, and Hong Kong, where it is estimated the total value of all lucky bamboo plants exported since 1997 has increased 400 fold.

REMOVING LILY POLLEN STAINS

When working with lilies, some people clip off the large pollen-covered anthers to avoid stains. Others prefer to leave lilies intact, but risk getting pollen stains on clothing, furniture, and tablecloths.



If treated quickly, lily pollen won't leave a trace, but avoid wetting it, which sets the

stains. Allow the pollen to dry completely. To remove it, hold the hose attachment of a vacuum cleaner above the stained article without touching it to avoid rubbing in the stain. Or use sticky tape to lift off the pollen grains. After removing as much pollen as possible, lay the stained article in direct sunlight for several hours to make the stain disappear.

Celebrate Gardening in April

In 1986, the U.S. Congress passed a resolution to create a National Garden Week. The week was intended to serve as an opportunity to celebrate the efforts and contributions of gardeners and farmers nationwide. Since that time, communities and organizations around the country have honored this tradition by scheduling special garden events during the second week of April.

Now, the National Gardening Association, a not-for-profit group based in Burlington, Vermont, is taking the concept one step further by making April National Garden Month. "One week in April is too short a span to celebrate everything that is happening in gardening around the country," says Valerie Kelsey, National Gardening Association president. The NGA has invited public gardens and horticultural industry groups to participate in the festivities and help raise awareness about the many benefits of gardening. Groups are encouraged to post April gardening events and activities on the National Garden Month calendar at www.nationalgardenmonth.org. Essays by gardening experts are also being published on the site, including one by AHS President Katy Moss Warner.

You can also find many good opportunities to celebrate gardening in April by browsing "Regional Happenings" beginning on page 57.

People and Places in the News

OUOLF TO DESIGN 9/11 GARDENS

This spring, internationally acclaimed Dutch horticulturist and landscape designer Piet Oudolf will present his final design for the Gardens of Remembrance, honoring those who perished on September 11, 2001. These gardens are part of a revitalization plan for The Battery, 23 contiguous acres of parkland with vistas onto New York Harbor. Part of the New York City Department of Parks and Recreation, The Battery is one of the city's most dramatic public open spaces south of Central Park.

NEW CONSERVATORY AT GINTER

On March 22, the Lewis Ginter Botanical Garden in Richmond, Virginia, will open a new \$7 million Conservatory, the only classical, domed structure of its kind in the mid-Atlantic region. You can take a sneak peek at the new facility by visiting www.lewisginter.org.

MORE HONORS FOR HINKLEY

This March, plantsman, explorer, author, and Heronswood nursery director Dan Hinkley received the 2003 Arthur Hoyt Scott Garden and Horticultural Medal and Award from the Scott Arboretum of Swarthmore College in Pennsylvania. Hinkley and partner Robert Jones co-founded the mail-order Heronswood nursery in Kingston, Washington, in 1989. His book *The Explorer's Garden* won AHS's book award in 1999.

ASIATICA NURSERY FIRE

In January, a fire destroyed the home of East Asian-plant expert Barry Yinger in Lewisberry, Pennsylvania. No one was injured, but Yinger's collections of horticultural slides, research, rare books, and writing were totally lost.

The stock for Yinger's mail-order nursery, Asiatica, survived and the nursery is continuing operations.

ASIAN LONGHORNED BEETLE

A new infestation of the Asian longhorned beetle (*Anoplophora glabripennis*) was reported last October in New Jersey, just across the Hudson River from the original infestation site in Brooklyn, New York. Despite quarantines and eradication efforts on the part of USDA and its Animal and Plant Health Inspection Service (APHIS), this is the fourth reported outbreak of this imported beetle, which scientists say has the potential to cause more damage than Dutch elm disease, chestnut blight, and gypsy moths combined.

In 1996, the beetle was discovered in the Greenpoint section of Brooklyn, having apparently entered the United States as a stowaway in wood packing material from China. Within weeks, a second infestation appeared in Amityville, New York. A third infestation was discovered in the Chicago area in 1998.

With no known predators, the Asian longhorned beetle could provoke environmental disaster if uncontained, destroying millions of acres of hardwood trees, including maples, birches, horse chestnuts,

ashes, and black locusts. After hatching in the bark of host trees, wormlike larvae burrow into the heartwood where they feed over fall and winter. At maturity, the beetles exit through dime-sized holes that may drip telltale sap or leave a pile of frass (sawdust) at the base of the tree.

"In late spring, people should keep their eyes out during the hot part of the day—from 10 a.m. until 2 p.m. The adults will be crawling on the bark—usually at head height or above," says Steven W. Lingafelter, of the USDA-ARS Systematic Entomology Laboratory. "Once they're found, there's not a lot people can do." Infested trees are chipped and burned. Those within a block of infested trees are being treated with imidacloprid, an insecticide.

To learn more about the Asian longhorned beetle or report an infested tree, visit www.aphis.usda.gov/oa/alb/alb.html.

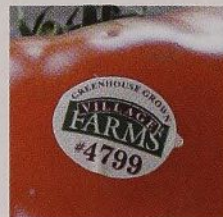
GARDEN RX ONLINE

The University of Minnesota Extension Service maintains an interactive Web site for gardeners to identify common plant problems: www.extension.umn.edu/

projects/yardandgarden/diagnostics. The site addresses plant diseases—with photos—and problems caused by animals, weather, and herbicides. Minnesota residents can also receive assistance by calling the UM Yard and Garden Clinic at (612) 624-4771 in the Twin Cities metro area, or (888) 624-4771 from other parts of the state.

DECODING FRUIT LABELS

How can you tell how the fruit you see and buy in the supermarket has been grown? Easy! That information is contained in the



PLU codes, printed on those little stickers you have to peel off fruit. Conventionally grown fruit has 4 numbers. Organically grown fruit

has 5 numbers, always beginning with a 9. Genetically engineered fruit also has a five-number code, beginning with an 8. You can find out more about the food you buy at the Organic Consumers Organization Web site (www.organicconsumers.org).

CAROLE OTTESEN

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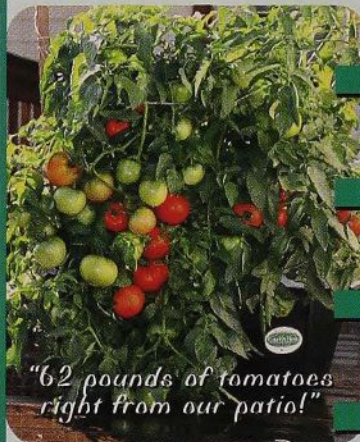
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Our Experts Answer Your Gardening Questions

LOOKING FOR WHITE FORSYTHIA

I've heard about a white-flowered forsythia. Is this a cultivar of the common forsythia?

—M.N., GAITHERSBURG, MARYLAND

"White forsythia" as it is sometimes called, is not a true forsythia. "Like forsythia, it is in the olive family," says Phil Normandy, a horticulturist at Brookside Gardens in Wheaton, Maryland, "but it's a different genus and species—*Abeliophyllum distichum*." Its fragrant, white, sometimes pink-blushed flowers appear in very early spring—earlier than forsythia and, for that reason, may get frost bitten. "It's a layering, mounding shrub that can get to be a tangle," says Normandy. To neaten it, he suggests clipping off stray, long branches. Planted in full sun, *Abeliophyllum distichum* will grow up to five feet tall and wide. It is hardy in USDA Zone 5 to 8, AHS Zone 8 to 5.

USING WOOD ASHES

I've been saving the wood ashes from my winter fires. Now that winter is over, when should I put them in my garden, and what effect will they have on my plants?

—A.S., ARLINGTON HEIGHTS, ILLINOIS

If you've stored your wood ashes in a closed container where they were protected from rain and snow that can leach out the nutrients, they should contain four to 10 percent potassium, one to two percent phosphate, but no nitrogen. Wood ashes are alkaline and can be used instead of lime to sweeten acid soils, but you need to apply approximately twice the amount of wood ash to achieve the same effect. And because wood ashes often contain high levels of salts, this may cause problems for your plants. Never use more than 20 pounds per 1,000 square feet. Don't use them if your soil is neutral or alkaline, or around acid-loving plants such as rhododendrons and blueberries.

WE'RE READY TO HELP: For answers to your gardening questions, call Gardener's Information Service at (800) 777-7931, extension 131, between 10 a.m. and 4 p.m. Eastern time, or e-mail us anytime at gis@ahs.org.

Wood ashes should be applied in a thin layer over the soil surface in winter and incorporated into the soil in spring. If you use wood ashes in your garden regularly, it's a good idea to check your soil's pH each year.

Never use ash from burned trash, cardboard, or painted, stained, or pressure-treated wood in the garden, because it may contain toxic chemicals.

REUSING SOIL

I've got some leftover containers of soil in which annuals were grown last year. Can I plant annual seeds in them again this year, or will the old soil carry disease organisms?

—D.K., NOVATO, CALIFORNIA

Unless you had problems with disease on last year's annuals, the soil in your container is less likely to be disease-laden than it is to be depleted of nutrients. Tip the old soil out into a wheelbarrow and mix it with some compost or other organic amendments (see "Fertile Ground," page 48). Then start your annual seeds in a sterile seed-starting mix and transplant them into the container with the revitalized soil when they are large enough.

If you are concerned about diseases in your old soil, or to prevent fungal diseases such as damping-off when direct seeding, try a method Tony Avent of Plant Delights Nursery in Raleigh, North Carolina, successfully employs to sterilize soil. According to Avent, he fills containers that have drainage holes with soil and moistens the soil with room-temperature water. Once the soil is evenly wet, he pours two rounds of boiling water over and through the soil, letting the water drain from the

containers. "It's absolutely the easiest thing in the world," he says.

LILACS FOR THE SOUTH

I've just moved from the Chicago area—where I grew beautiful lilacs—to Chapel Hill, North Carolina. My new neighbor, who has lived here all her life, says lilacs don't do well here. Can you suggest any lilacs that would tolerate the heat and humidity of the Southeast?

—R.S., CHAPEL HILL, NORTH CAROLINA

Syringa patula 'Miss Kim' is one of the most reliable for southern gardens, says Dick Bir, an Extension horticulture specialist at North Carolina State University. "'Miss Kim' and *Syringa meyeri* 'Palibin' have been dependable but are somewhat smaller shrubs with a slightly different fragrance" than common lilacs (*Syringa vulgaris*) says Bir. Two common lilac hybrids that have shown excellent mildew resistance in trials are the purple/silver purple bicolor 'Albert Holden' and the pastel purple-blue 'Wedgewood Blue'. Unfortunately, both are susceptible to borers.

"Lilacs that sort of 'look like lilacs' that we think have the most promise here in the Piedmont region are a series of hybrids that came out of Descanso Arboretum in California," says Bir. "The Descansos are generally *Syringa* × *hyacinthiflora* hybrids. We currently have 'Angel White', 'California Rose', 'Blue Boy', and 'Lavender Lady'." In general, Bir says, these have good mildew and borer resistance. 'Tinkerbelle', a hybrid between 'Palibin' and *S. microphylla* 'Superba' that has rose buds that open to deep pink, fragrant flowers shows promise in initial testing in USDA Zone 8, says Bir, "but only time will tell." 🌿

William May, Gardener's Information Service Volunteer, and Marianne Polito, Gardener's Information Service Manager.

Herbs in Place of HRT?

by Carole Ottesen

THE NEWS hit like a bombshell: Early results of a major study showed that hormone replacement therapy (HRT), a seeming magic bullet for the side effects of menopause with supposed beneficial effects on heart health and bone density, actually *increased* the risk of breast cancer by 26 percent.

In July last year, the Woman's Health Initiative (WHI) cancelled a National Institutes of Health-sponsored study of HRT three years shy of its completion. WHI's study participants, taking a combination of estrogen plus progestin, were told to stop taking their pills because the risks of HRT outweighed the benefits. In addition to the increased risk for breast cancer, there was a 41 percent increase in strokes, a 29 percent increase in heart attacks, and doubled rates for blood clots in the legs and lungs. There were benefits as well: 37 percent less colorectal cancer and 24 percent less total fractures.

For the 16,608 study participants as well as for some six million other postmenopausal women across the country, HRT provided relief for the hot flashes, mood swings, vaginal dryness, and insomnia associated with menopause. To get the same relief without dangerous side effects, many women are turning to an herbal remedy: black cohosh (*Cimicifuga racemosa*). Also known as bugbane, this perennial grows wild in the deciduous forests of eastern North America. In mid- to late summer, four- to six-foot candelabralike spikes of creamy white flowers bloom on slender stems above the foliage, gracing many a woodland garden.

HERBAL HISTORY

Black cohosh has a long history of medicinal use. Even before 1875, when American herbalist Lydia Pinkham began marketing a 36-proof patent medicine



Black cohosh (*Cimicifuga racemosa*) offers post-menopausal women an herbal alternative for hormone replacement therapy.

“Vegetable Compound” with black cohosh root as its main vegetable component, this member of the buttercup family (Ranunculaceae) figured in the pharmacopoeia of native Americans—most often as a remedy for rheumatism.

It was the 19th-century Eclectic physicians who championed it as the treatment of choice for all female complaints. “Europeans learned of its use from the Eclectics, and they have favored the herb for helping reduce unwanted symptoms that can arise during menopause, such as hot flashes,” says Christopher Hobbs, a fourth-generation herbalist who practices in Santa Cruz, California.

For over half a century, black cohosh has been widely and safely used and tested in Europe. From 1944 to the present, an alcohol extract of black cohosh root (Remifemin) has been the subject of numerous German studies. More recently,

studies have been undertaken in the United States.

MODERN-DAY STUDIES

“The modern scientific evidence for black cohosh is increasing,” says Hobbs. “In vitro studies show that black cohosh extracts have estrogenic effects, other hormonal-regulating effects, and anti-estrogenic effects. The reason for the apparent contradiction is that medicinal plants are a complex mixture of compounds and they often have varying activity.” Hobbs

cites a recent study in which estrogen-sensitive cancer cells were exposed to black cohosh extract. Not only did the extract *not* stimulate the growth of the cancer cells, he says, it “retarded the growth.”

For its successful treatment of the side effects of menopause, including mood improvement, black cohosh extract was approved for this use in the 1989 German Kommission E monograph, the results of an exhaustive study sponsored by the German government that examined the efficacy and safety of herbal remedies.

“Enough studies now show that the whole extract is safe to take for women who are concerned about an increased risk of breast or uterine cancer,” says Hobbs, adding, “The bottom line for me after researching and prescribing this herb as a clinician for many years is that the estrogenic effect of black cohosh is likely to be more of a regulatory effect rather than a stimulatory effect.”

Carole Ottesen is an associate editor of The American Gardener.

Dirt

by Christina Le Beau

THERE'S A PILE of dirt in my driveway. Six cubic yards, delivered last week. A rich, black cascade of soil, compost, and manure. Good dirt just begging for a home. I've been trying to get outside and answer its call ever since. But there the mound sits, taunting me from beneath the shiny orange tarp that strains to keep the rain from muddying its edges and turning my driveway into a swirling, chocolate-colored soup.

Every day I look outside and see that tarp and wonder when the rain will stop. Gingerly I creep around the edges, adding rocks to keep the tarp in place, watching the sky and the weather forecast with wary eyes. I turn guiltily and look upon the dozens and dozens of plants longing to stretch their roots in that dark, fertile dirt, so tantalizingly close. Or at least I imagine they're longing to stretch their roots. To look at them reveals no hint that they're captive in plastic nursery pots, clay flowerpots, wood barrels, and even plastic bags—whatever I could find when I uprooted them a month ago from our previous garden. They look healthy and green, some with fat buds or even fatter flowers, seemingly content to spend their spring huddled in such close quarters.

But I know if they stay much longer in those pots they'll start to choke for air, start to wither and fade. They'll beg for nutrition and room to spread out. They'll glare at me from behind their leaves, bending to their neighbors as if to say, "She dug us up for *this*?"

"Come on," I'll tell them, "at least you have plenty of water."

"Four wheelbarrows per cubic yard," the woman told me on the phone, when I called to inquire about a delivery of soil for the new garden.

"Big wheelbarrows?" I asked.

"Yes, and mounded," she replied.

I envisioned the gardens I'd create at this house, imagined the transplants from my old house mingling happily with newcomers, all plunged in that heavenly organic mixture. "Sold," I told her. "I'll take six yards."

Delivery was delayed once because of rain, surely a bad sign. And when the



truck finally arrived, clouds threatened. As it backed into the driveway, I had one eye on the sky and another on the dirt piled high in the truck. There was enough dirt there to call my sanity into question. My heart leapt to my collar as I imagined a driveway, a back porch, and two cars buried in dirt. What had I done?

When the driver tilted the truck bed, releasing his cargo in a swoosh and a clank of chains, I jumped back, sure I would be buried as well. But when the dirt settled, I saw it really wasn't so much. A nice, heaping mound. Perfect. I picked up some of the soil in my hand, squished it and admired it, and took a deep, happy breath as I imagined the gardens it would sustain. Then I went back inside to finish some work on the computer before I could move on to the work calling me from outside.

And it began to rain.

Now the pile shrinks by the day. My husband assures me the runoff is finding a home in the badly eroded garden that borders the garage, the one through which

years of storms have swept the rain that drains from the driveway. This time the runoff brings dirt as well, he points out, so this is a good thing. But I sigh and shake my head, cursing my timing and longing for a dry day that isn't already committed to something else.

Then, this morning, sun. An unmistakable glow behind the blinds. I hadn't even hoped for it. Overcast. Cold. Muggy. Any of these would do so long as it was dry. But sun? I'm slightly dizzy at the prospect. Now I imagine its warmth drying out my dirt pile, casting hope on the plants that ring the wet mountain like some arboreal tribe waiting to sacrifice a virgin to the volcano. Yet the forecast is unforgiving. There's a brief respite now, but the rain will return again—soon. I've no time to spare.

I look to my calendar, to my phone, to my files. They can wait, I tell myself. I've got a date with some dirt.

Christina Le Beau is a free-lance journalist who gardens in Rochester, New York.

Double your garden's sensory appeal by planting spring-blooming shrubs with fragrant flowers.

Fragrant

BY MARY YEE

THE BEAUTY of an early spring garden looms large in seemingly small details such as the tips of narrow, green crocus leaves poking up through the soil—or the fact that after a long, frozen winter you can actually push a trowel into the ground. In the reawakening landscape, the first fuzzy gray catkins to burst on a pussy willow branch are more enchanting than any summer rose or lily.

So it is at winter's end that early-blooming shrubs can feed a gardener's starved soul with hints of a new growing season.

Many spring-flowering shrubs provide a brief period of blossoms worthy of notice even when competing with the flashier spring bulbs. A number of them produce early flowers with the added attraction of delicious fragrance—the mysterious dimension in a garden that often stops visitors in their tracks—or sends them searching eagerly for the source if it isn't readily apparent. You don't need a grove of fragrant shrubs to achieve this purpose; a single well-chosen, well-placed specimen may be all you need to lift your spring garden above mere good looks and form.

To help you create that additional sensory experience in your garden, we've selected some early-flowering evergreen and deciduous shrubs that are, for the most part, highly attractive both in and out of flower; a few are for connoisseurs who especially prize sweet aromas.

Bloom times are given as a range of when each plant is in bloom in different areas of North America; blooming starts earlier in warm regions than in cooler regions. The degree of fragrance may also vary depending on climate and other growing conditions. It's best to acquire the shrub of your choice when it's in bloom so you can judge for yourself.

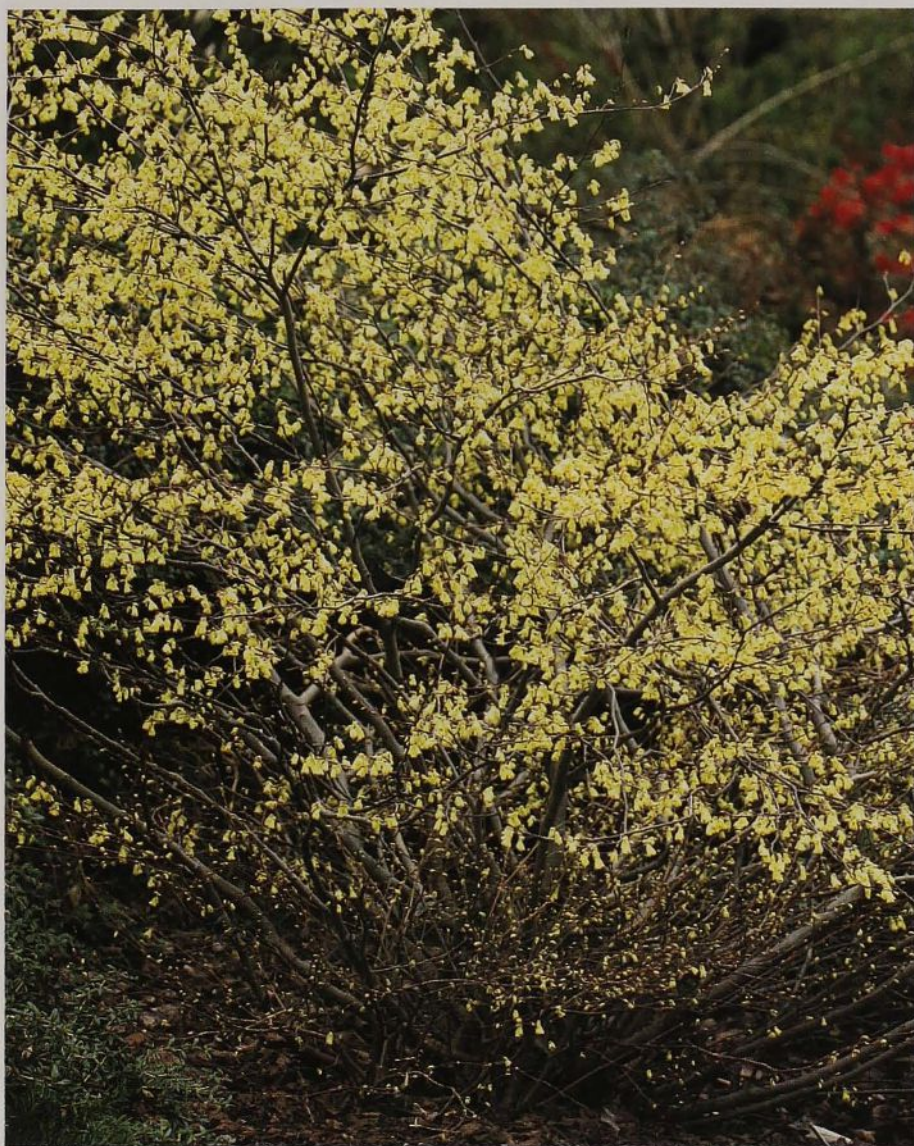
Mary Yee is managing editor and designer of *The American Gardener*.



