

November/December 2002

The American GARDENER

The Magazine of the American Horticultural Society

Cold-Hardy Camellias

Rebirth of a Monastery Garden

Creating a Woodland Garden

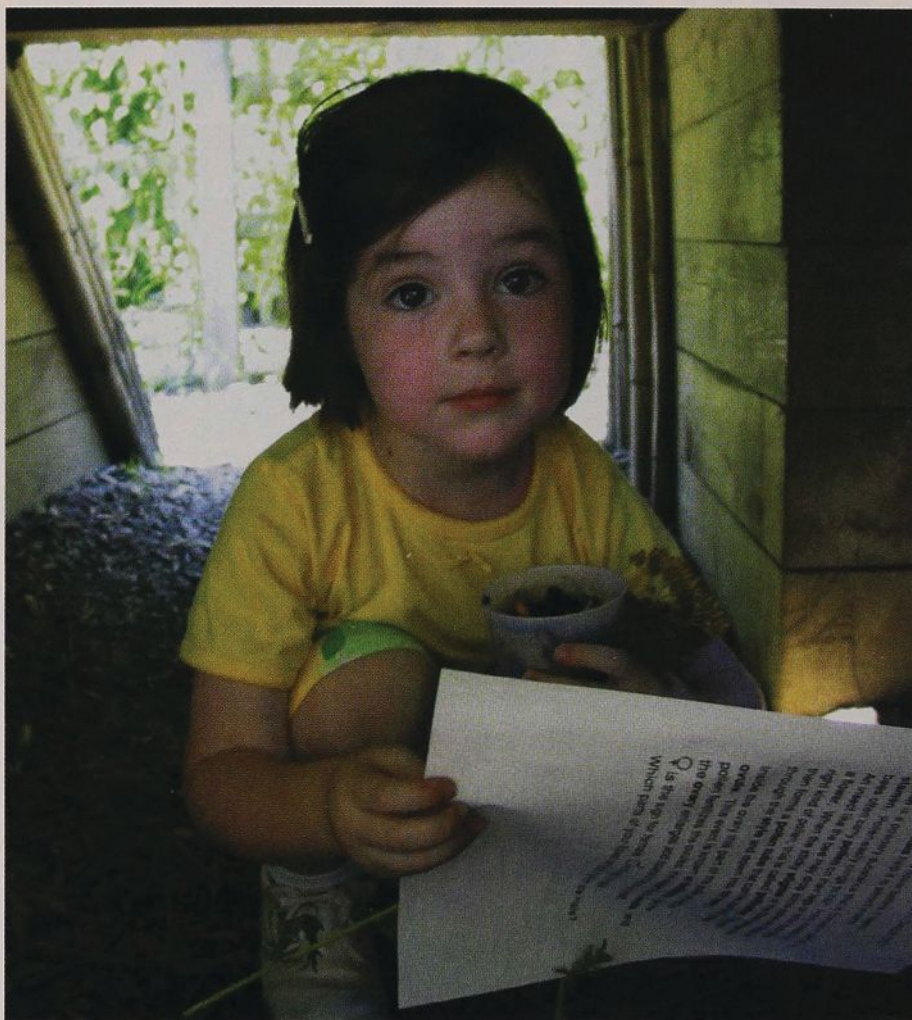
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Sarah Doesn't Care that AHS has been Inspiring and Educating Gardeners for 80 Years.



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.

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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 flower shows and botanical gardens throughout North America. A list of participating shows and 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.

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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: **perennial**.

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Notes from River Farm

AS THE harvest moon wanes and autumn delivers its first chill of the season, I write my first communication to you as president of the American Horticultural Society. For many years, Dr. H. Marc Cathey, president emeritus of the AHS, has written this column. During that time he has regaled us with joyful and poignant stories of his granddaughters and shared his great love for plants. There is hardly a finer plantsman, a more accomplished horticultural researcher, and—although I may be presumptuous to say so—a more imaginative grandfather.

Because I know you would miss his regular articles just as much as I would, we have created a new column called “Everyday Garden Science” in which Dr. Cathey will use his uncanny ability to make complex horticultural concepts easy to understand. See page 62 for the