Mexican Orange Blossom

(*Choisya ternata*, Zones 8–10, 10–8.) Native to Mexico. Growing to eight feet, this compact evergreen shrub in the citrus family has dark green, palmate leaves that release a pungent aroma when crushed. Its small white flowers, which have an orangey fragrance, open in late spring or early summer, sometimes reblooming in late summer and in fall. Plant it in part shade to full sun and moist, well-drained, acidic soil. Where it's not hardy, it can be grown in a container and wintered indoors. The cultivar 'Sundance' is more compact, growing to about five feet, and has bright yellow to yellow-green leaves; it does not flower reliably, however.

Spring Shrubs



Buttercup Winter Hazel

(*Corylopsis pauciflora*, Zones 6–9, 9–1.) Native to Japan and Taiwan. This deciduous shrub has a somewhat gangly, spreading habit, growing to six feet tall and as wide. Its oval to heart-shaped leaves have bristly margins and are bright green above and silky underneath. In late winter to early spring, profuse small pale yellow flowers release a pleasant fragrance as they dangle gracefully from the thin, bare branches. Grow in part or dappled shade, protected from wind, in well-drained acidic soil. Fragrant winter hazel (*C. glabrescens*, Zones 5–9, 9–6) is slightly hardier and grows much larger.



Fragrant Daphne

(*Daphne odora*, Zones 7–9, 9–7.) Also known as winter daphne. Native to China and Japan. This much prized evergreen shrub grows to four feet high and wide with a rounded habit. It has glossy dark green leaves and pinkish-purple flowers that bloom in terminal clusters from midwinter to early spring. Plant in part to near full shade in well-drained soil. A temperamental plant, it is not easy to grow but is worth a try for its delightful fragrance, which University of Georgia horticulturist Michael Dirr describes as “alluring.” Cultivars include ‘Alba’, which has creamy white flowers, and ‘Aureo-Marginata’ (shown above), which has leaves with yellowish margins.

Dwarf Fothergilla

(*Fothergilla gardenii*, Zones 4–8, 8–1.) Also known as witch alder. Native to the southeastern United States. A compact deciduous shrub ideal for small gardens, dwarf fothergilla grows to three feet high and wide. Its dark green, ovoid leaves with toothed margins turn red, orange, and yellow in autumn. Blooming in late spring, its cylindrical or sometimes roundish clusters of white petalless flowers with exceptionally long stamens resemble bottlebrushes; their delicate fragrance has been described as honey-scented or sugary. In some regions the flowers are borne before the leaves emerge in spring. Grow in full sun to part shade in moist, well-drained, acidic soil. ‘Blue Mist’ has bluish-green foliage and is reportedly a little less hardy than the species and produces less colorful fall foliage.



Coast Leucothoe

(*Leucothoe axillaris*, Zones 6–9, 9–6.) Also known as dog-hobble. Native to the southeastern coastal United States. This evergreen shrub grows to four feet high and wide. Its arching stems are clad in leathery, toothed, ovate to lance-shaped leaves that are dark green in summer and turn purplish in winter. Slightly fragrant, curiously urn-shaped white flowers bloom in late spring in dangling axillary racemes that can sometimes be obscured by foliage. Grow in part to full shade in moist, well-drained, acidic soil. This plant is often confused with *L. fontanesiana* (Zones 5–8, 8–3), a slightly larger and more floriferous species native to the mountains of the southeastern United States.





Fragrant Olive

(*Osmanthus fragrans*, Zones 8–11, 12–8.) Also called sweet olive. Native to China and Japan. An upright evergreen shrub with stiff, leathery oval to lanceolate leaves, fragrant olive grows 10 to 15 feet in cooler zones and to 30 feet in warmer zones. Small axillary clusters of white flowers bloom periodically from autumn to spring. They offer little visual interest, but have a pronounced sweet fruity fragrance. “Flowers appear over such a great time frame and are so fragrant that to not try the plant is to cheat one’s garden,” says University of Georgia horticulturist Michael Dirr. Grow in full sun to part shade in most well-drained soils and protect from cold winds. Where it is not hardy, fragrant olive can be grown very successfully as a container plant and brought indoors when cool weather arrives. *O. fragrans* forma *aurantiacus* bears orange-colored blossoms.



Western Mock Orange

(*Philadelphus lewisii*, Zones 5–8, 8–1.) Native to western North America. This deciduous shrub grows three to 10 feet high and spreads to six feet. Masses of single, open-faced white blossoms up to 1½ inches in diameter bloom profusely in late spring to early summer. The fragrance of its flowers is the subject of much rhapsody by those who have experienced it; however, it is not detectable in all forms. It tolerates a wide variety of conditions—and even neglect—but thrives in sun to part sun in moist, well-drained soil. Unlike most other mock oranges, which generally have little else beyond their flowers to make them of true landscape value, this one has exfoliating bark. ‘Cheyenne’ is a new trademarked selection recently introduced by the USDA Field Station in Cheyenne, Wyoming, that bears two-inch flowers and grows to seven feet high and six feet wide. Littleleaf mock orange (*P. microphyllus*, Zones 6–9, 9–6), another western native, is also reported to be variably fragrant.

Sources

Fairweather Gardens, Greenwich, NJ. (856) 451-6261.
www.fairweathergardens.com. Catalog \$4.

Forestfarm, Williams, OR. (541) 846-7269. www.forestfarm.com. Catalog \$5 (free if ordered online).

Greer Gardens, Eugene, OR. (541) 686-8266.
www.greergardens.com. Catalog free.

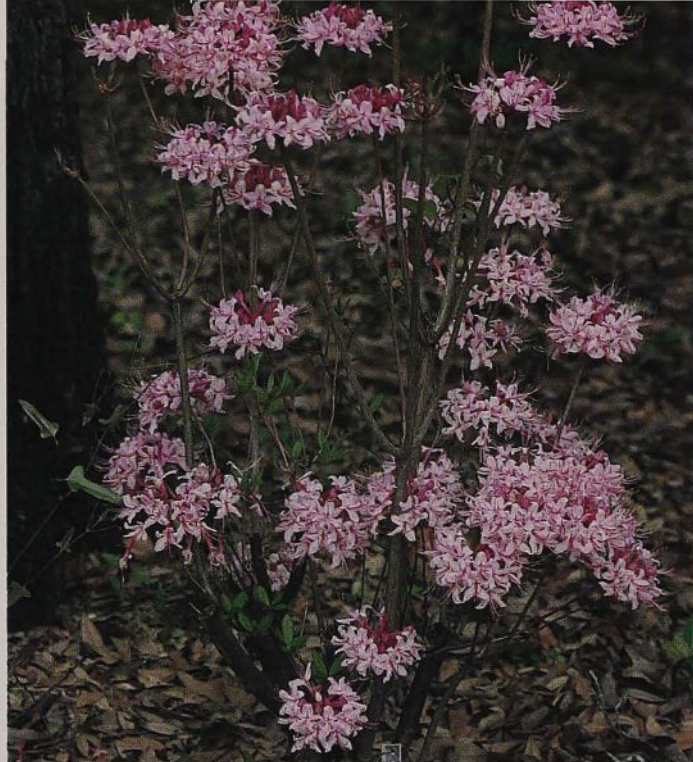
Meadowbrook Nurseries (formerly We-Du), Marion, NC.
(828) 738-8300. Catalog only available online this year at www.we-du.com.

Roslyn Nursery, Dix Hills, NY. (631) 643-9347.
www.roslynnursery.com. Catalog \$3.

Resources

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Sunset Western Garden Book, edited by Kathleen Norris Brenzel.
Sunset Publishing Corp., Menlo, California, 2001.



Piedmont Azalea

(*Rhododendron canescens*, Zones 6–9, 9–4.) Native to the southeastern United States. One of the finest of our native deciduous azaleas, this plant grows six to 15 feet tall and spreads slowly via suckers sent up from its stoloniferous roots. Its white to pink tubular flowers bloom in terminal inflorescences in February to April, sometimes opening before the oval to elliptical dark green leaves emerge. The flowers have a delicate, sweet scent. Grow in part to full shade in moist but free-draining loamy soil. Piedmont azalea hybridizes freely with other native deciduous azaleas, and cultivars with different flower colors are available.

Buffalo Currant

(*Ribes odoratum*, Zones 5–8, 8–5.) Also known as clove currant. Native to the central United States. A candidate for the edible garden, this deciduous shrub grows six to seven feet high. It has blue-green, rounded to oval leaves that are generally divided into three to five lobes. These can turn yellow to reddish in autumn, although sometimes the plant drops most of its leaves by summer due to stress or disease. Drooping racemes of bright yellow, clove-scented flowers open in spring, followed by edible purple-black berries in summer. Over time, buffalo currant develops a loose, untidy habit because of its tendency to produce lots of suckers, but it can be pruned back heavily. Grow in full sun or part shade. Because many currants are prone to white-pine blister rust, they are prohibited in some states; check with your local Extension office before ordering. Buffalo currant is often confused with golden currant (*R. aureum*, Zones 5–8, 8–3), a closely related species. 'Crandall' is a rust-resistant cultivar that grows three to four feet tall.



Other Fragrant Spring-Blooming Shrubs

Name	Hgt./Spread (ft.)	Flower color/scent	Bloom range	Other attributes	USDA/AHS Zones
<i>Daphne ×burkwoodii</i> (Burkwood daphne)	3–4/6	white	Apr. to May	semi-evergreen	5–8, 8–4
<i>Daphne cneorum</i> (rose daphne, garland flower)	1/2	rose/sweet	Apr. to May	evergreen	5–7, 7–5
<i>Lonicera fragrantissima</i> (fragrant honeysuckle)	10/10	white to cream/ lemony	Mar. to early Apr.	deciduous	4–8, 8–3
<i>Mahonia bealei</i> (leatherleaf mahonia)	6–8/6–10	yellow	late Jan. to Mar.	evergreen foliage, blue berries	5–8, 8–3
<i>Michelia figo</i> (banana shrub)	7–10/5–8	pale brownish purple/ fruity	Mar. to May	evergreen, red seeds	10–11, 12–10
<i>Osmanthus delavayi</i>	6–15/5–10	white	Apr. to May	—	7–10, 9–7
<i>Rhododendron occidentale</i> (western azalea)	6–10/6–10	pale pink to white	Apr. to June	orange-red fall foliage	7–9, 9–7
<i>Sarcococca ruscifolia</i> (sweet box)	3/3	white	Jan. to Mar.	evergreen	8–9, 9–7
<i>Viburnum ×burkwoodii</i> 'Mohawk' (Burkwood viburnum)	8/8	pink and white/ spicy	Apr. or May	orange-red fall foliage	5–8, 8–1



Korean Spice Viburnum

(*Viburnum carlesii*, Zones 5–8, 8–5.) Native to Korea. A compact deciduous shrub ideal for small gardens, Korean spice viburnum grows slowly to six feet high and wide. Its soft, hairy, oval leaves have serrated edges and turn reddish in autumn. Domed clusters of dark pink flower buds open gradually in mid-spring to reveal the decadently fragrant white or pale pink flowers, which are redolent of a blend of exotic spices. Grow in full sun to part shade in loamy, well-drained soil. A cultivar, 'Compactum', lives up to its name, growing to about three feet.

Suburban Makeovers

A landscape designer reveals how he transformed three bland suburban yards into dynamic garden showcases.

ARTICLE AND PHOTOGRAPHS
BY KEITH DAVITT

AS A LANDSCAPE designer, it has been fulfilling to see progressive and even adventurous designs showing up in American suburban gardens over the last couple of decades. Despite this progress, we have a long way to go before we can escape the monoculture of lawns with specimen trees and foundation plantings that still plague our suburbs.

That ubiquitous style may have suited the sensibilities of the 1960s, when the notion of sidewalk appeal flourished, when parks were plentiful, and when the early-1900s concept of masking foundations with a bandage of plants yet prevailed. But at every landscape design seminar I attend, the main complaint I hear from professional designers is that they are still being asked to perpetuate the existence of insipid suburban gardens.

For this reason I am always grateful when a client comes to me with a request to design something out of the ordinary in his or her suburban garden. The following projects represent three such gardens on which I worked, each quite distinct from the others, and each designed to be in keeping with both the style of the neighborhood and the wishes of the garden's owner. All were created with respect for the *genius loci*, which translates roughly to, "Consult the Genius of the Place."

Originally a Greek notion, this concept was popularized by 18th-century English poet Alexander Pope. To the ancient Greeks it meant that before building or excavating on any site, it was necessary to find out which spirit or demi-god inhabits and watches over the place and make sure that whatever is done there is in harmony with that spirit.

As a landscape designer, this philosophy has become an integral part of my approach to all projects. I try to open myself to the individual character of a given site, no matter how nondescript or confused, no matter how large or small. I find that every place has its own character or in some way expresses what is needed for it to become a beautiful garden. In my experience, it is the perception of this character and an appreciation for the tastes and needs of the client that gives rise to a truly successful design.



AFTER: *Cedarhurst, New York*

SOMETHING "DIFFERENT AND BEAUTIFUL"

THIS CRAFTSMAN-STYLE house in Cedarhurst, New York, is in a neighborhood of nondescript yards designed to numb the mind and dull the senses. The owners, a married couple in their early forties, wanted something more. A *lot* more. Because they were just finishing the remodeling of the interior, they were ready to take on the exterior and wanted a genuine garden.

The real sin with this site was that it was like a still life without the life. No notion of beauty or gracefulness or charm was to be found. And yet the potential was certainly there. The lush



Top left: Before renovation, this garden in Cedar Hurst, New York, featured a typical foundation planting and a swath of lawn that ran to the sidewalk. The author removed many of the existing shrubs and built berms along the sidewalk. The renovated garden, left, features a curvy stretch of lawn flanked on both sides by lush beds that lead to a new fence with a gate and an arbor. A meandering path made of flat river rocks, top, adds interest to the lawn. Plants in the new beds include iris and lavender, above, crape myrtle, spiraea, *Rosa glauca*, and Leyland cypress (*Cupressocyparis leylandii*).

lawn and surrounding trees hinted at a garden and the vigor of the massive foundation plants bespoke of good soil and amenable climate. It just wanted an element of design to inspire, inform, and develop the latent possibilities.

The owners had a clear picture of what bothered them about the garden—and what they were looking for in a redesign. “It’s boring,” they told me. “We want plants and flowers, and we don’t want it to look like every other yard. We want it to be different and beautiful.” Those are the kind of instructions that warm a landscape designer’s heart.

The Design

This property bothered me because it was out of balance. All the weight was around the house with an empty expanse of lawn fading out to nothing. Also lacking was any sense of rhythm or flow, and the planting scheme was—well, there wasn’t one.

To create balance and movement, I constructed a series of curvy planting berms along the sidewalk. On the house side I also added some vertical variations and reshaped all the beds, balancing their contours with those of the bermed beds across from them. Now the lawn sweeps between the beds in a graceful flow

and serves as a verdant foil to the many flowering plants.

To add an element of solidity and structure, I cut a walkway of smooth river-flats (flat, river-washed stone) into the lawn in a series of graceful curves corresponding to the flow of the lawn and the shape of the beds.

The Planting

I wanted the plantings in this garden to be interesting all year and downright exciting most of the time. This was achieved by using groupings of several plants that have similar characteristics juxtaposed against strongly contrasting plant groupings. For example, I planted variegated grasses in combination with irises and daylilies against a backdrop of purple smoke bush (*Cotinus coggyria*), sand cherries (*Prunus pumila*), and barberries (*Berberis* spp.). The upright, spiky shapes of the grasses and herbaceous perennials create an intense contrast with the dark, rounded foliage of the shrubs. For the purposes of unification, a similar grouping is repeated nearby.

To enhance the sense of motion I had created with the shape of the planting beds, I staggered distinctive plants—such as the smoke bush, the grasses, and a crape myrtle—along both sides of the lawn. These attract and draw the eye of a beholder in a graceful sweep down the length of the garden.

In this garden, I also planted a lot of what I refer to as “detail plants”—small plants that have intricate foliage and flowers and can be appreciated both from a distance and up close. Often a garden is quite fine as far as it goes but lacks depth. But, as with music, our appreciation is deepened if the melodies are laid down in layers of variation. So, in my view, a garden should be satisfying at a single glance and should continue to satisfy to whatever level of detail we choose to look. Among the detail plants I use are pinks (*Dianthus* spp.), lamb’s-ears (*Stachys* spp.), columbines (*Aquilegia* spp.), anemones (*Anemone* spp.), astilbes (*Astilbe* spp.), euonymus, and dwarf spiraeas (*Spiraea* spp.).

AN ENGLISH GARDEN IN CARMEL

THE OWNERS of this property in Carmel, a quaint town on the central California coast just south of Monterey, had purchased this property for their retirement home and were in the process of transforming a plain two-story dwelling into a charming cottage-style house. They were looking for the same level of transformation in the garden, which was, as gardens go, among the more dismal I have come across.



The author transformed the sterile yard of this Carmel property, left—here looking out to the street—into an English-style garden by building terraces filled with a rich variety of plants. The new garden—seen here from the street, above—offers a visual feast of colors and textures from flowering shrubs, herbaceous plants, and annuals.

The house had been placed on an elevated grade in order to capture ocean views from the upper story. Only a straight, purely functional, walkway broke up the monotony of the grass-covered front yard sloping down to the road. Nothing had been done to bring grace or charm or magic or interest to the place. Even a better lawn with a few plants here and there would not have done the trick. The linear path accentuated the poverty of the situation, yielding a depressing, rigid yard utterly devoid of appeal.

The owners were both originally from the San Francisco area, but had pleasant memories of a few years spent in England and were interested in the idea of an English-style garden. They weren't sure exactly what sort of English garden, but they wanted it to be informal and in keeping with their new house.

The Design

Not infrequently, what you find on a site is so wrong that you need to look in the opposite direction to find its true potential. It's as if



AFTER: Carmel, California

FREE-STANDING STONE WALLS

The stone I used for the walls in the Carmel garden was a local sedimentary stone not unlike English limestone in appearance. The mild climate of coastal California meant no concrete footings were necessary. Before starting, I dug a trench several inches deep and with a slight downward slope from front to back into which I placed thick, large stones to serve as the base. The slope gave the walls a slight lean into the embankment, counteracting the pressure of the soil over time.

The stones were split and chiseled to make even courses and tight joints, and laid such that each joint was overlain with a length of stone above. As the wall went up, I backfilled it with rubble for support. An occasional long stone was built into the wall to anchor it into the embankment. Here and there stones were laid on their edge with their large surface outward and pieces of drain tile were built in. These provide a satisfying variety to the look of the wall. To finish, heavy, well-formed pieces of stone were used to cap the wall and give it solidity.

—K.D.



The author designed stone walls and a curving walkway to provide structure to the barren yard of this garden in Carmel.

you come across a beautiful young girl dressed in rags, unkempt, and cast down in every way who calls out to you, “Fix me up, dress me nicely, heal and elevate me to my true nature.”

That is what I felt here. Within sound of the ocean, open and sunny on clear days, shrouded in fog on others, slightly sloping from the house to the road and utterly unimposing of any other theme or motif, this place was made to become a well-proportioned, elegant garden of terraces with one level leading gracefully and naturally to the next. The notion of an “English garden” suggested to me a medley of beautiful plants in magnificent disorder spilling over the tops of stone, from within the cracks, and creeping up the base of walls. The place begged to be freed of its lackluster, unimaginative, and almost battered look. Such a design would satisfy the wishes of the clients, bring out the hidden potential of the property and be in keeping with the magical, casual atmosphere of Carmel-by-the-Sea.

I carved out three terraces supported by two arching stone walls. A meandering brick walk leads from the driveway near the road to the arched gate on the uppermost level, cutting through the three elevations in a long, graceful S-curve. The lower wall dovetails into the walk while the upper wall reverses its curve on the other side of the walk. The walls and walk create pleasant lines and add motion and grace to the garden.

Swinging the walkway away from the driveway and out into the garden created space for abundant plantings on both sides.

By curving the walkway, I was trying to create a situation where people would slow down and have a chance to look around and enjoy the landscape.

Laid on sand in a running bond pattern—that is, with the bricks laid lengthwise with each brick beginning in the middle of the bricks on either side—the central portion of the brick walkway maintains that soft, natural look while remaining durable. The outer courses, designed in a basket weave pattern—two bricks side by side surrounded by four sets of two bricks laid perpendicularly—were set in cement to prevent any tipping or slipping of the brick outward. The steps were laid on a cement base which extends below the (rare) frost line. Just as an occasional brick or piece of terra cotta was randomly worked into the wall, an occasional stone was incorporated into the walkway, further uniting these two structural components through this casual design detail.

The free-standing stone walls define three amply sized terraces and give natural, solid structure to the garden, providing balance to the abundant blossoms and foliage that characterize English cottage gardens. Level terraces, in contrast to a slope, are restful and satisfying, especially with spacious steps joining them.

The Planting

For a garden of this style to succeed, it needs a diverse array of well-grouped plants that provide a long season of overlapping bloom times and a variety of textures and colors. In some landscapes, such a lavish display of foliage and flowers might be overwhelming—the onlooker’s eye would tend to wander from plant to plant with no place to rest, finally succumbing to fatigue. But because of the strong structural elements that anchor this garden, the eye can settle on any of a number of pleasing solid elements among the bountiful plantings.

The plants used in this garden are too numerous to list, but here are some of the dominant elements. For the “bones” of the garden I used flowering cherries (*Prunus serrulata*), which are located on either side of the walk in the front left and at the right rear, along with edible figs (*Ficus carica*). The primary

shrub masses throughout the garden are camellias (*Camellia japonica* and *C. sasanqua*), with notable assists from roses, rose-maries (*Rosmarinus* spp.), hibiscuses, and marsh andromeda (*Andromeda polifolia*). Herbaceous perennials include English daisies (*Bellis perennis*), baby’s-breath (*Gypsophila paniculata*), Peruvian lilies (*Alstroemeria* spp.), and irises, to name but a few.

HAPPY TIERS IN THE ROCKAWAYS

THIS TWO-STORY stucco house in the Rockaways of Queens, New York, was set on a prototypical suburban front yard with a lawn, foundation plantings, and some annuals. In addition to being nearly identical to every other yard in the neighborhood, this property also suffered from an unfortunately placed spruce tree and a very large, exposed concrete porch.

The owner was vocal about what she wanted—“Lots and lots of flowers and plants. Really. *A lot of them*”—if not particularly specific. But it was clear to me from her dismay over the existing landscape and her enthusiasm for its possibilities that in this case, much as in the Carmel project, a complete reversal was in order. All I could sense about the site during my first visit was that it desperately needed to break out of the harsh, rigid confinement of straight lines and flat planes.

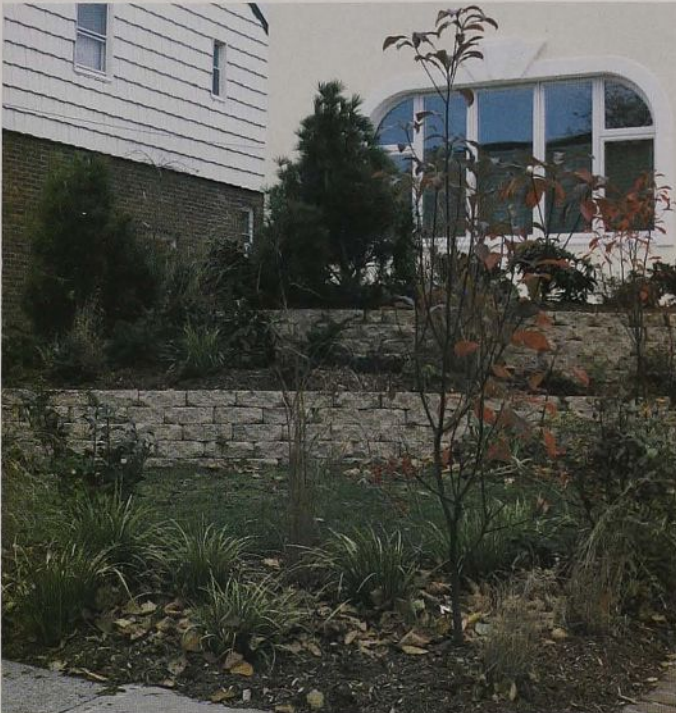


AFTER: *Rockaways Queens, New York*

The Design

The immediate need for a more graceful transition from the yard level to the top of the porch suggested terraces. These would also add vitality and dimensionality, and giving them an arching layout would bring an element of flowing motion, so wanting in this space. And the areas created by terracing would permit abundant planting.

One wall would have been sufficient to create the desired transition from lower to higher plane, but the owner also wanted to screen the front porch from the view of passers-by. To generate instant privacy, I constructed a wall nearly as tall as the porch, then a lower wall between that wall and the sidewalk. The upper terrace this created provided another planting plane,



BEFORE

The tiny front yard of this property in Rockaway featured a bland square of lawn, above, before its facelift. The author built concrete block walls, top, to increase its dimensionality. The revamped yard, opposite, has a softer feel thanks to the curve of the walls and the planting beds. Though reduced in size, the lawn's new organic shape makes it more dynamic.

which, with the addition of a few select evergreens, provided screening from the road. The lower terrace, intermediate between the lowest and highest planes, comfortably unites the ground level with the porch level. Both walls originate at the front steps, curve gently outward and meet an end wall, which comes straight off the edge of the house.

In a neighborhood such as this, where each yard merges seamlessly with those around it, it is important not to totally disconnect a garden from the surrounding community. It is fine for it to be different and even to stand out, but some elements that tie it to the larger environment should be retained. In this case, the lawn and the retaining wall materials serve this function.

The lawn, however, is no longer a rectangle. The arching lower wall and the irregularly shaped planting beds create a pleasantly curving swath of lawn that flows between the wall and planting beds, providing a sense of motion. The lawn helps unite the garden with the community but contributes to the free-flowing nature of the overall design as well.

In most cases, I would have preferred to use natural stone for a retaining wall, but that would have been too far removed in character from the concrete sidewalks, driveways, and elevated foundations. Instead, I built these walls of prefabricated, concrete blocks that have a somewhat natural appearance but are clearly manmade, in keeping with the overall environment.

The Planting

In keeping with the owner's requests, I designed this garden using a diverse mixture of species loosely united through the bold forms of ornamental grasses, primarily eulalia grass (*Miscanthus sinensis* 'Gracillimus'), distributed throughout. For color, I planted groupings of irises and daylilies and contrasted these blade-leaved plants with the mounded form of mophead hydrangeas (*Hydrangea macrophylla*). Nearby, rhododendrons and azaleas offer early color. Other color highlights come from lilies and honeysuckle (*Lonicera x heckrotti*). On the opposite side of the garden I added rugosa roses (*Rosa rugosa*), deutzias, and various annuals. Ferns and spreading conifers such as *Microbiota decussata* serve as foliar contrasts and backdrop to the many blossoms. On the upper terrace, Japanese umbrella pines (*Sciadopitys verticillata*) provide the primary screening, while more rhododendrons and Warminster broom (*Cytisus x praecox*) add texture and color.

ESCAPING SUBURBIA

As you can see from these three garden designs, once the preconception that a yard must consist of a lawn, foundation planting, and specimen tree has been overcome, there are infinite creative solutions for humdrum suburban front yards. Think how much more enjoyable suburban America will be when we can drive down any street and find one beautiful garden after another and no two alike.

A resident of Cambridge, New York, Keith Davitt is a landscape designer and builder with design projects nationwide. The author of Small Spaces Beautiful Gardens, his most recent book, Beyond the Lawn, has just been released by Rockport Publishers, and Water Features For Small Gardens is scheduled for publication this summer by Timber Press.

Blushing Greens



Colorful leafy “greens” are a delicious wake-up call for the spring vegetable garden.

BY RITA PELCZAR PHOTOGRAPHS BY DAVID CAVAGNARO

SALAD GREENS are among the easiest and fastest vegetables to grow in your backyard. They account for a significant portion of my vegetable garden in spring, when cool temperatures enhance their sweetness and slow their propensity to bolt—or send up a flower stalk—signifying the end of their harvest. I sow several consecutive plantings to extend my salad days, stretch the season with a few heat-tolerant types, and replant again in my fall garden. These are staples both in the garden and on my dinner table. I count on their reliability.

Opposite page: Green-and-red 'Red Butterworth' lettuces form large heads with soft, highly textured leaves. **Right:** A bed of 'Outredgeous', 'Green Forest', 'Simpson Elite', and 'Galactic' romaine lettuces resemble a patchwork quilt.

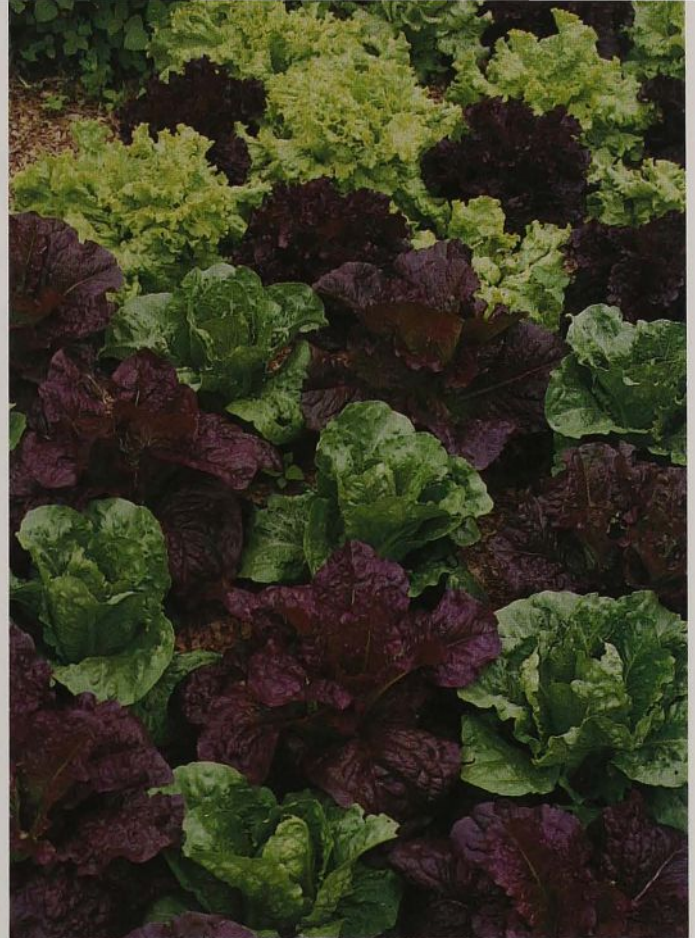
But reliability without pizzazz is boring. So in recent years my salad greens have assumed new identities: In addition to leafy greens, I now grow leafy reds, purples, and pinks. A few color combinations add further spice—some varieties look as if they were splattered with red paint, while others sport a more conservative pink blush or burgundy edging.

Some are so pretty they have escaped the neat rows of my vegetable patch, demanding space and a less conventional presentation in my ornamental beds. The frilly pink-edged leaves of 'Lollo Rossa' lettuce (*Lactuca sativa*) have put a ruffled edge on my spring border, paired with pastel pansies, and the shiny, deep burgundy-ribbed leaves of 'Rhubarb' Swiss chard (*Beta vulgaris*) add a bold touch in beds or tubs of mixed annuals.

BEYOND ICEBERG

Crisphead or iceberg lettuce—that crunchy head that used to be the only kind of lettuce you could buy—is actually one of the least healthful to eat, the most demanding to grow—and, dare I say, boring—of all greens. Clearly my admitted prejudice is not shared; it remains one of the most popular leafy greens at the supermarket. But where lettuce is concerned, iceberg is only the tip of the, uh... well, you know what I mean.

Bibb lettuce, also called Boston or butterhead, produces a loose head of thick, soft leaves, with an almost buttery texture. Its center is usually blanched. The magenta-blushed outer leaves of 'Merveille des Quatre Saisons' ('Marvel of Four Seasons') are a stunning contrast to the creamy center. 'Speckles' is an Amish heirloom with lime green leaves, speckled with bright red markings forming neat heads around yellow-green centers. Known for its heat and disease tolerance, 'Red Butterworth'



forms very large heads. The outer, more exposed leaves are tinted deep red, while inner leaves are green.

Looseleaf lettuce varieties produce loose rosettes of curled leaves with smooth, lobed, or frilled margins, and many are ready to harvest just a little more than a month after sowing. The thin, delicately lobed, red leaves of 'Red Salad Bowl' form an upright rosette at maturity. With its sweet flavor and outstanding keeping qualities, it is often used in commercial mixes of baby greens. Another reliable performer is 'Red Sails', which has medium

SEED-SOWING STRATEGIES

Although you can often find seedlings for sale at garden centers and farmer's markets, starting your own plants from seed is easy and more economical. Lettuce and mustard can be sown in early spring, and again in late summer or early fall, after the worst of summer heat has passed. Both need cool temperatures to grow; plants will bolt, leaves become bitter, and further sowings will fail to germinate when days get hot. Swiss chard can be sown from mid-spring, after danger of heavy frost, until mid-summer in most areas and then again in early autumn.

Plant greens in rows, sowing seeds about an inch apart and $\frac{1}{4}$ - to $\frac{1}{2}$ -inch deep. Be sure to check the directions on your lettuce seed packs, because some varieties require light for germination, and thus should be sown on the surface of the soil. Rows should be spaced at least a foot apart for lettuce and a foot and a half for mustard and chard.

The key to a great crop of greens is thinning, which is a rewarding chore because the tiny plants you remove will probably be the first fresh produce you taste from your spring garden. How much room you leave for your remaining lettuces depends on the type you are growing: for leaf lettuce, about four to six inches between plants, six to ten inches for romaine and most bibb types, and 12 inches for larger bibb and Batavian types. Mustard and chard benefit from a 12-inch spacing as well.

To make sure you have an abundance of colorful fresh greens for as long as possible, make several spring sowings of lettuce at ten to 14-day intervals. For the later sowings, select varieties that tolerate more heat. In the fall, plant again, at two-week intervals, beginning with those heat-tolerant selections. A similar staggered planting scheme for mustard and chard will ensure a long season of sweet tiny leaves for salads, sandwiches, and garnish.

—R.P.

green, crinkled leaves that are edged with a burgundy blush. The wine-red leaves of 'Galactic' are about as dark as a lettuce can get. Its ruffled leaves have a sweet, mild flavor.

Batavian and French crisphead lettuces are intermediate between iceberg and bibb types. Their large leaves form a loose but distinct head and they are more flavorful than iceberg types, with a similar crisp texture. 'Cardinale' produces red leaves that are resistant to tip burn, and are very heat tolerant. The large, flattened heads of 'Rouge Grenobloise' have a cabbage rose look, and the thick, mild leaves are bicolored red and green.



Swiss chard 'Bright Lights'—with stems in red, orange, yellow, and white—dazzles in the garden and on the table.

Somewhat more heat tolerant than other lettuces is romaine or cos. Elongated leaves with stiff mid-ribs form loose, tall heads. Romaine adds a firm, crisp texture and sharp flavor to a salad mix; it is the backbone of a Caesar salad. 'Rouge d'Hiver' is a French heirloom that can be harvested for use as "baby greens" or allowed to mature, producing robust, cupped bronze leaves. It is tolerant of both heat and cold. A German heirloom, 'Forellenschluss' ('Flashy Troutback'), gets its name from the red-speckled leaves that resemble a trout's back. It has a smooth, buttery—not at all fishy—flavor. 'Outredgeous' is one of the reddest romaines you will find. Its slightly ruffled, sweetly flavored leaves are red on top, green beneath.

MUSTARD AND CHARD

Tasty and colorful mustards and chards, picked young, will add zippy flavor to any salad. Left to mature, I prefer them in a stir-fry or sautéed in olive oil and garlic. Mustard (*Brassica juncea*) requires cool temperatures; sow seeds in early spring or late summer. In contrast, chard stands up better to heat than most salad greens.

Mustard needs more room than most lettuces, but you can sow seeds fairly close together, thinning as it grows—those little leaves are very tasty. 'Osaka Purple' develops broad, deep purple-blushed leaves that have a mild tangy flavor. The dark magenta leaves of 'Red Giant' are infused with a hint of hot pink and char-

Sources

Bountiful Gardens, Willits, CA. (707) 459-6410.
www.bountifulgardens.org. Catalog free.

■ *Lettuce*: 'Forellenschluss', 'Galactic', 'Marvel of Four Seasons' ('Merveille des Quatre Saisons'), 'Red Sails';
Mustard: 'Red Giant'; *Chard*: 'Rhubarb'.

The Cook's Garden, Londonderry, VT. (800) 457-9703.
www.cooksgarden.com. Catalog free.

■ *Lettuce*: 'Forellenschluss', 'Four Seasons' ('Merveille des Quatre Saisons'), 'Lolla Rossa', 'Red Butterworth', 'Red Salad Bowl', 'Red Sails'; *Mustard*: 'Osaka Purple', 'Red Giant'; *Chard*: 'Bright Lights'.

John Scheepers Kitchen Garden Seeds, Bantam, CT.
(860) 567-6086. www.kitchengardenseeds.com.
Catalog free.

■ *Lettuce*: 'Cardinale', 'Flashy Troutback' ('Forellenschluss'), 'Red Salad Bowl', 'Rouge d'Hiver', 'Rouge Grenobloise'; *Chard*: 'Bright Lights'.

Territorial Seed Company, Cottage Grove, OR.
(888) 657-3131. www.territorialseed.com. Catalog free.

■ *Lettuce*: 'Cardinale', 'Red Sails', 'Outredgeous', 'Speckles'; *Mustard*: 'Osaka Purple', 'Red Giant'; *Chard*: 'Bright Lights', 'Rhubarb'.

Resources

Burpee—The Complete Vegetable & Herb Gardener by
Karan Davis Cutler. Macmillan, New York, 1997.

The Gardener's Table by Richard Merrill and Joe Ortiz. Ten
Speed Press, Berkeley, CA, 2000.

trouse. It's very cold tolerant—I sow it in late summer, and have enjoyed its spicy-hot flavor in my salads almost all winter.

Swiss chard is hard to beat for intense color. The dark, glossy, crinkled green leaves of 'Rhubarb' chard contrast boldly with its bright burgundy-red stems. And for even more color, 'Bright Lights' offers the same dark leaves with stem colors that include red, orange, yellow, gold, and white. Chard's flavor is pretty intense, too; I always mix it with other greens in salad.

DINNER IS SERVED!

The colors and textures of lettuce, chard, and mustard add the same bold touch to the salad bowl as the garden. Mix the reds and purples with the greens for visual contrast and piquant variations in flavor, and your boring salads have gone gourmet. If your garden space is limited, try a pre-mixed blend. But if you have room, select several different varieties to create your own colorful, flavor-packed mixed green salad, or "mesclun".

Rita Pelczar is an associate editor of The American Gardener.

Rainy-Day Gardens



Imaginative plantings that help capture and clean runoff are attracting the attention of home gardeners, landscape designers, and watershed managers.

BY MARYALICE KOEHNE

AN IDEA WHOSE time has come, rain gardens are storming the country, showing up in private gardens, arboretums, housing developments, parking lots, and along roadways from the Chesapeake Bay to Puget Sound. In Seattle, they're part of a "Salmon Friendly Gardening" program, while in Maryland they are being promoted as a way to "Save the Bay."

If you haven't heard of a rain garden before, the basic concept is quite simple—they are designed gardens or plantings that help capture and clean storm water runoff from gutters, driveways, lawns, and other impermeable or semi-permeable surfaces. This helps prevent soil erosion and reduces the amount of pollutants entering our rivers and ground water.

National interest in storm water management has been increasing exponentially because of the growing concern about non-point source (NPS) pollution, which the U.S. Environmental Protection Agency (EPA) now considers the leading cause of water quality problems

Above: Lorrie Otto used only native plants to create this rain garden in Bayside, Wisconsin.

A TYPICAL RAIN GARDEN

The middle planting zone of the garden is suitable for plants that prefer consistently moist soil but tolerate periods of drought. Examples: sweetbay magnolia (*Magnolia virginiana*), river birch (*Betula nigra*), swamp azalea (*Rhododendron viscosum*), cardinal flower (*Lobelia cardinalis*), switch grass (*Panicum virgatum*), black-eyed Susan (*Rudbeckia hirta*).

The lowest zone of the garden is ideal for plants that like wet feet most of the time but can withstand occasional dry spells. Examples: New England aster (*Aster novae-angliae*), sedges (*Carex* spp.), marsh marigold (*Caltha palustris*), swamp milkweed (*Asclepias incarnata*).

The outermost, driest edge of the garden can be planted with any trees, shrubs, and herbaceous perennials suited to your region and site.

Rainwater is directed away from the house to a naturally low spot in the yard by means of a gutter extension pipe, shown here, or French drains.

Small stones or pebbles at the terminus of the pipe create a free-draining area for excess water to collect initially before seeping into the garden itself.

The saucerlike depression of the rain garden, which should be fairly shallow and no more than a foot or so deep in the center, is filled with a mixture of soil, organic matter, sand, and gravel to permit good drainage.

A layer of mulch over the rain garden reduces weeds and helps filter runoff.

in the United States. Unlike pollution that can be traced directly to one source—such as an industrial plant or a sewage treatment facility—NPS pollution is caused by a variety of manmade and natural pollutants that are picked up by runoff and then deposited into water bodies and water sheds. These pollutants include fertilizers, pesticides, oil, grease, de-icing salts, heavy metals, bacteria from animal wastes, and even sediment.

EPA studies indicate that as much as half of all pollutants in stormwater come from home landscapes, and some communities are now requiring home and business owners to find ways to avoid discharging stormwater into sewers. If you consider that a city block generates nine times more runoff than a woodland area the same size, it makes even more sense to plant rain gardens.

Rain gardens have been part of new housing developments and road construction projects for more than 20 years, but they have often been saddled with clunky and unromantic names such as bioretention

ponds, low impact developments (LIDS), infiltration basins, stormwater marshes, and even “wet gardens.”

Consultants to the Prince George’s County, Maryland, Department of Environmental Resources (DER) are credited with coining the term “rain gardens,” which helps convey the idea of relatively small, colorfully planted areas that collect rain water or snow melt. In home gardens, they are typically located near the downspouts of gutters, or in areas where water tends to wash off a sloping driveway. The water routed to these areas is filtered naturally by the garden’s plants and soils. As an added bonus, these plantings attract and provide habitat for birds, butterflies, and other beneficial wildlife.

TAKING A CUE FROM NATURE

As with many successful ideas, the ecological model for rain gardens comes from nature, where vegetation, soil, and soil organisms slow down, filter, and store rainwater. Mature forests are particularly critical components of this process be-

cause over time they have developed a spongy litter layer that absorbs water and allows it to slowly percolate into the soil, where it replenishes watersheds and aquifers. According to the EPA, national forests alone are responsible for capturing and filtering the drinking water used by more than 60 million Americans.

“It’s not so much that this is a new idea,” says Carole Barth, an environmental planner with the Prince George’s County DER, “but we’re putting back water in the environment like Mother Nature did before we messed it up.”

Using the catchy slogan “From Rainbows to Rain Gardens,” the DER’s goal is to foster a million rain gardens to help protect the Chesapeake Bay through an outreach program that extends to Master Gardeners, garden clubs, local watershed groups, and schools.

In other words, rather than continuing to treat rainwater like a waste product by funneling it into stormwater sewer systems, it’s being valued as the precious natural resource that it is.

FINDING A SITE

Late winter to early spring, when snows melt and rains fall, is the perfect time to evaluate your property to see if you can benefit from creating one or more rain gardens. Look for a low point in your yard where water tends to pool after storms, or an area along the street or driveway where you get a washout every time it rains. If you have had to add extenders to your gutters or install a French drain to route water away from the house, you may have perfect conditions for a rain garden.

There is no single formula for creating rain gardens—their shape, size, and plantings depend on many factors, including

where you live. But even a relatively small rain garden can help alleviate runoff problems. Consider starting with just one small plot that can easily be dug by hand, then extend it or add others later. If you have a steeply sloping lot or get a high volume of water flow during major storms, you may want to consult a landscape architect. Rain gardens should always be set well away from buildings, so there's no chance excess water could flow into the basement.

What rain gardens usually have in common is a relatively shallow saucer- or bowl-shaped depression where runoff initially collects. The soil in the bottom of this depression is often amended with a blend of organic matter, sand, gravel and

mulch to facilitate drainage. A slightly acidic soil—with a pH of 5.5 to 6.5—has been found to be ideal for the type of biochemical reactions that remove pollutants. Some rain gardens include an underdrain system or an overflow outlet to handle excess water during heavy storms.

The key is that the central basin shouldn't be so deep that water will stand in it long enough to kill plants or allow mosquitoes to breed in summer. If water overflows the depression during a heavy storm, it should be absorbed by plantings around the perimeter.

Before planting your rain garden, experts advise that you watch how the site handles two or three rainfalls. This will

SOLVING PROBLEMS AT HOMES AND SCHOOLS

Rain gardens at three very different sites in and around Milwaukee, Wisconsin, illustrate how diverse such gardens can be and how they can be used both to solve drainage problems and to create beautiful, interesting plantings.

When Katie and John Clark were looking for something to replace the scraggly, balding lawn that underlay their wooded front yard, the idea of a meandering dry river bed seemed like a practical solution. But once runoff water began tumbling over small waterfalls in their new installation and woodland plants began to thrive, they realized that besides solving aesthetic problems, this new installation at their home in Elm Grove, a suburb of Milwaukee, boasted many advantages. During storms, when rainwater gushes down the driveway from the cul-de-sac that fronts their house, it now courses through the channel to a wooded area behind their house. As the runoff from their property and the street pools there, it soon infiltrates the soil and helps recharge and renew the groundwater.

At Indian Hill School in Brown Deer, a northeastern suburb, students routinely use a rain garden—as well as prairie and woodland plantings—as part of science lessons and projects. Begun in 1990, this verdant paradise fronting the modern, flat-roofed building was destined to become a formal garden before several mothers and local environmental activist Lorrie Otto lobbied the school board to install more naturalistic plantings. Water that flows through the rain garden eventually drains into a pond that hosts frogs, dragonflies, and other wildlife. “This is our outdoor classroom,” said principal Rebecca Bell. “Each teacher uses it differently and ties it into the curriculum.”

Otto has solved runoff problems in her own garden with what she calls “a drainage ditch that goes nowhere.” This early version of a rain garden she created in the grass-clad drainage ditch that ran alongside the street in the front of her yard initially drew the ire of city officials. The city soon let her have her own way, however, and now stands of mature native plants such as white turtlehead (*Chelone glabra*), Indian grass (*Sorghastrum nutans*), and Joe Pye weed (*Eupatorium fistulosum*) edge a pond that collects filtered street runoff.

A lifelong environmental activist, this feisty 83-year-old is one of the founding members of Wild Ones—an organization that advocates naturalistic gardening—and is credited with fostering passage of legislation banning use of the pesticide DDT in Wisconsin in 1970, two years before Congress outlawed the pesticide nationally.

“I think there should be ordinances saying you must keep the rain water that falls on your property right there,” says Otto. On this issue, at least, city officials around the country are finally beginning to see eye to eye with her. —M.K.



A rain garden at Indian Hill School in Brown Deer, a suburb of Milwaukee, Wisconsin, filters water that eventually drains into this pond. The rain garden and pond are integral parts of the school's outdoor classroom activities and science projects.

allow time for the amended soil in the basin to settle—if it settles too much, you may need to add more soil—and will let you see how long water stands in the basin. If you still have standing water after three days, you may need to improve the drainage.

Plants should be selected to fit the site chosen for the rain garden. Determining the exposure of the location—degree of sun or shade—is particularly important.

Rain gardens generally have two or three planting zones. The innermost planting zone in the bottom of the central basin should include plants that are happy having “wet feet” most of the year but that will also tolerate periods of drought—plants native to wetlands are good choices here. The second planting zone, on the sloping walls of the central basin, should include plants that tolerate periodic immersion and are also drought tolerant—plants native to the edges of streambanks are appropriate here. The third planting zone, around the perimeter of the basin, can include a variety of herbaceous perennials, shrubs, and even trees suited to your regional soil and climate.

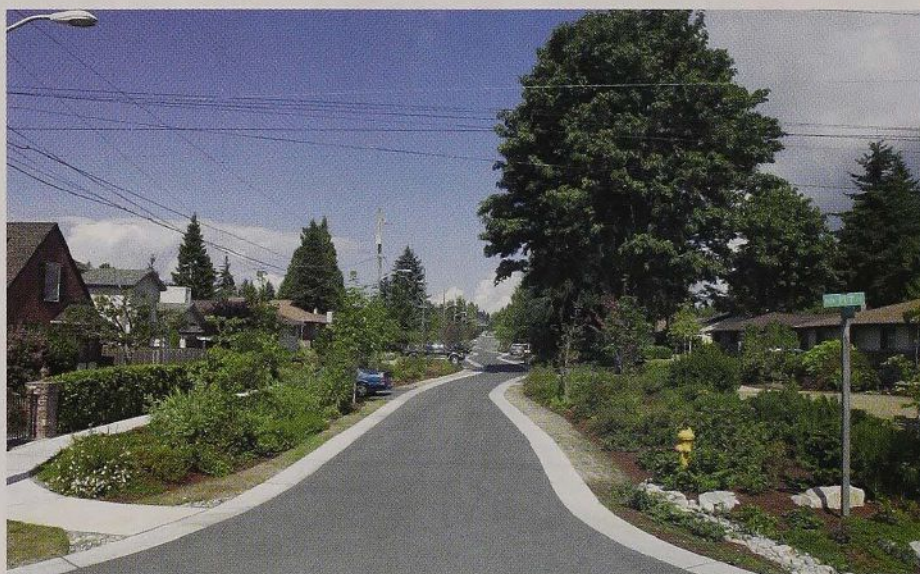
Experts advise that all planting areas in rain gardens be covered with two or three inches of organic mulch. Research has shown that in addition to reducing weed problems, the mulch helps remove pollutants from the water filtering through it.

As the concept of rain gardens spreads rapidly, plant lists suited for different areas of the country are becoming available through regional university Extension agencies, departments of environmental protection, and some specialty nurseries (see “Resources,” page 41).

Usually, a minimal financial investment can yield an attractive addition to your landscaping.

REDUCING SUBURBAN RUNOFF

Existing neighborhoods of major cities are also benefiting from rain gardens that slow the rush of storm water into municipal retention ponds and sewage facilities. For example, Seattle, Washington, claims that the innovative Street Edge Alternative (SEA Street), completed in 2000 by the Seattle Public Utilities and the Seattle Department of Transportation, is the first of its kind in the country. The project involved city agencies working directly with



In Seattle, severe runoff problems in one neighborhood were solved by creating rain gardens along the length of an entire street. Top: Before construction of rain gardens, runoff from this street flowed into a local creek. Above: Rain gardens not only absorb runoff but look great.

individual property owners in a three-and-a-half block area along a busy street in a 1950s subdivision that was built without curbs or gutters (see photographs above).

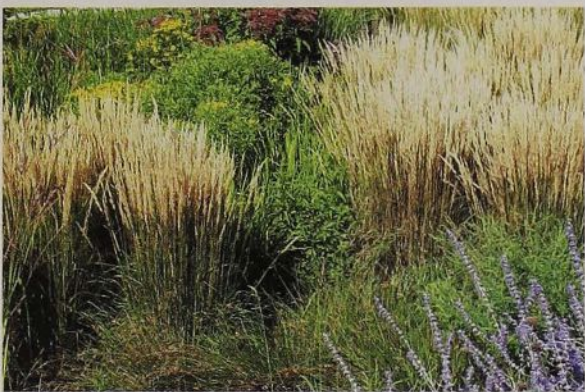
Previously, ditches along the edges of the properties carried a high volume of water that was contributing to the overload of Pipers Creek, a nearby waterway. Now, the flow is stemmed by a series of carefully designed plantings that run the length of the road. Each homeowner was able to choose from among six varieties of deciduous trees, five evergreens, 20 shrubs, 10 herbaceous perennials, two low-growing ground covers, and six types of wetland plants. While city workers did the planting, property owners are responsible for maintaining the gardens.

The prototype project has proven so successful that this technique is being applied to other streets that are subject to severe stormwater runoff.

Another innovative urban rain garden project is on display in the Swede Hollow neighborhood of St. Paul, Minnesota, where the neighborhood association joined forces with the city to help protect a restored wetland area along the Mississippi River from polluted runoff. Two vegetated swales funnel stormwater from a street into the 900-square-foot Maria Bates Rain Garden, designed by Barr Engineering.

Local elementary school students planted the garden, which features a diverse blend of native and adapted exotic plants such as big bluestem (*Schizachryium sco-*

parium), New England aster (*Aster novae-angliae*), blazing star (*Liatris aspera*), black-eyed Susan (*Rudbeckia fulgida* 'Goldsturm'), and feather reed grass (*Calamagrostis xacutiflora* 'Karl Forster'). Neighborhood artists added a meandering walkway with signage that helps explain the garden's function, and benches encourage passersby to stop and savor the colorful plantings.



Above and top: At the Maria Bates Rain Garden in St. Paul, Minnesota, students from a local elementary school planted the garden with a mixture of native and adapted exotic plants.

The Seattle and St. Paul rain gardens are voluntary efforts to reduce stormwater runoff, but some municipalities are moving toward mandatory programs.

In Milwaukee, a new law will require 45,000 homeowners and businesses to disconnect downspouts from sanitary sewers served by the Milwaukee Metropolitan Sewerage District (MMSD) by 2007. An estimated 200 million gallons of rainwater that falls during heavy storms will thus be directed back to the ground, which should eliminate the city's need to dump diluted sewage into creeks, the Milwaukee River, or Lake Michigan every time three to five inches of rain falls quickly.

The district hopes to disconnect downspouts from 10,000 homes a year and will

pay homeowners \$50 per disconnected downspout beginning in 2004. By 2007, disconnections will be mandated. Besides rain gardens, green roofs, rain barrels, roof restrictors, and increasing the tree canopy are options the district intends to pursue.

RESTORING PARADISE TO PARKING LOTS

Designing rain gardens in association with parking lots—which are major sources of both pollution and runoff—is something many municipalities, botanical gardens, and businesses are exploring. “We’ve installed a demonstration rain garden that catches runoff from the parking lot at the new Alterra Coffee House/Milwaukee Flushing Station on the lakefront,” says Kevin Shafer, executive director of MMSD.

Botanical gardens and arboretums see rain gardens as important elements of educational and environmental programs. In cooperation with the Virginia Department of Forestry, the Blandy Experimental Farm near Boyce, Virginia, installed a rain garden at its visitor's parking lot in 2001. And a rain garden is planned as part of new parking areas being constructed during renovation of the visitor center at the Minnesota Landscape Arboretum in Chanhassen.

As we look for ways to reconnect our gardens with the natural world around us, it's important to keep in mind that no gardens are truly natural. Wherever human settlement disrupts nature, problems develop unless people remember the words of conservationist Aldo Leopold: “The privilege of possessing the earth entails the responsibility of passing it on the better for our use.” Rain gardens are one way to reduce our own environmental footprint while at the same time creating a beautiful addition to our landscapes.

Maryalice Koehne is a free-lance writer who lives and gardens in Wauwatosa, Wisconsin.

Resources

Environmental Protection Agency, www.epa.gov/cgi-bin/epa

Friends of Bassett Creek (a private conservation group in Minneapolis, Minnesota), www.mninter.net/~stack/rain/

GreenSpace Partners (a community group in Minneapolis, Minnesota), www.greeninstitute.org/GSP

National Wildlife Federation's Backyard Wildlife Habitat Program, www.nwf.org/backyardwildlifehabitats

Natural Resources Defense Council, www.nrdc.org/water/pollution/grunoff.asp

Prince George's County, Maryland, Department of Environmental Resources, (301) 883-5852 / (301) 883-5834 www.co.pg.md.us/pgcounty/government/agencyindex/der/ppd/lid/bioreten2.asp

■ Offers booklet, new bioretention plant list of 150 hardy plant species.

Seattle SEA Streets project, www.ci.seattle.wa.us/util/SEAstreets/default.htm

University of Wisconsin Extension Service, Madison WI. (608) 262-3346 or toll-free (877) 947-7827. <http://clean-water.uwex.edu/pubs/>

■ Offers publication titled *Rain Gardens: A Household Way to Improve Water Quality in Your Community.*

Virginia Department of Forestry, http://state.vipnet.org/dof/rfb/riparian/rain_gardens.htm

Wild Ones, www.for-wild.org

Wisconsin Department of Natural Resources, Madison, WI. (608) 264-6217. www.dnr.state.wi.us/

■ Offers pamphlet titled “Rain Gardens...Nature's Way to Control Runoff Pollution.”

Heuchera

BY CAROLE OTTESEN



Explosion

Plant breeders have turned a genus of subtly beautiful American woodland wildflowers into a line of wildly popular foliage plants.

ONCE, THE ONLY routinely grown ornamental member of the heucheras—some 55 species of North American evergreen and semi-evergreen perennials—was coral bells (*Heuchera sanguinea*), a native of the Southwest. In the old days, the attraction was flowers, the “white coral bells” celebrated in song. In the last dozen years or so, there’s been an explosion of *Heuchera* cultivars, but the focus of breeding has changed. Nothing like the ones that lined your great-grandmother’s garden walk, today’s heucheras are hot, new foliage plants available in a crazy quilt of colors, patterns, and leaf forms.

How plain-Jane, common alumroot (*H. americana*), a small, green denizen of calcium-rich, wooded slopes, along with several other wild species begat a race of beguilingly colorful garden beauties is a story that began in the 1970s. That’s when Brian Halliwell, curator of herbaceous and alpine collections at the Royal Botanic Gardens, Kew, found an outstanding seedling. It was named ‘Palace Purple’ for Kew Palace.

Its parentage was uncertain then and remains disputed now. It is often described as being derived from *H. micrantha*—a species native to the Pacific Northwest and northern Idaho—but many *Heuchera* ex-

Top: Unassuming *H. americana* is insect and mildew resistant and tolerates cold, heat, and humidity. **Right:** *H.* ‘Plum Pudding’, with silver-netted burgundy foliage, is one of the tempting new heuchera cultivars.





Left: *H.* 'Amber Waves' is in the vanguard of a wave in sherbet colors: lime green, salmon, and raspberry. **Bottom:** *H.* 'Jack Frost' has bright green leaves speckled white.



perts are skeptical that such a hardy cultivar could have sprung from the tender *H. micrantha*. 'Palace Purple', says *Heuchera* breeder Charles Oliver of the Primrose Path Nursery in Scottsdale, Pennsylvania, "is not a selection of *H. micrantha*, as the British would have it, but *H. villosa*, a large species of the Ohio Valley and upper southeastern United States."

Don Jacobs, owner of Eco-Gardens in Decatur, Georgia, agrees, noting that the physical characteristics of *H. micrantha*—near round primary leaves with rounded lobes; dark seeds with short or obsolete spines; and flower bases with flat hairs—differ pronouncedly from those of *H. villosa*, which has pointed lobes, dark red seeds with prominent spines, and flower bases with erect long soft hairs.

According to Jacobs, the late botanist Edgar Wherry collected purple-leaved plants of *H. villosa* about 1960 in Virginia. Wherry subsequently shared seeds from those plants widely through the American Rock Garden Society exchange. "I'm confident that the plant that came back as 'Palace Purple' was derived from material collected by Edgar Wherry," says Jacobs.

FOCUS ON FOLIAGE

Whatever its bloodlines, 'Palace Purple' crossed back over the pond bearing the British stamp of approval. And it opened the eyes of American breeders and gardeners to the potential of little-regarded woodland natives that could vie with hostas. 'Palace Purple' unlocked the gate, and heucheras stormed mainstream gardens.

Here was a lush, low mound of foliage that was bronze on top and clear purple-red below. Its airy sprays of flowers were ornamental enough to edge a perennial border. But its real destiny was as a foliage plant that could cover ground, smother weeds, and add year-around color. Like a hosta, this *Heuchera* cultivar was hardy, wonderfully adaptable, and tolerated a wide spectrum of soil types, moisture, and light conditions. Better than a hosta, it was evergreen—or at least everpurple. In 1991, the Perennial Plant Association (PPA) named 'Palace Purple' Plant of the Year.



Left: *H.* 'Purple Palace' serves as a nicely colored ground cover. Above: 'Eco-Magnifolia' has silver-green leaves with burgundy veining.

'Palace Purple' basked in the limelight while other arguably more-ornamental heucheras were being found and developed to less fanfare. Since the 1970s, a number of nursery people and horticulturists had begun to pay attention to the alumroot.

Jacobs of Eco-Gardens recalls collecting from a diverse native stand of heucheras near Weaverville, North Carolina, in 1978. From that material, he eventually developed *H.* 'Eco-Magnifolia,' a spectacular selection with silver, burgundy, and green markings.

Meredith Clebsch of Native Gardens nursery in Greenback, Tennessee, says she gathered seeds from a silvery patterned *H. americana* selection she named 'Tellico' while botanizing in 1983 or 1984 near the "infamous Tellico Dam...where good natives have managed to survive."

In 1984, Richard Lighty, then director of the Mt. Cuba Center for the

Study of Piedmont Plants in Greenville, Delaware, made a selection from a group of colored-leafed *H. americana* seedlings. It was propagated by tissue culture in 1985, tested under diverse conditions, and, in 1989, named and distributed as 'Garnet' for the jewel-like color of its new leaves.

But it was a fortuitous pit stop along the Blue Ridge Parkway that was to touch off the real breeding frenzy. In 1986, nursery owner Dale Hendricks, en route home from the Cullowhee Conference in western North Carolina, found a nice silver-blue selection. "It had to be *H. americana*," says Hendricks, "but it was way different from the usual stuff."

Hendricks collected seed, sowed it, and was shocked when "zillions" came up. He called it 'Silver Selection' and initially sold it under that name through his wholesale nursery in Landenburg, Penn-

sylvania. "It was Alan Bush, then proprietor of Holbrook Farms Nursery, who called it 'Dale's Strain,'" says Hendricks, "and eventually that name stuck."

Hendricks emphasizes that 'Dale's Strain' is a seed strain rather than a cultivar. Propagated from seed rather than from cuttings or tissue culture, its plants have the family look, but display individual variations. Thus he passes on to nurseries that—in turn—pass on to gardeners, an interesting array of genetic possibilities inherent in the strain.

Soon after 'Dale's Strain' became available, Nancy Goodwin of Montrose Nursery in Hillsborough, North Carolina, planted a specimen near 'Palace Purple' in what she has come to call "the marriage bed." One of the offspring was a seed strain she dubbed 'Montrose Ruby'.

"The hybrids distributed under the name 'Montrose Ruby' were a combination of the best qualities of both parent plants—the dark purple of 'Palace Purple' with the silvery markings of 'Dale's Strain,'" says Goodwin. "They also had a different quality to the leaf surface—almost a velvety quality. It absorbed rather than reflected light."

TAKING THE NEXT STEP

It was at about this time that plant breeder Dan Heims of the wholesale Terra Nova Nurseries in Oregon entered the picture. Already a *Heuchera* aficionado, Heims had introduced 'Snow Storm', a selection of *H. sanguinea* in

HOY-CHUR-UH OR HYEW-KUR-UH?

The name *Heuchera* was given to the genus by naturalist Carolus Linnaeus to honor Johann Heinrich von Heucher, who, like Linnaeus, was both a physician and professor of botany. Heucher was associated first with the University of Wittenberg and, later, with the University of Dresden. He may never have seen the plant named for him, but he lived contemporaneously (1677–1747) with Linnaeus and was noted for assembling the first plant catalog of the Wittenberg Botanic Garden in 1711. Speakers of German pronounce it, more or less, HOY-chur-uh with the "ch" sound just a little less guttural than the "ch" in the Scottish word *loch*. Most American gardeners pronounce it HYEW-kur-uh. —C.O.



Above left: Originally christened 'Silver Selection', this seed strain is most often called 'Dale's Strain'. **Above right:** Finding chance seedling crosses such as this one in Rick Darke's garden is a frequent and delightful experience. Note the variations in leaf color on a single plant.

1988. It attracted attention in this country at the annual PPA conference and, remembers Heims, "it was a huge hit in Europe," where nurseries such as Blooms of Bressingham had been breeding *Heuchera* crosses—mostly for flowers—for decades.

Equipped with the genetic pyrotechnics of 'Dale's Selection' and 'Montrose Ruby', Heims embarked on an intensive breeding program. He had chosen to work with the genus *Heuchera* with prudent forethought: "I asked what genera covered the different zones for hardiness?" says Heims. "What

gives more than a couple of weeks of pleasure? Foliage plants."

His first efforts were for better leaf structure. He used *H. sanguinea* for flower color, *H. micrantha* for the color purple, and a chance sport called 'Ruffles' for ruffled foliage. But the mainstay was to be *H. americana*. "It has incredible shade tolerance, tall flower spikes, evergreen leathery foliage, silvery highlights, mildew resistance, insect resistance, cold and heat and humidity tolerance, and attractive seasonal variability," says Heims. "Because of these attributes, *Heuchera americana* has been the backbone of my breeding program."

Crosses of *H. americana* with other species with ornamental traits yield as many variations as are to be found among hostas—with the added virtue of being evergreen. This makes *H. americana* what Heims calls "a value-added plant"; extra attributes make it even more desirable and marketable. Heims ticks off additional value-added traits of *Heuchera* cultivars: They are good garden plants, have flowers, are great container plants, and are drought tolerant. And, he notes, they can be stunningly attractive even in winter. "We get hoarfrost out here when it's foggy and the temperature drops below freezing," says Heims. Hoarfrost on heuchera leaves, he adds, forms a coating like diamond dust.



Left: *H. 'Montrose Ruby'*, a cross between 'Palace Purple' and 'Dale's Strain'.

Heims' well-organized, vigorous breeding program is helped along by sheer numbers. "It isn't uncommon to do 10,000 crosses, select the three best and throw away 9,997," says Heims. Terra Nova's contributions swell the number of new cultivars that come to market each season.

'Montrose Ruby' and 'Dale's Strain' were also key components of other breeding programs, including that of Charles Oliver at the Primrose Path Nursery. "I started my *Heuchera* breeding in the mid-'80s with crosses between *H. xbrizoides* and *H. pubescens* from seed collected in the shale barrens in Maryland and West Virginia," says Oliver. "My earliest selection, *H.* 'White Marble', I crossed with *H.* 'Montrose Ruby'. This produced some good plants with white flowers and silvered purple leaves, the best of which is *H.* 'Quilter's Joy'."

'Quilter's Joy' and the names of many others—'Raspberry Regal', 'Cathedral Windows', 'Harmonic Convergence'—pay tribute to the remarkable silver-red-purple pattern variations possible. These seem endless and so does the parade of named cultivars.

The end is nowhere near in sight. This year, Terra Nova's newest cultivars will

GROWING HEUCHERAS

Common alumroot (*H. americana*) and its cultivars tolerate a full range of situations from sun to shade in a variety of soils, but for tall plants with lush foliage, plant them in humus-rich, near-neutral soil in a site where they will get some shade during the hottest part of the day.

All heucheras grow best in well-drained soil, but the dwarf and western alpine species require especially sharp drainage and a lighter soil than woodland species.

Most heucheras should be divided every third year in spring by carefully slicing through the crown to yield two or more segments with a healthy crop of roots. If they are planted in rich, organic soil and topdressed annually with compost or organic mulch, they normally don't require supplemental fertilization.

Deer will eat heucheras, but slugs seem to leave them alone. —C.O.

come in "an incredibly new color range—in limes and pumpkin tones," says Heims.

NEW DIRECTIONS

Foliage colors and patterns started the heuchera breeding frenzy. Now that the genes for those traits are safely encoded in the bloodlines, breeders are following other avenues. Species with other qualities—compact form, for example—are coming into the mix. Oliver has crossed two dwarf species from the Rocky Mountains—*H. hallii* and *H. pulchella*—with his 'Quilter's Joy' to produce a series of diminutive plants with good flowers and foliage, in-

cluding *H.* 'Petite Marbled Burgundy' and *H.* 'Petite Pearl Fairy'.

The dramatic, exquisitely-patterned foliage of the new heucheras has some gardeners, as often happens with hostas, cutting off the flowers as soon as they appear. Nevertheless, flowers are coming back into the equation. This was, after all, a genus grown traditionally for the coral bells celebrated in song. In Britain and Europe, flowers never really fell from favor.

Now, the aim in American breeding is to have it all: "I have been trying to produce plants with showy flowers as well as attractive foliage," says Oliver.

REGIONAL DIVERSITY

Beyond outward appearances, a wealth of *Heuchera* species indigenous to different regions around the continent has allowed breeders to capture traits that customize cultivars for those regions. "In the past, ruffled forms have not been very hardy, since this trait is derived from *H. micrantha*, which is not hardy in the northeastern United States," says Oliver. For greater cold tolerance, Oliver sought out *H. pubescens* in the wilds of West Virginia for its "nicely ruffled leaves and extra-large flowers." He expects to introduce extremely hardy ruffled forms in the next couple of years.

Hardiness is also a big consideration for researchers at the Agriculture Canada Morden Research Station in Manitoba, Canada. There, Lynn Colicutt—who has since left the station—used *H. richardsonii*, a prairie native, in breeding "prairie hardy" forms that can tolerate temperatures to -40 degrees Fahrenheit.

In California, the late Dara Emery of



Dainty and drought tolerant, *Heuchera* 'Petite Pearl Fairy' has alpine species in its lineage.



H. 'Canyon Delight', floriferous and drought tolerant, is ideal for western gardens.

the Santa Barbara Botanic Garden produced crosses of drought-tolerant western species. Released in 2002, his "Canyon Quartet" series ('Canyon Chimes', 'Canyon Delight', 'Canyon Melody', and 'Canyon Pink'), is both drought tolerant and floriferous.

"Many of our California taxa have very nice, showy flowers—a trait that is missing from most of the foliage selections to date," says Bart O'Brien, director of horticulture at the Rancho Santa Ana

Botanical Garden in Claremont, California, who collected *H. elegans* 'Bella Blanca', a vigorous albino form, released in 1999. Other releases from Rancho Santa Ana are hybrids derived from crossing *H. sanguinea* and *H. maxima*, including 'Wendy' and 'Santa Ana Cardinal'.

Region-specific forms and an even broader color range make heucheras even more desirable, so it's not surprising that horticultural institutions are paying close attention. Sixty cultivars were tested for six years at the Chicago Botanic Garden (CBG). In that rigorous climate, says Plant Evaluation Manager Richard Hawke, heucheras generally proved to be short-lived. "As the stems of heucheras get woodier, they tend to push themselves out of the ground," says Hawke. "Down the line, of 10 new heucheras, only one will become a garden standard." Four found to be especially long-lived in the trials are: 'Molly Bush', 'Montrose Ruby', 'Palace Purple', and 'Bressingham Bronze'. The published results of the heuchera trials will be available in May 2003. (For a copy of the evaluation, send \$3, payable to the Chicago Botanic Garden, to Richard Hawke, CBG, 1000 Lake Cook Road, Glencoe, IL 60022.)

In a three-year trial that ended in 2001, Britain's Royal Horticultural Society (RHS) evaluated 201 taxa. Fourteen cultivars re-

Sources

Canyon Creek Nursery, Oroville, CA.
(530) 533-2166. www.canyoncreeknursery.com. Catalog \$2.

Heronswood Nursery Ltd., Kingston, WA.
(360) 297-4172.
www.heronswood.com. Catalog \$5.

Munchkin Nursery, Depauw, IN.
(812) 633-4858. www.munchkinnursery.com. Catalog \$3.

Plant Delights Nursery, Raleigh, NC.
(919) 772-4794. www.plantdelights.com. Catalog for 10 postage stamps or a box of chocolates.

The Primrose Path, Scottsdale, PA.
(724) 887-6756. www.theprimrosepath.com. Catalog \$2.

ceived RHS's Award of Garden Merit: Of these, 14 cultivars of *Heuchera* received RHS's Award of Garden Merit (AGM). These include: 'Blackbird', 'Can-Can', 'Chocolate Veil', 'Magic Wand', 'Purple Petticoats', 'Quilter's Joy', 'Raspberry Regal', 'Regina', *H. sanguinea* 'Alba', 'Fireworks', 'Molly Bush', 'Sashay', and 'Smokey Rose'. Alas, 'Palace Purple', the plant that started the fervor in the first place, has fallen out of favor and had its AGM rescinded.

In future, we can expect more winning plants—and not all of them will be in the garden centers. Every spring, in addition to the new crop of colorful introductions at the garden center, gardeners who already have a few heucheras in the garden will discover *Heuchera*'s ultimate value-added trait: It crosses with wild abandon.

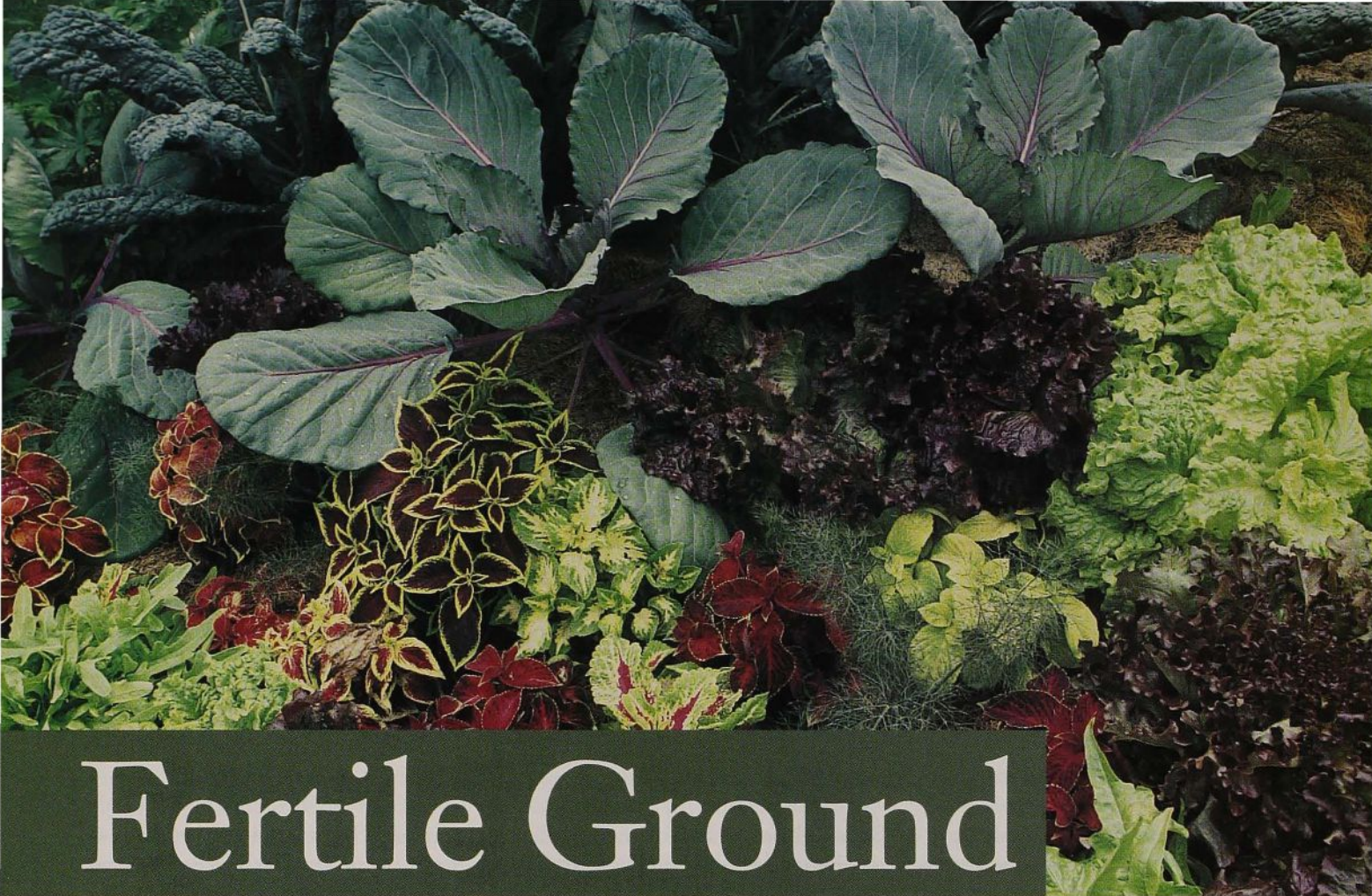
Of the numerous chance seedlings he finds in his Pennsylvania garden, Rick Darke, author of *The American Woodland Garden*, says, "you can't possibly keep track of where they come from. They are so beautiful. And some are equal to or better than the cultivars." When visitors ask the cultivar name of one of the seedlings, Darke is always tempted to answer 'Serendipity'.

Carole Ottesen is an associate editor of The American Gardener.

×HEUCHERELLAS

Another promising area of breeding with heucheras is through an intergeneric cross with foamflowers (*Tiarella* spp.), a closely related genus of woodland plants that offer outstanding flowers and showy foliage. These intergeneric hybrids, dubbed "foamy bells" (×*Heucherella* spp.), are lower growing and more shade-loving than most heucheras, with denser, showier flower clusters. So far, two species (×*H. alba* and ×*H. tiarelloides*) have been developed and some 10 cultivars are available.

—C.O.



Fertile Ground

Taking care of your soil is the first and most important step toward a successful and healthy garden.

BY RITA PELCZAR

A WELL-BALANCED soil is essential for a productive, healthy garden. But obtaining that balance is a lot more complicated than fertilizer manufacturers would have you believe. Tossing out handfuls of granules a couple of times a year or spraying leaves with a liquid fertilizer every two weeks sounds easy, but research is showing that a holistic approach to soil management is the best way to achieve healthy soil and healthy plants.

THE WORLD BENEATH OUR FEET

The subterranean environment is both complex and dynamic. Any change has a ripple effect on its chemical, biological, and physical make-up. Every time we cultivate the soil or add something to it, we alter the balance: The availability of nutrients shifts, the growth of certain soil-borne organisms is favored or discouraged, the structure improves or deteriorates.

The amendments we add to the soil should be aimed at tipping the balance in

the direction of healthy plant growth.

FERTILITY VERSUS FERTILIZER

Sixteen chemical elements have been identified as essential plant nutrients. While carbon (C), hydrogen (H), and oxygen (O) are derived from air and water, the remaining nutrients are generally obtained through the soil. These include the “big three”—nitrogen (N), phosphorus (P), and potassium (K)—commonly called macronutrients because they are needed in the largest quantities by plants. The secondary nutrients—calcium (Ca), magnesium (Mg), and sulfur (S)—are needed in moderate quantities. Trace elements, which though essential are needed only in very minute quantities, include: boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo), and zinc (Zn).

These nutrients exist in a variety of forms, most of which are unavailable for direct absorption by plants. Just as setting

a well-balanced meal before your kids doesn't mean they'll eat it, applying fertilizer to the soil doesn't mean your plants will automatically benefit. The chemical elements in fertilizers often require a transformation by organisms into different, more soluble forms before plants can take them in. During this transformation process, many things can happen to these elements—they may combine with other elements or compounds, becoming chemically bound and temporarily unavailable. They may volatilize and be lost to the atmosphere, be leached below or beyond the root zone (rhizosphere), or be washed into a local watershed.

Soil fertility, therefore, depends not only on the presence of those essential elements, but on the system that converts them into a useable form and retains them until they are needed. In addition to physically supporting plants, soil and the microorganisms that inhabit it function as a reservoir for nutrients. A fertile, well-bal-

Opposite: Healthy soil is critical for a lush, thriving garden.

anced soil stores and cycles elements efficiently so that they become available as needed for plant growth.

THE SOIL FOOD WEB

A productive soil teems with life. According to the U.S. Department of Agriculture's Soil Quality Institute, a single spadeful of rich garden soil contains more species of organisms than can be found above ground in the entire Amazon rain forest. And these critters are busy: feeding on organic matter, releasing nutrients in plant-usable forms, establishing symbiotic relationships with plants, and moving to and fro, all the while churning and stirring the concoction that serves to support our garden plants.

Soil organisms—both macro and micro—consume and store nutrients derived from organic matter in their bodies. When they eventually decay or are eaten by other organisms, these nutrients are released into the soil solution, where they are available for absorption by hungry plants.

A special group of fungi known as mycorrhizae develop a symbiotic relationship with plant roots, acting to dramatically extend the reach of root hairs in the soil. The superfine filaments of fungi increase a plant's efficiency in absorbing nutrients (see "Microbial inoculants," page 51).

Oregon State University soil biologist Elaine Ingham calls the interdependent, subterranean system of living and decaying organisms "the soil food web." Although its make-up varies from one ecosystem to another, Ingham has found that in any system, this web determines how well a soil functions with respect to water flow, nutrient storage and cycling, buffering and degrading potential pollutants, and sustaining productive biological activity.

"Increasing the biomass and species diversity of bacteria and fungi increases the ability of the soil to hold nutrients and retain water," says Ingham. "This means nutrients stay in the soil and do not leach out into surface or ground water."

In a soil that has a healthy, well-balanced food web, Ingham suggests that the organisms perform the functions that support healthy plant growth without need of

A Cure for Over-Fertilized Soil

If you have noticed that your plants are not doing as well as they have in the past, despite repeated applications of fertilizer, the problem could be that salts have accumulated to damaging levels in your soil. High levels of salts in the soil can damage plant roots, as well as kill off and reduce the diversity of beneficial soil organisms.

To reverse the situation, stop fertilizing with synthetic fertilizers and begin working organic matter into the soil to dilute the concentration of salts. Soil biologist Elaine Ingham suggests that you can further "add back the soil life you killed," with the addition of aerobically produced compost or compost tea. Anaerobic compost, which usually has a putrid smell, often contains compounds that are harmful to plants. "Well-made aerobic compost," Ingham says, "contains an enormous number of bacteria and fungi, bacterial and fungal species, good protozoan numbers and species, and some beneficial nematodes." Regular additions of organic matter will feed these beneficial organisms so that they can begin returning the soil to a productive state.

Additionally, compost tea helps control diseases. "Compost tea functions to put the organisms back into soil [that are] better at consuming plant exudates and thus protecting the plant from disease organisms," says Ingham. With such high concentrations, the beneficial organisms simply out-compete the disease-causing organisms for food and may create a physical barrier between disease organisms and the plant.



Compost tea, being brewed here with the help of an aerator, can help restore over-fertilized soils.

—R.P.

additional chemicals. She and fellow researchers have established Soil Foodweb Inc., to provide biological soil testing and guidance for improving the balance and agricultural sustainability of soil.

SUBTERRANEAN HOMESICK BLUES

Since chemical fertilizers became widely available in the last century, they have often



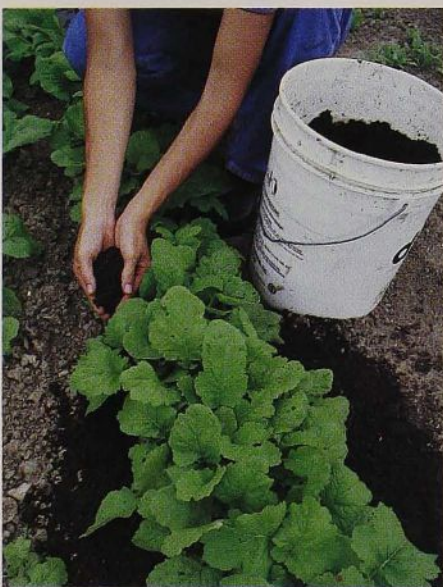
Synthetic fertilizers such as these are a short-term fix for plant health.

been viewed as an easy fix for infertile soil. They are less expensive and easier to handle than bulky loads of manure or compost, and the nutrients they supply can be measured with greater precision. Farmers and home gardeners alike have been advised to supplement their soil's nutrients annually with a complete fertilizer—one that contains the macro elements: nitrogen, phosphorus, and potassium.

Although synthetic fertilizers can boost soil nutrient levels, recent research indicates that repeated or indiscriminate application of these fertilizers can have a negative affect on garden and agricultural soils and the plants that grow on them. "This direct-feeding of high-analysis macro elements is now being widely questioned as being harmful to normal plant-soil-microbial functions," says Don Chapman, president of Bio-Organics,

Inc., a producer of mycorrhizal inoculants. Water pollution is another drawback to such a regime: Excess fertilizers leach into and pollute groundwater and rivers (for more on this, see the article on rain gardens, page 37).

Ingham is also concerned that the widespread use of inorganic fertilizers is having a deleterious effect on soil. “The results aren’t all in yet, but the prognosis isn’t good,” she says. Ingham explains that because inorganic fertilizers are composed of salts, they increase the osmotic concentration in the soil solution. The result, says Ingham, is that “water will be sucked away from any living organism. Some of the bacterial, fungal, protozoan, and nematode species will be pickled.”



Sidedressing plants with compost is a good way to return organic matter to the soil.

The accumulation of salts can also result in plant toxicities and dead zones within the soil (See “A Cure for Over-Fertilized Soil,” page 49.)

Although plants may initially respond well to synthetic fertilizers, too much can lead to lush but weak growth that is prone to insect infestation and disease. According to Chapman, a fully nourished plant, one that is growing in a more natural, biologically rich environment, “has internal defenses which force-fed plants lack. This is why synthetically-fed plants have so many problems and need so much more protecting than naturally-grown plants.”

The situation is exacerbated if pesticides are used that inadvertently decimate

beneficial soil bacteria and fungi, leaving no natural defense against opportunistic disease-causing organisms.

DETERMINING YOUR SOIL'S NEEDS

So how do you know what you need to add to your soil to ensure a healthy balance of nutrients and organisms and to maintain good soil structure? “Traditional soil testing can be very useful in developing a baseline understanding of the soil system you are working with, as well as identifying specific nutrient deficiencies or imbalances,” says soil ecologist Scott Subler. (For more about soil testing, see the SMART-GARDEN™ article on page 14.)

But, Chapman warns, “the idea that you should ‘test’ your soil naturally leads one to think that you must then proceed to ‘fix’ any soil that measures higher or lower than the chemically ideal state. What might have been perfectly healthy soil can be made lifeless and compacted by applications of chemicals,” he says.

If a nutrient deficiency is identified, the amount of fertilizer added to correct it should be carefully considered. “Inorganic fertilizers in small doses don’t shock soil organisms measurably,” so only add small amounts at a time, suggests Ingham. And by adding organic matter at the same time you apply fertilizer, you feed the soil organisms, further reducing their shock.

While helpful as a diagnostic tool, a soil test tells only part of the soil fertility story. It provides a gardener with a reading of the soil degree of acidity or alkalinity (pH) and levels of specific nutrients in the soil at the time of the test. But these levels are constantly changing.

The pH of the soil not only affects the availability of nutrients, it influences the soil biology as well—or vice versa. “I have a funny view of pH,” says long-time gardener and garden writer Jeff Lowenfels, who has been experimenting with compost tea in his own garden. “I believe the biology of the soil creates the chemistry. It is only when the biology is killed off, as it is with salt-based fertilizers, pesticides, tilling, etc., that the chemistry takes over.” Lowenfels, who lives in Anchorage, Alaska, explains that bacteria produce alkaline by-products, while fungal wastes tend to be acidic. In a biologically diverse soil, he says, “there is a lot of buffering that helps negate large swings in the pH.”

AN OVERVIEW:

Organic matter is available in many forms, from barnyard manure to concentrated compost teas. Other amendments that may be useful for certain soil/plant situations are natural, inorganic materials that supply specific nutrients in a mineral form.

The following amendments are some of the most effective and widely available for maintaining a balanced source of nutrients for healthy plant growth. And not all organic matter is certified for use in organic food production—some may contain residues of pesticides or household chemicals.

Compost and manure: A backyard compost pile that encourages aerobic decomposition is an excellent source of organic matter as well as beneficial soil organisms. Barnyard manures must be aged. Uncomposted manure is awkward to apply, can burn plants, and the nitrogen it contains is subject to runoff and volatilization.

Commercially, compost and manure are typically sold in a dried form. Some are blended with other ingredients that may not be approved for certified organic production. Prohibited in all certified organic production is composted sewage sludge, which may contain heavy metals or other contaminants.

Cover crops: A cover crop, also called green manure, regenerates soil. Planted on an annual bed or vegetable garden during the “off” season, or grown between rows of vegetable crops, it replenishes organic matter, prevents erosion that often occurs when soil is left bare, and suppresses weed growth. The root growth of a cover crop gently loosens the soil, promoting aeration.

Leguminous cover crops, such as clover, alfalfa, or vetch develop a symbiotic relationship with nitrogen-fixing bacteria that form root nodules, converting otherwise unavailable nitrogen into a plant usable form.

Compost tea: Although brewing a “tea” out of herbs, seaweed, or compost for fertilizing and protecting plants is nothing new, the practice has recently gained

NATURAL SOIL AMENDMENTS



A selection of natural soil amendments—clockwise from top—blood meal, compost, and kelp.

a great deal of attention and refinement. By extracting microorganisms from aerobically produced compost and boosting their numbers by supplying the substrates they need to grow and multiply, a concentrate is developed that both enriches the soil and suppresses plant diseases. Several companies are now producing such amendments for sale, as well as machines that make the tea (see “Sources”, page 52).

The benefits of compost tea are much the same as compost—nutrients and nutrient sustaining organisms are introduced that help maintain a healthy soil, but the concentrated liquid is easier to apply. “Compost tea is just an easy way to get compost out into the field,” says Ingham.

But not all compost teas are equal. Ingham has assessed the quality of several commercially available compost tea machines, and she warns that not all produce a beneficial brew. “There are machines that make bacterial tea, not compost tea.” In order to obtain the nutrient and disease preventing benefits, “you have to have fungi, protozoa, and nematodes in the tea,” Ingham says. For more information about Ingham’s test results or testing your own

brew, log onto her Web site (see “Resources,” page 52).

Plant and animal by-products: Depending on where you live, a variety of plant or animal by-products may be readily available and relatively inexpensive. But some, though high in quality, are often too costly for other than limited garden use.

Plant by-products such as soybean meal, alfalfa meal, cottonseed meal, which are sometimes used as animal feed, contain a broad range of plant nutrients. Leaf mold can be produced by composting your own leaves or obtained through municipal sources; however, the latter may be contaminated with household chemicals, paint, or trash bags. Some plant by-products like cottonseed meal may contain pesticide residues that prohibit their use on certified organic crops.

Dried blood meal, fish meal, and fish emulsion are good sources of nitrogen. Bone meal contains high levels of phosphorus, largely in an available form.

Earthworm castings: Earthworm castings, or droppings, have long been used by organic growers as a nutrient-rich, biologically active amendment. Worm castings are sold as both solid fertilizers and liquid

“teas.” Systems for composting with worms—called vermiculture—are also available (see “Sources,” page 52).

Seaweed products: Products derived from seaweed are usually sold either as dried, ground materials suitable for spreading on the soil surface, or as a liquid concentrate which can be watered into the soil or sprayed on foliage. Although they are easy to handle and contain a broad range of nutrients, these products are fairly expensive compared to other natural fertilizers, so their use is generally limited to small gardens or high-value crops.

Microbial inoculants: Certain microorganisms are known to benefit plants by developing symbiotic relationships. As noted in the discussion of cover crops, *Rhizobia* bacteria penetrate leguminous plant roots, transforming nitrogen from the soil atmosphere into compounds that the plant can use. Inoculating legume seed with *Rhizobia* can reduce or eliminate the need for fertilizer.

Mycorrhizae are a group of fungi that live in or on plant roots, extending the reach of their roots as they absorb nutrients and water. Because this system is so efficient, mycorrhizae can significantly reduce the need for fertilization.

Most likely, there are many other soil organisms that benefit plants, according to Subler. “The role of mycorrhizae has been well studied, but the activities of innumerable other important species have yet to be identified and detailed.” This assumption underscores the significance of maintaining a biologically diverse soil environment.

Rock and mineral powders: Not all natural amendments are organic. Many are mined or extracted from prehistoric deposits. Colloidal phosphate—clay particles surrounded by natural phosphate, and rock phosphate—usually extracted from ancient marine deposits are good sources of phosphorus. Natural potassium sulfate, granite dust, and greensand are rich in potassium. Secondary and trace elements are available from a variety of rock or mineral powders. —R.P.

For additional information on natural soil amendments, see “Seasonal Garden Goods” on page 53.

Sources

Bio-Organics, La Pine, OR. (888) 332-7676.

www.bio-organics.com.

- Mycorrhizal inoculants

Dirt Works, New Haven, VT. (800) 769-3856.

www.dirtworks.net.

- Kelp meal, seaweed fertilizer, organic fertilizer blends, compost, compost supplies, cover crops, etc.

Dr. Subler's Living Soil, Millheim, PA. (888) 210-8198.

www.livingsoil.com.

- Earthworm castings and other worm composting products

Foley Farms, Coarsegold, CA.

www.sierratel.com/foleys/index.html.

- Worms, vermiculture information and supplies

Home Harvest® Garden Supply, Inc., Baltimore, MD.

(800) 348-4769. <http://homeharvest.com>.

- Organic soil amendments, compost supplies, etc.

SoilSoup, Inc., Edmonds, WA 98020.

(877) 771-7687. www.soilsoup.com.

- Compost tea brewing systems and supplies

Resources

The Rodale Institute, Kutztown, PA. (610) 683-1400.

www.rodaleinst.org.

Soil Foodweb, Inc., Corvallis, OR. (541) 752-5066.

www.soilfoodweb.com.

The Soil Management Series, University of Minnesota Extension Service Distribution Center, St. Paul, MN.

(800) 876-8636. www.extension.umn.edu/distribution/cropsystems/DC7398.html.

Sustainable Soil Management-Soil System Guide,

Appropriate Technology Transfer for Rural Areas (ATTRA), Fayetteville, AR. (800) 346-9140.

<http://attra.ncat.org/attra-pub/soilmgt.html>.

From the Soil Up by Donald L. Schriefer. Acres U.S.A., Austin, Texas, 2000.

Soil and Composting by Nancy J. Ondra. Houghton Mifflin, Boston, Massachusetts, 1998.

The Soul of Soil, 3rd edition, by Grace Gershuny and Joseph Smillie. agAccess, Davis, California, 1995.

Tests are now available that assess the organic matter and microbial activity of a soil. Scott Subler suggests that these biological tests “may give a better overall indication of soil health and may also suggest management activities to improve plant health and growth.”

“Ultimately, the best test for your soil,” says Subler, “is how well your plants grow.”

FEED OFTEN—STIR INFREQUENTLY

Unless severe conditions exist that seriously limit plant growth, such as salinity, poor drainage, or an extremely shallow soil, the most important practices for improving and maintaining a fertile garden soil are the regular addition of organic matter and the reduction of tillage. “These two practices will help supply nutrients, create a good rooting environment, support healthy soil biota, and enhance water infiltration and water-holding capacity,” says Ann Lewandowski of the USDA’s Natural Resources Conservation Service Soil Quality Institute in St. Paul, Minnesota.

Although tilling the soil occasionally may be necessary for preparing planting



Tilling the soil can damage its structure, so do it only when you prepare new beds.

beds, overtilling can lead to habitat disruption for soil organisms, a breakdown of soil structure that results in compaction, and an increase in the rate of decomposition and loss of organic matter. Furthermore, removing plant debris from the soil surface leaves soil susceptible to erosion.

PUTTING NUTRITION IN PERSPECTIVE

What makes a soil system work is balance. To make the most of the nutrients in your soil, its physical structure, biological

make-up, and chemical traits need to be conducive to plant growth. Poor drainage that results in waterlogged conditions, inadequate rainfall or irrigation, excessive soil compaction, a soil void of organisms, or a pH that is extremely high or low will override the benefits of added nutrients.

Critical to the balance is a diverse population of organisms. “The diversity—the number of different types—of the soil organisms determines the types of biological functions the soil can provide, including regulating nutrient availability, disease suppression, etc.,” Subler explains.

Thus, to obtain a fertile soil—one that sustains healthy plant growth—a gardener should consider using management practices and soil amendments that will foster development of a rich, diverse community of organisms. “Although many good gardeners have, in fact, been doing just that for years,” says Subler, “the scientific reasoning behind this practice is just now taking root.”

Rita Pelczar is an associate editor of The American Gardener.

SEASONAL GARDEN GOODS

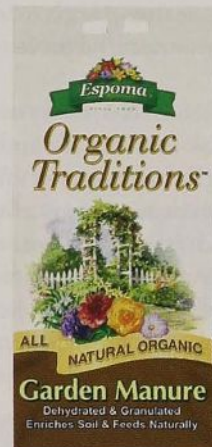
Good soil is the foundation for great gardens, and it's easier than ever to promote soil health without using synthetic fertilizers. Here are some organic soil amendments and additives worth trying.



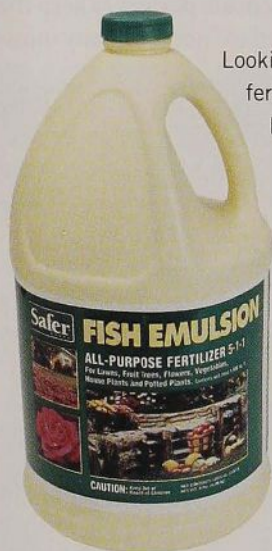
Made of composted crab shells and wood chips, **Chesapeake Blue Organic Soil Enhancer** is an odorless, weedfree amendment that improves soil structure and moisture retention, and provides nutrients. A 20-pound bag sells for \$7.95 from Home Harvest. (800) 348-4769. www.homeharvest.com.



Mycorrhizal fungi form a beneficial relationship with plant roots, helping improve their intake of nutrients and water, as well as protecting the plants from many fungal diseases. **Plant Success** mycorrhizal fungi spores from Plant Revolution, Inc., makes it easy to give plants a boost. A pound of granules retails for \$15.95; 40 tablets for \$9.95; 4 ounces of root dipping gel for \$14.95. Worm's Way. (800) 274-9676. www.wormsway.com.



Espoma's **Organic Traditions** line of products includes everything from bone meal and cow manure to green sand and kelp meal. They are sold in many retail garden stores on the East Coast, often starting at 5 pounds for under \$7. Contact Espoma at (888) 377-6621 to locate a store near you, or visit www.espoma.com. One mail-order source is Home Harvest. (800) 348-4769. www.homeharvest.com.



Looking for an organic slow-release fertilizer? **Safer Fish Emulsion All-Purpose Fertilizer** is made from fish solubles in a 5-1-1 formulation that makes it suitable for use on all plants and on lawns. A gallon of concentrate sells for \$9.99. Woodstream Corporation. (800) 800-1819. www.victorpest.com.



Earthworm castings—the excrement of earthworms—contain microorganisms and enzymes that enhance soil health and plant growth. Organic and odorless, **Dr. Subler's Living Soil Earthworm Castings** can be used dry or as a liquid fertilizer. An 8-ounce pouch of dry castings retails for \$4.95; an 8-ounce bottle of liquid for \$5.95. Other sizes are available. Pacific Garden Company. (888) 210-8198. www.livingsoil.com.

Products profiled are chosen based on qualities such as innovative design, horticultural utility, and environmental responsibility; they have not been tested by the American Horticultural Society. Send new product information to New Products, *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308, or e-mail to editor@ahs.org.

Recommendations for Your Gardening Library

Grounds for Pleasure:

Four Centuries of the American Garden.

Denise Otis. Harry N. Abrams, Inc, New York, 2002. 352 pages. Publisher's price, hardcover: \$75.

WEIGHING IN at over five pounds, Denise Otis's gorgeous book is all muscle and no flab. Fifteen years in the making by the former editor of *House & Garden*, this highly readable work is an extraordinary chronicle of the private garden in America from its earliest roots to the end of the 20th century.

And what a lot of information is packed in here. Musings about likely influences on the European settlers include asides on such subjects as the native Indians' possible use of sunflowers "decoratively." And there are portfolios of outstanding modern gardens, not the least of which is a breathtaking Santa Barbara hillside garden by Isabelle C. Greene, inspired by terraced agricultural fields.

Illustrated with archival line drawings as well as black-and-white and color photographs, this book is a thoughtful and loving study by a knowledgeable garden writer. The conversational text provides a wealth of information on American landscapes as varied as the grandly "naturalistic" 19th-century Hunnewell estate, with its astonishing mix of Italian and French influences, and a Lilliputian New York City backyard of the same period, designed to feature subtropical plants.

The names of some who influenced their countrymen will be familiar—Charles Platt, Ellen Shipman, and Frank Scott, among them. But a fair majority of the characters may be new to most, as the scope of the author's knowledge and personal interest is nothing less than astonishing. Nowhere is this more evident than in the center section where the material included is aptly described in part of the subtitle: "...some digressions on the (garden) customs or conditions that influenced them." And delightful digressions these are, ranging from subjects as diverse as the Picturesque Style in Brooklyn as promoted by a local nurseryman, to the peculiarly American passion for foundation planting.

It is a shame the phrase "exhaustively researched" has become such a cliché, as I can think of no more succinct way to describe Denise Otis's remarkable magnum opus.

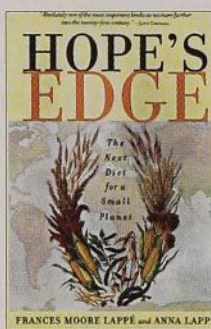
—Linda Yang

Linda Yang, a former garden writer for The New York Times, is author of The City Gardener's Handbook (Storey, 2002).

Hope's Edge: The Next Diet for a Small Planet.

Frances Moore Lappé and Anna Lappé. Tarcher/Putnam Publishing, New York, 2002. 448 pages. Publisher's price, hardcover: \$26.95.

IF YOU THINK gardening is just about finding joy and solace in working with the earth or making our world more beautiful, think again. Gardening is also political—whether through the creation of edible gardens at schools in San Francisco, seed-saving efforts in India, planting trees in Nigeria, or reclaiming land for growing in Brazil. *Hope's Edge* shows by these and other examples that the links between what we grow and eat, our health, and our economy extend to the root and soul of our societies.



Expect to have your perceptions rattled as you travel around the world with Lappé and her daughter on a broad and deep personal journey. We embark with their multitude of questions and doubts about solving the problem of world hunger. We return with no pat answers, but with hope and conviction that the way we grow

plants and feed our communities can be transformative.

In Bangladesh, founders of the Grameen bank are proving that a different model for lending money can transform despair and poverty into abundance. Not only is the bank owned by its borrowers—poor village women—but these women also require 16 borrower "pledges" that are slowly bringing about social change in the treatment of women. Among them are pledges to keep the family small, educate their children, and to "not inflict any injustice on anyone nor to allow anyone to do so."

In India, a former nuclear physicist is helping villages climb out of deep debt from costly chemicals by saving seeds and returning to organic farming. In Europe we meet farmers who are shifting their emphasis from productivity to quality and recognizing a farm's multiple roles in a community: providing healthful food, protecting the environment, and providing jobs.

Back home, we learn about a new breed of America's family farms that are community-supported, and meet old timers seeking to improve their health by trading chemicals and feed lots for organics and intensive, rotational pasture grazing.

At its core, *Hope's Edge* is about facing our fears and discovering we do have the courage and know-how to make a difference. A must-read for those interested in sustainability, it will challenge and inspire gardeners everywhere.

—Tanya Denckla

Tanya Denckla is author of the forthcoming revised 2nd edition of The Organic Gardener's Home Reference (Storey).

The Genus Epimedium.

William T. Stearn. Timber Press, Portland, Oregon, 2002. 342 pages. Publisher's price, hardcover: \$49.95.

A PERFECTIONIST to the very end, legendary English botanist William T. Stearn finished work on a revised and much enlarged version of his 1938 monograph, *The Genus Epimedium*, shortly before his death in 2001. In this remarkably scholarly work, Stearn organizes and describes the species and many cultivars and sorts out the "dire tangle" of names. Gardeners shouldn't be put off by this scholarly approach, but rather revel in "those delightful things" that so captivated Stearn.

Commonly known as barrenworts, epimediums are garden workhorses. There is enough diversity in the genus to appeal to all levels of gardeners, from the novice to the sophisticated. As Stearn describes, there are evergreen varieties like *Epimedium xperalchicum* and *E. xwarleyense* to mask bare woodlands. Deciduous species such as *E. alpinum* and *E. xversicolor* 'Versicolor' effectively clothe the mulched soil of shrub borders. There are vigorous spreaders like *E. pinnatum* subsp. *colchicum* that sport abundant yellow flowers when grown in any good garden soil. *E.*

grandiflorum and *E. acuminatum* are perfect for shady rock crevices, since they grow slowly, forming tidy clumps.

The book is an excellent mix of history, geography, gardening tips, and science. Concise, clear taxonomic descriptions and information on geographical distribution are complemented by glorious paintings, line drawings, and color photographs. The key to the genus is excellent, and was sorely needed. The number of named cultivars and selections included—many recently discovered—is outstanding.

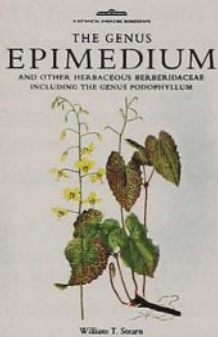
Stearn applies the same taxonomic treatment for other herbaceous members of Berberidaceae, including *Vancouveria*, *Caulophyllum*, *Diphylleia*, and *Jeffersonia*. A final bonus in the book is the inclusion of Julian Shaw's thorough discussion of the genus *Podophyllum*.

If you weren't an epimedium enthusiast before discovering this book, I am sure you will be won over after perusing its pages. I have been growing epimediums for over two decades—they cover dark shady corners, creep under woody shrubs and conifers, colonize dappled shade, and occasionally stray into sunnier spots. Now I want to grow more species, hybrids, and selections, and I am delighted to have this book in my gardening library as a tool and a top-notch reference.

Plant and grow epimediums. Be barren no more!

—Yvonne England

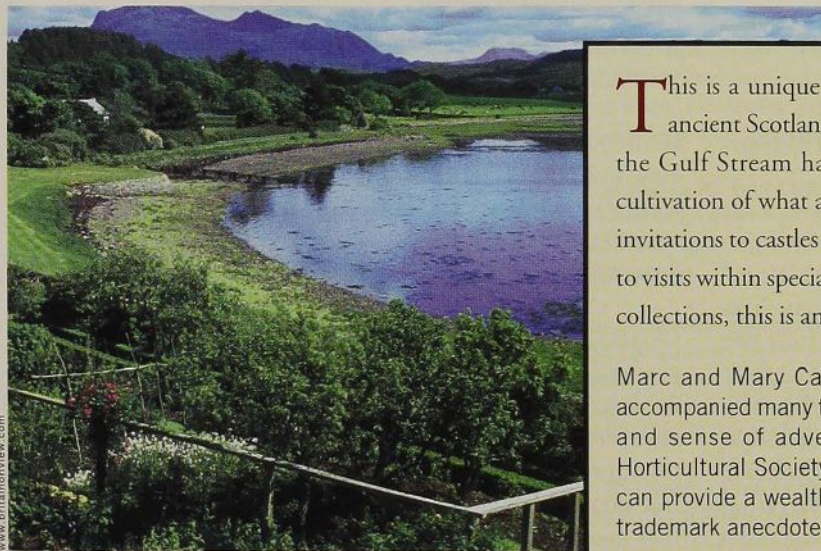
Garden writer Yvonne England lives and gardens in Honey Brook, Pennsylvania.



2003 American Horticultural Society TRAVEL STUDY PROGRAM

Great Gardens of Scotland and the Hebrides

July 26–August 7, 2003



This is a unique opportunity to experience the incredible gardens of ancient Scotland and the Hebrides Islands. The benevolent currents of the Gulf Stream have provided an ideal microclimate that allows the cultivation of what are perhaps the finest European gardens. From private invitations to castles and historic residences on this moor-strewn landscape to visits within special gardens unparalleled in their beauty and horticultural collections, this is an AHS Travel Study program not to be missed!

Marc and Mary Cathey will be hosting this tour. The Catheys have accompanied many travelers in the past and are well known for their charm and sense of adventure. As President Emeritus of the American Horticultural Society and national garden radio icon, Dr. H. Marc Cathey can provide a wealth of in-depth horticultural information along with his trademark anecdotes.

For complete details of the exciting 2003 schedule, visit the AHS Web site at www.ahs.org, or call the Leonard Haertter Travel Company at (800) 942-6666.

No member dues are used to support the Travel Study Program.

Noteworthy New Titles

There are many more new books on the market than we have time or space to review, but here are a few that recently caught our eye. Through a partnership with amazon.com, AHS members can order these and other books at a discount by linking to amazon.com through the Society's Web site at www.ahs.org.

Architecture in the Garden.

James van Sweden, foreword by Penelope Hobhouse. Random House, New York, New York, 2002. 272 pages. Publisher's price, hardcover: \$39.95.

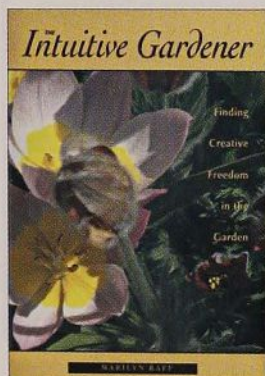
IN HIS NEW BOOK, award-winning landscape architect James van Sweden reveals both the logic and the inspiration behind developing a harmonious landscape that weds house to garden. He provides readers with a process that they can apply to their own landscape, using architectural elements as the backbone of a design that suits both the homeowners' needs and makes the most of their site.

Van Sweden discusses the elements of garden architecture—paths, walls, gates, fences, terraces, sheds, lighting, furniture, waterworks, and art. To illustrate his approach, he describes several case studies that include both large and small landscapes in a variety of climates and styles. Stunning color photographs by Richard Felber enhance van Sweden's discussions; schematic drawings by Ching-Fang Chen provide useful details.

The Intuitive Gardener:

Finding Creative Freedom in the Garden.

Marilyn Raff. Fulcrum Publishing, Golden, Colorado, 2002. 184 pages. Publisher's price, softcover: \$24.95.



"TWO FORCES propel me to garden: imagination and intuition," states Marilyn Raff in the first chapter of her new book about how you approach gardening. Drawing from her experience developing her own suburban landscape in Littleton, Colorado, she encourages readers to trust their own intuition, rather than limit themselves to the rules and opinions of experts. She suggests that gardeners unleash their

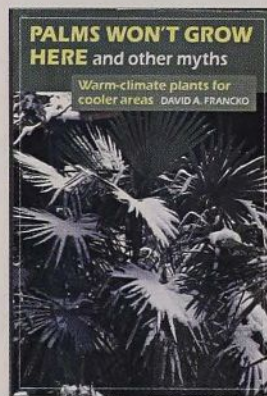
imagination and creativity and follow their internal feelings about what is right for their gardens.

Chapters include discussions about sun-loving plants, plants for the shade, roses, and grasses. In her final chapter, "The Richness of Color and Form," Raff focuses on appreciating and making the most of seasonal changes in the garden.

Palms Won't Grow Here and Other Myths.

David A. Francko. Timber Press, Portland, Oregon, 2003. 267 pages. Publisher's price, hardcover: \$27.95.

ADVENTUROUS GARDENERS will welcome this book by botany professor David A. Francko. Asserting that warm-climate plants can be grown in areas



subject to chilling winters, Francko provides suggestions on how gardeners can successfully push the envelope of plant hardiness. His discussions about the science behind cold hardiness, microclimates, site selection, and plant protection offer a logical approach based on understanding and accommodating plant needs. With humorous asides and practical tips, Francko challenges cool-temperature gardeners to consider growing exotic, tropical plants that they have previously considered too tender for their climate.

Gardening with Prairie Plants:

How to Create Beautiful Native Landscapes.

Sally Wasowski, photographs by Andy Wasowski. University of Minnesota Press, Minneapolis, Minnesota, 2002. 304 pages. Publisher's price, softcover: \$29.95.

LANDSCAPE DESIGNER Sally Wasowski offers practical advice and detailed directions for anyone interested in prairie gardening. Plans for both small and large landscapes are discussed, as is criteria for selecting and installing plants. Detailed listings for more than 300 species provide the gardener interested in native plants with ample choices and the cultural information they need to grow them successfully. The 241 color photographs by Andy Wasowski illustrate the effective use of prairie native in landscape design.



REGIONAL HAPPENINGS

Horticultural Events from Around the Country

NORTHEAST

CT, MA, ME, NH, NY, RI, VT

MAR. 15–23. **132nd New England Spring Flower Show.** Massachusetts Horticultural Society. Bayside Expo Center. Boston, Massachusetts. (617) 933-4983. www.masshort.org.

MAR. 26. **Nature Meets Zone Denial.** Lecture by C. Colston Burrell. Wave Hill. Bronx, New York. (718) 549-3200. www.wavehill.org.

MAR. 27–30. **The 16th Annual Capital District Garden and Flower Show.** Hudson Valley Community College. Troy, New York. (518) 786-1529. www.gardenandflowershow.com.

MAR. 29 & 30. **Plant Society Expo.** Brooklyn Botanic Garden. Brooklyn, New York. (718) 623-7210. www.bbq.org.

APR. 10. **From the Ground Up.** First of The Perennial Gardener Series. Berkshire Botanical Garden. Stockbridge, Massachusetts. (413) 298-3926. www.berkshirebotanical.org.

APR. 10–13. **New York International Orchid Show.** Greater New York Orchid Society and Rockefeller Center. Rockefeller Center. New York, New York. (201) 767-0621. www.gnyos.com.

APR. 19–21. **Hofstra Arboretum Flower and Garden Show.** Hempstead, New York. (516) 463-6815. www.hofstra.edu/mi/events_m.

APR. 26. **Earth Day Celebration—Garden in the Woods.** Tour. New England Wild Flower Society. Framingham, Massachusetts. (508) 877-7630. www.newfs.org.

MAY 7–10. **Spring Herb Sale at the Historic Lyman Estate Greenhouse.** Lyman Estate, The Vale. Waltham, Massachusetts. (781) 891-1985. www.spnea.org.

MAY 10. **23rd Annual Herb Plant Sale.** New England Unit of the Herb Society of America. Massachusetts Horticultural Society Elm Bank. Wellesley, Massachusetts. (617) 484-4841. www.neuhsa.homestead.com.

MAY 17. **Trade Secrets: A Rare Plant and Garden Antiques Sale.** To benefit Women's Support Services. The Wake Robin Inn. Lakeville, Connecticut. (860) 365-1080.

Events sponsored by or including official participation by AHS or AHS staff are identified with the **AHS** symbol.

MID-ATLANTIC

PA, NJ, VA, MD, DE, WV, DC

JAN. 18—MAY 26. **Nature's Jewels: A Living Exhibit of Orchids and Butterflies.** Smithsonian's Arts and Industries Building. Washington, D.C. (202) 357-2700. www.smithsonian.org.

MAR. 20. **Challenges of Urban Woodland Restoration.** Olmsted Woods walks and bird walks at Washington National Cathedral. All Hallows Guild. Washington, D.C. (202) 537-2319 or (202) 298-8109.

MAR. 22. **Morning in the Mountains.** A walk. The Wintergreen Nature Foundation. Nellysford, Virginia. (434) 325-7451. www.twnf.org.

MAR. 22–APR. 20. **Spring Flower Show 2003.** Phipps Conservatory and Botanical Gardens. Pittsburgh, Pennsylvania. (412) 622-6914. www.phipps.conservatory.org.

MAR. 29. **Native Plants: The Future of Earth's Garden.** Symposium. U.S. National Arboretum. Washington, D.C. (202) 245-5898. www.usna.usda.gov.

AHS MAR. 29–APR. 5. **Washington Blooms!** Spring celebration with garden tours, demonstrations, and more. American Horticultural Society. River Farm, Alexandria, Virginia. (703) 768-5700 ext. 117. www.ahs.org.

APR. 5. **Choice Plants for Your Cutting Garden in Sun or Shade.** Green Spring Gardens Park. Alexandria, Virginia. (703) 642-8095. www.greenspring.org.

AHS APR. 6–8. **Colonial Williamsburg's 57th Garden Symposium.** Colonial Williamsburg Institute. Colonial Williamsburg. Williamsburg, Virginia. (757) 220-7286. www.colonialwilliamsburg.org.

APR. 9 & 10. **The Garden Club of Virginia's 69th Annual Daffodil Show.** Leesburg Garden Club. Carradoc Hall/Holiday Inn. Leesburg, Virginia. (703) 777-8885.

APR. 12–25. **Easter Display.** Longwood Gardens. Kennett Square, Pennsylvania. (610) 388-1000. www.longwoodgardens.org.

APR. 20–27. **70th Annual Historic Garden Week in Virginia.** The Garden Club of Virginia. (804) 644-7776. www.vagardenweek.org.

APR. 24. **Historic Plants at Monticello.** Lecture. Monticello. Charlottesville, Virginia. (434) 984-9828. www.monticello.org.

AHS APR. 24–26. **AHS Spring Plant Sale.** April 24 is FOR MEMBERS ONLY and runs from 5 p.m. until 8 p.m. Open to the general public April 25 and 26 from 9 a.m. to 3 p.m. River Farm, Alexandria, Virginia. (703) 768-5700. www.ahs.org.

APR. 26. **58th Annual Eastern Shore of Virginia Historic Garden Tour.** The Garden Club of Virginia. Eastern Shore, Virginia. (757) 442-2121. www.esgardentour.com.

APR. 26. **The Ashland Garden Club Historic Garden Week Tour.** The Ashland Garden Club. New Kent County, Virginia. (804) 883-6573. www.VAGardenweek.org.

Earth Day: April 22

FOUNDED BY Gaylord Nelson in 1970, Earth Day is based on the simple philosophy that “ordinary people, acting together, can achieve extraordinary things to improve the environment.” The grassroots effort of community groups is the driving force behind the philosophy.

Earth Day and the Earth Day Network are composed of “an alliance of 5,000 groups, representing 184 countries, working to promote a healthy environment and a peaceful, just, sustainable world.”

Some Earth Day-related events are included on these pages. For more information on how you or your community group can take part in this annual event, log onto www.earthday.com or www.earthday.net.

—Eva Monheim, Editorial Intern

APR. 26 & 27. **The 48th Annual Shenandoah-Potomac Garden Council of Historic Berkeley & Jefferson Counties House and Garden Tour.** Martinsburg, Charles Town, Harpers Ferry, and Shepherdstown, West Virginia. (800) 498-2386. www.travelwv.com.

MAY 10 & 11. **Annual Wildflower, Native Plant and Seed Sale.** Brandywine River Museum. Chadds Ford, Pennsylvania. (610) 388-8327. www.brandywinemuseum.org.

MAY 14 & 15. **Elements of Design in the Residential Landscape.** Lewis Ginter Botanical Garden. Richmond, Virginia. (804) 262-9887 ext. 316. www.lewisginter.org.

SOUTHEAST

AL, FL, GA, KY, NC, SC, TN

MAR. 20-23. **10th Festival of Flowers: Through the Garden Gate.** Providence Hospital Foundation. Spring Hill College Campus Mobile, Alabama. (877) 777-0529. www.festivalofflowers.com.

MAR. 21-23. **Beyond the Garden Gate: Antiques & Garden Show.** To Benefit Brenner Children's Hospital. Benton Convention Center. Winston-Salem, North Carolina. (212) 255-0020. www.stellashows.com.

MAR. 25. **Revival of the Front-Yard Garden.** Class. Atlanta Botanical Garden. Atlanta, Georgia. (404) 876-5859. www.atlantabotanicalgarden.org.

MAR. 27. **13th Annual Gardening Symposium: The Art of Gardening.** Sponsored by South Carolina Midlands Master Gardeners Association and Riverbanks Botanical Garden. Columbia, South Carolina. (803) 781-3567.

APR. 2. **Home Remedies for Orchid Ailments.** International Orchid Center. American Orchid Society. Delray Beach, Florida. (561) 404-2000.

APR. 4 & 5. **Savannah Garden Exposition.** Roundhouse Railroad Museum. Savannah, Georgia. (912) 236-8097. www.savannahgardenexpo.com.

APR. 5. **The Beauty of Summer Bulbs.** Lecture. Daniel Stowe Botanical Garden. Belmont, North Carolina. (704) 825-4490. www.dsb.org.

APR. 5-MAY 4. **Festival of Flowers.** Biltmore Estate. Asheville, North Carolina. (828) 255-1776. www.biltmore.com.

APR. 11-13. **23rd Annual Sarasota Bromeliad Show and Sale.** Sarasota Bromeliad Society. Selby Botanic Gardens. Sarasota, Florida. (941) 358-4953. www.selby.org.

APR. 12 & 13. **Spring Plant Sale.** Huntsville

Trillium Heaven in Virginia

A MILLION trilliums may sound like an exaggeration, but that's what you actually will see if you make the trip to the little town of Linden, Virginia, in early May. In this spectacular botanical area, at an elevation of just under 2,000 feet, you don't even have to get out of your car to see great white trillium (*T. grandiflorum*) coming up in people's front lawns and crowding the banked sides of county road 638.

But if you do park the car and walk along the Tri-Co Tower Trail in the G. Richard Thompson Wildlife Management Area (WMA), you'll be rewarded with trilliums so numerous that in places it is hard not to step on them. In pure white, aging from pale pink to cerise, trilliums dot the forest floor as far as the eye can see. Here and there among them there are also great colonies of mayapple (*Podophyllum peltatum*), unfolding in shiny green patches. Wild geranium (*Geranium maculatum*), yellow corydalis (*Corydalis flavula*), and wild ginger (*Asarum canadense*) are some of the hundreds of other wildlings that inhabit this botanically rich parkland.

To reach the Thompson WMA, take Interstate Route 66 to exit 13. Head south for a quarter mile, then turn left on Virginia Route 55 for one-and-a-half miles to Linden. In Linden, turn left on County Road 638 and then bear right toward Blue Mountain Estates. Continue for four miles to parking lot #6 on the right. Bring your camera, but stay on the path and leave your trowel at home. "We don't want people rustling the flowers," says Julia Dixon Smith, media relations coordinator for Virginia Department of Game and Inland Fisheries (VDGIF), "the expectation is that people leave the area just as they find it."

More information about the Thompson WMA is available through the VDGIF Web site at www.dgif.state.va.us/hunting/wma/index.html

—Carole Ottesen, Associate Editor



Botanical Garden. Huntsville, Alabama. (256) 830-4447. www.hsvbg.org.

APR. 15. **Tuesdays in the Tropics Fedder Science Lecture Series:** Sharon Matola. Marie Selby Botanical Gardens. Sarasota, Florida. (941) 366-5731. www.selby.org.

APR. 18-21. **Foxhall Flower Show.** Foxhall Farm. Douglasville, Georgia. (404) 572-7255. www.foxhallflowershow.com.

APR. 24. **Legends In The Garden: Who in the World Is Nellie Stevens?** Lecture by Allan Armitage. Georgia Perimeter College Native Plant Garden. Decatur, Georgia. (404) 244-5001. www.gpc.peachnet.edu/~ddonald/botgard/george3.htm.

AHS APR. 25-JUNE 8. **10th Epcot International Flower and Garden Festival.** Walt Disney World, Orlando, Florida. www.wdwlplanner.com/flowergarden.htm.

APR. 26 & 27. **17th Annual Green Thumb Festival.** Walter Fuller Park. St. Petersburg, Florida. (727) 893-7335.

MAY 17. **Garden Open Day.** Self-guided garden tour and plant sale at Montrose. Hillsborough, North Carolina. (919) 732-7787.

NORTH CENTRAL

IA, IL, IN, MI, MN, ND, NE, OH, SD, WI

MAR. 1-APR. 30. **Foremost's Butterflies Are Blooming.** Frederik Meijer Gardens & Sculpture Park, Grand Rapids, Michigan. (616) 957-1580. www.meijergardens.org.

MAR. 22. **Basic Pruning.** Demonstration. Indianapolis Museum of Art. Indianapolis, Indiana. (317) 920-2648. www.ima-art.org.

MAR. 22. **The Holden Arboretum Maple Sugaring Festival.** Holden Arboretum. Kirtland, Ohio. (440) 946-4400. www.holdenarb.org.

MAR. 22. **What's Hot! Current Trends in Trees and Shrubs.** Class. Klehm Arboretum and Botanic Garden. Rockford, Illinois. (815) 965-8146. www.klehm.org.

APR. 5–MAY 30. **Light Gaps.** Exhibit on light and its fluctuation in the forest. Olbrich Botanical Gardens. Madison, Wisconsin. (608) 246-4550. www.olbrich.org.

APR. 11–13. **Antiques & Garden Fair.** Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

APR. 12–MAY 18. **Zoo Blooms.** Spring floral display. Cincinnati Zoo & Botanical Garden. Cincinnati, Ohio. (513) 281-4700. www.cincinnati-zoo.org.

MAY 1. **Creative Container Gardens.** Workshop. Olbrich Botanical Gardens, Madison, Wisconsin. (608) 246-4716. www.olbrich.org.

MAY 1. **Rain Gardens.** Lecture by Fred Rozumalski, Minnesota Valley National Wildlife Refuge, Bloomington, Minnesota. www.stolaf.edu/depts/biology/mnps/

MAY 2–4. **14th Annual Orchard in Bloom Garden Show.** The Orchard School. Holliday Park. Indianapolis, Indiana. (317) 713-5765. www.orchard.org.

MAY 3–10. **74th Annual Tulpen-Fest.** Tulip Time Festival, Inc. Holland, Michigan. (800) 822-2770. www.tuliptime.org.

SOUTH CENTRAL

AR, KS, LA, MO, MS, OK, TX

MAR. 15–APR. 20. **Dallas Blooms 2003.** Dallas Arboretum. Dallas, Texas. (214) 327-4901. www.dallasarboretum.org.

MAR. 17–APR. 8. **Remains of a Rainbow.** Photo exhibit of rare Hawaiian plants and animals. Missouri Botanical Garden. St. Louis, Missouri. (800) 642-8842. www.mobot.org.

MAR. 21–23. **32nd Annual Audubon Pilgrimage.** House and garden tour. West Feliciana Historical Society. West Feliciana, Louisiana. (225) 635-6330. www.audubonpilgrimage.info.

APR. 1 & 2. **Florescence: Voyages, Garden Club of America Major Flower Show.** The Museum of Fine Arts–Houston. Houston, Texas. (713) 639-7300. www.mfah.org.

APR. 4–6. **Better Living Flower & Outdoor Show.** Dallas Convention Center. Dallas, Texas. (214) 977-7369. www.wfaa.com/betterliving.

APR. 5 & 6. **Violets Show Their Colors.** Metropolitan St. Louis African Violet Council's

48th Annual Show. Missouri Botanical Garden. St. Louis, Missouri. (800) 642-8842. www.mobot.org.

APR. 5 & 6. **Viva Botanica. Garden Festival.** San Antonio Botanical Garden, San Antonio, Texas. (210) 829-5100. www.sabot.org.

APR. 11 & 12. **Spring Fiesta 2003.** Birmingham Botanical Gardens. Birmingham, Alabama. (205) 414-3950. www.bbgardens.org.

APR. 11–21. **Tulip Time.** The Binkley Gardens. Topeka, Kansas. (785) 478-4624. (800) 235-1030.

APR. 12 & 13. **Spring Garden Show.** New Orleans Botanical Garden. At City Park. New Orleans, Louisiana. (504) 483-9386. www.neworleanscitypark.com/garden.

APR. 22 & 23. **13th Annual Garden Symposium.** Biedenbarn Museum & Gardens. Monroe, Louisiana. (800) 362-0983. www.bmuseum.org.

APR. 25–27. **Spring Herb Festival.** Fredericksburg Herb Farm, Fredericksburg, Texas. (830) 997-8615. www.fredericksburgherbfarm.com.

APR. 26. **Container Garden Workshop.** Botanica, The Wichita Gardens. Wichita, Kansas. (316) 264-0448. www.botanica.org.

MAY 17–19. **FloraKansas.** Plant sale, demonstrations, and tours. Dyck Arboretum of the Plains, Hesston, Kansas. (620) 327-8127. www.dyckarboretum.org.

NORTHWEST

AK, ID, MT, OR, WA, WY

MAR. 25. **Phacelias of the Pacific Northwest.** University of Montana. Montana Native Plant Society–Clark Fork Chapter. Missoula, Montana. (406) 728-8740. www.umt.edu/mnps/.

APR. 6. **Spring Plant Sale.** The Berry Botanic Garden, Portland, Oregon. (503) 636-4112. www.berrybot.org.

APR. 10–13. **14th Annual Puyallup Spring Fair.** Western Washington Fair Association. Puyallup Fairgrounds. Puyallup, Washington. (253) 841-5045. www.thefair.com.

APR. 16. **Northern Continental Divide Ecosystem.** Lecture and slide show. Montana Native Plant Society–Flathead Chapter. Montana Logging Association Building. East of Kalispell, Montana. (406) 892-2446. www.umt.edu/mnps/.

APR. 26 & 27. **37th Annual Glide Wildflower Show.** Glide Community Center. Glide, Oregon. (541) 677-3797. sova.org/glide2.htm.

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APR. 30–MAY 4. **Treasures of the Pacific Northwest.** American Rhododendron Society's 58th International Convention. WestCoast/Red Lion Olympia Hotel. Olympia, Washington. (360) 943-4000. arsconvention@attbi.com.

WEST COAST

CA, NV, HI

APR. 11–13. **14th Annual Southern California Spring Garden Show.** South Coast Plaza. Costa Mesa, California. (714) 435-2160. www.southcoastplaza.com.

APR. 12 & 13. **A Thyme for Herbs.** Festival. Quail Botanical Gardens. Encinitas, California. (760) 436-3036. www.qbgardens.org.

APR. 26 & 27. **Plants from Around the World.** Garden show. Fullerton Arboretum, Fullerton, California. (714) 278-3579.

APR. 26 & 27. **Redlands Horticultural and Improvement Society 91st Annual Flower Show, Garden Tour, and Plant Sale.** Environmental Systems Research Institute, Cafe New York Street. Redlands, California. (909) 793-5802.

MAY 17. **Annual Plant Sale.** The Huntington, San Marino, California. (626) 405-2100. www.huntington.org.

SOUTHWEST

AZ, NM, CO, UT

APR. 5 & 6. **Home & Garden Tour.** Tucson Botanical Garden. Tucson, Arizona. (520) 326-9686. www.tucsonbotanical.org.

APR. 26. **Tucson Botanical Garden Annual Herb Sale.** Featuring native regional herbs. Tucson Botanical Garden. Tucson, Arizona. (520) 326-9686. www.tucsonbotanical.org.

MAY 2–4. **Maricopa County Home and Landscape Show.** Arizona State Fairgrounds, Phoenix, Arizona. (480) 778-9955. www.phoenixhomeshow.com.

CANADA

APR. 20. **Earth Day.** Royal Botanical Gardens. Hamilton/Burlington, Ontario. (905) 527-1158. www.rbg.ca.

APR. 20–MAY 4. **Tulip Festival.** Minter Gardens. Chilliwack, British Columbia. (604) 792-3799. www.mintergardens.com.

APR. 27. **Magnolia Night.** Dinner reception and silent auction. Royal Botanical Gardens. Hamilton/Burlington, Ontario. Call (905) 527-1158 ext. 521 for tickets. www.rbg.ca.

APR. 27. **Plant Sale.** VanDusen Botanical Garden. Vancouver, British Columbia. (604) 878-9274. www.vandusengarden.org.

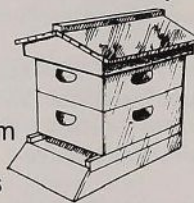
GARDEN MARKET

CLASSIFIED AD RATES: All classified advertising must be prepaid. \$2.50 per word; minimum \$60 per insertion. Copy and prepayment must be received on the 20th of the month three months prior to publication date. To place an advertisement, contact Lori Houston at (563) 652-2824.

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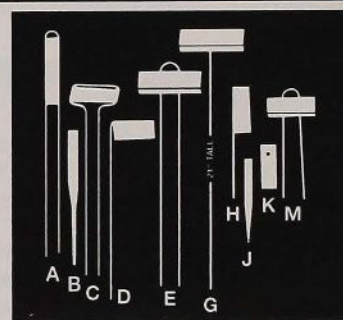
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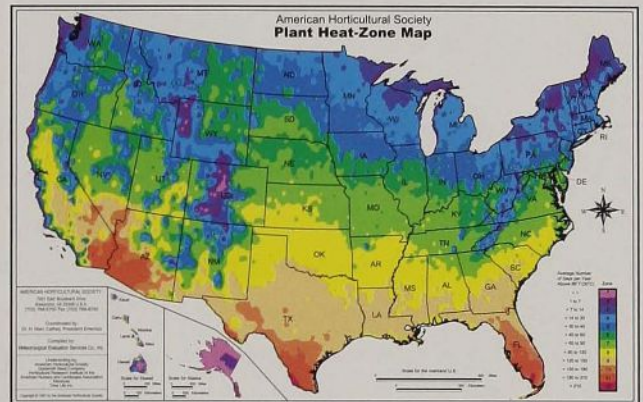
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PRONUNCIATIONS AND PLANTING ZONES

Most of the cultivated plants described in this issue are listed here with their pronunciations, USDA Plant-Hardiness Zones, and AHS Plant Heat Zones. These zones suggest a range of locations where temperatures are appropriate—both in winter and summer—for growing each plant. While the zones are a good place to start in determining plant adaptability in your region, factors such as exposure, moisture, snow cover, and humidity also play an important role in plant survival. The zones tend to be conservative; plants may grow outside the ranges indicated. A USDA zone rating of 0 means that the plant is a true annual and completes its life cycle in a year or less. Many plants that are perennial in warm climates are grown as annuals in cooler zones. To purchase a two-by-three-foot glossy AHS Plant Heat-Zone Map for \$9.95, call (800) 777-7931.



A-D

Abeliophyllum distichum uh-beel-ee-o-FIL-um DIS-tih-kum (USDA 5-8, AHS 8-5)
Andromeda polifolia an-DROM-eh-duh pah-lih-FO-lee-uh (2-6, 6-1)
Bellis perennis BEL-lis pur-EN-niss (4-8, 8-1)
Beta vulgaris BEH-tuh vul-GAIR-iss (0, 12-1)
Brassica juncea BRASS-ih-kuh JOON-see-uh (0, 8-1)
Camellia japonica kuh-MEEL-yuh jah-PON-ih-kuh (7-8, 8-7)
C. sasanqua C. sah-SAHNG-kwuh (7-8, 8-7)
Choisya ternata CHOY-see-uh ter-NAY-tuh (8-10, 10-8)
Cimicifuga racemosa sih-mih-SIF-yew-guh ras-eh-MO-suh (3-8, 12-1)
Corylopsis glabrescens kor-ih-LOP-siss glab-RES-enz (5-9, 9-6)
C. pauciflora C. paw-sih-FLOR-uh (6-9, 9-1)
Cotinus coggygria KO-tin-us ko-JEE-gree-uh (5-9, 9-3)
×*Cupressocyparis leylandii* kyew-press-o-SIP-ar-iss lay-LAND-ee-eye (6-9, 9-3)
Cytisus praecox SY-tis-us PREE-cox (6-9, 9-6)
Daphne burkwoodii DAF-nee burk-WOOD-ee-eye (5-8, 8-4)
D. cneorum D. nee-OR-um (5-7, 7-5)
D. odora D. o-DOR-uh (7-9, 9-7)
Dracaena sanderiana druh-SEE-nuh san-dur-ee-AN-uh (min. 55 degrees, 12-10)

E-H

Epimedium acuminatum ep-ih-MEE-dee-um ak-yew-min-AY-tum (5-9, 9-4)
E. alpinum E. al-PY-num (4-9, 9-4)
E. grandiflorum E. gran-dih-FLOR-um (5-8, 8-5)
E. ×perralchicum E. pair-al-CHEE-kum 5-8, 8-5
E. pinnatum* subsp. *colchicum E. pin-NAY-tum subsp. KOAL-chih-kum (5-9, 9-4)
***E. ×versicolor* 'Versicolor'** E. vur-SIK-uh-lur (5-9, 9-4)
Ficus carica FY-kus KAH-ree-kuh (8-11, 12-1)
Gypsophila paniculata jip-SOF-ih-luh pan-ik-yew-LAY-tuh (4-9, 9-1)
Fothergilla gardenii fah-thur-GIL-uh gar-DEN-ee-eye (4-8, 8-1)
Heleborus ×hybridus hel-eh-BOR-us HY-bri-dus (6-9, 9-6)
Heuchera americana HYEW-kur-uh uh-mair-ih-KAN-uh (4-8, 8-1)
H. ×brizoides H. bry-ZOY-deez (4-8, 8-1)
H. cylindrica H. sih-LIN-drih-kuh (4-8, 8-1)
H. elegans H. EL-ih-ganz (4-8, 8-1)
H. hallii H. HAL-lee-eye (4-8, 8-1)
H. maxima H. MAKs-ih-muh (4-8, 8-1)
H. micrantha H. my-KRAN-thuh (6-8, 8-1)
H. pubescens H. pyew-BESS-enz (4-8, 8-1)
H. pulchella H. pul-KEL-uh (4-8, 8-1)

H. richardsonii H. rih-chard-SOWN-ee-eye (3-8, 8-1)
H. sanguinea H. san-GWIN-ee-uh (3-8, 8-1)
H. villosa H. vih-LO-suh (4-9, 9-1)
×*Heucherella alba* hyew-kuh-REL-uh AL-buh (5-8, 8-3)
×*H. tiarelloides* H. tee-uh-rel-LOY-deez (5-8, 8-3)
Hydrangea macrophylla hy-DRAN-juh mak-ro-FIL-luh (6-9, 9-3)

I-O

***Ilex verticillata* 'Winter Red'** EYE-leks vur-tih-sih-LAY-tuh (4-8, 8-1)
Lactuca sativa lak-TOO-kuh sah-TEE-vuh (8-11, 12-1)
***Leucanthemum ×superbum* 'Becky'** loo-KAN-theh-mum soo-PUR-bum (5-8, 8-5)
Leucothoe axillaris loo-KO-thoh-ee ak-sih-LAIR-iss (6-9, 9-6)
L. fontanesiana L. fon-tan-ee-zee-AN-uh (5-8, 8-3)
Lonicera fragrantissima lah-NISS-er-uh fray-gran-TIS-sih-muh (4-8, 8-3)
L. ×heckrottii L. hek-ROT-tee-eye (6-9, 9-4)
Microbiota decussata my-kro-by-O-tuh day-kuh-SAY-tuh (3-7, 7-1)
Mahonia bealei mah-HO-nee-uh BEEL-ee-eye (5-8, 8-3)
Michelia figo my-KEE-lee-uh FEE-go (10-11, 12-10)
***Miscanthus sinensis* 'Gracillimus'** miz-KAN-thus sy-NEN-siss (5-9, 9-1)
Osmanthus delavayi oz-MAN-thuss deh-luh-VAY-ee (7-10, 9-7)

O. fragrans O. FRAY-granz (8-11, 12-8)
O. fragrans* forma *aurantiacus O. FRAY-granz f. aw-ran-tee-AY-kus (7-10, 10-7)

P-Z

Philadelphus lewisii fil-uh-DEL-fus loo-ISS-ee-eye (5-8, 8-1)
P. microphyllus P. my-kro-FIL-lus (6-9, 9-6)
Prunus pumila PROO-nus PYEW-mih-luh (4-8, 8-1)
P. serrulata P. sair-yew-LAY-tuh (5-8, 8-6)
Rhododendron canescens ro-doh-DEN-dron kuh-NES-senz (6-9, 9-4)
R. occidentale R. ahk-sih-den-TAL-ee (7-9, 9-7)
Ribes aureum RIE-beez AW-ree-um (5-8, 8-3)
R. odoratum R. o-doh-RAY-tum (5-8, 8-5)
Rosa glauca RO-zuh GLAW-kuh (2-8, 8-1)
R. rugosa R. roo-GO-suh (2-9, 9-1)
Sarcococca ruscifolia sar-kuh-KOKE-uh rus-kih-FO-lee-uh (8-9, 9-7)
Sciadopitys verticillata sy-ah-DOP-ih-tiss vur-tih-sih-LAY-tuh (5-9, 9-4)
Sorghastrum nutans sor-GASS-trum NOO-tanz (5-8, 8-5)
Viburnum ×burkwoodii vy-BER-num burk-WOOD-ee-eye (5-8, 8-1)
V. carlesii V. kar-LEEZ-ee-eye (5-8, 8-5)

Winterberry and Hellebores

by Carole Ottesen

MANY PLANT COMBINATIONS shine in early spring, some wait until summer to collaborate in forming a garden attraction. Rare is the pair that pleases in all seasons. One that does so is this duo of winterberry (*Ilex verticillata* 'Winter Red') with a ground cover of Lenten roses or hellebores (*Helleborus x hybridus*) at the Scott Arboretum in Swarthmore, Pennsylvania. Together, these two plants form a dynamic composition, always attractive, but one that changes personality with the temperature.

In the heat of summer, when the winterberry and hellebores fill out into a quiet, cooling island of dark green on green, all of the interest comes from the contrast of leaf sizes and textures—small, precise, leathery winterberry leaves against hellebore's big, bold, palmate ones. When the days shorten and nights turn cold, this combination defies the thermometer and heats up. That's when the leaves of the winterberry turn an extroverted warm yellow that demands attention.

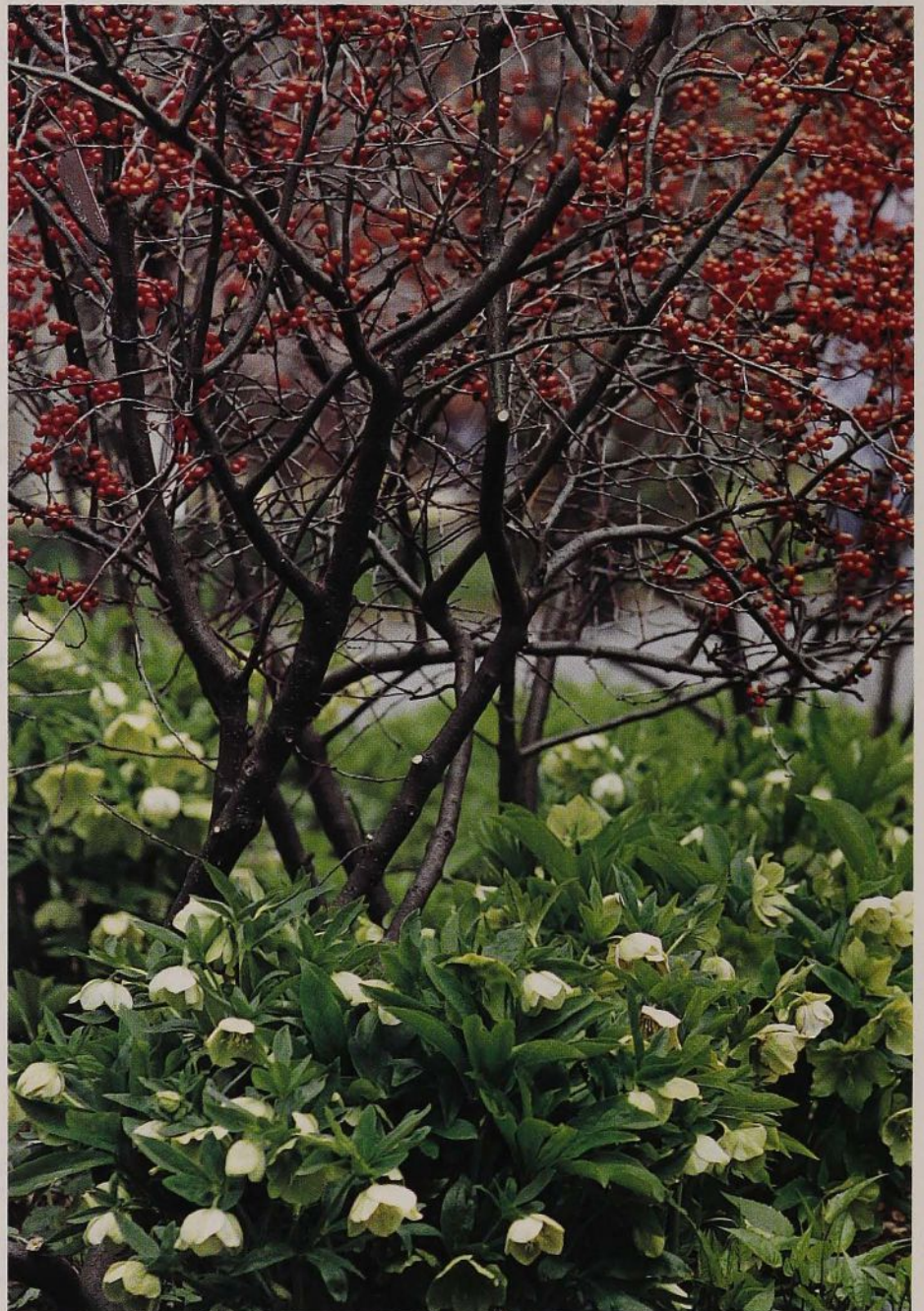
Deciduous *Ilex verticillata* 'Winter Red' (USDA Zone 4–8, AHS Zone 8–1) grows six to eight feet tall and nearly as broad; the female, berry-bearing plants need a late-blooming male such as 'Apollo' for pollination.

Helleborus x hybridus (Zones 6–9, 9–6) is evergreen, growing to about 18 inches tall by 30 inches wide.

As winterberry's leaves fall, they reveal the generous crop of red berries for which the cultivar 'Winter Red' is famous. Leafless gray stems, thick with bright berries, now rise out of a ground cover of complementary deep evergreen.

But the show isn't over until the hellebores bloom in earliest spring, at which time, due to the berry-holding powers of 'Winter Red', the ornamental qualities of the two plants overlap in a spectacular contrast of the steadfastness of winter berries with the freshness of spring flowers.

Carole Ottesen is an associate editor of *The American Gardener*.



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—Brian E. Holley, Director, Cleveland Botanical Garden

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—Katy Moss Warner, AHS President and CEO



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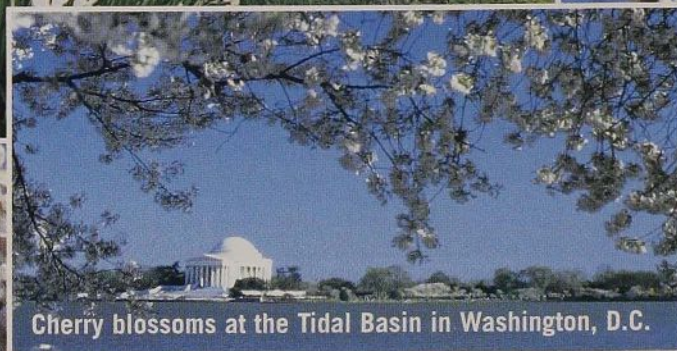
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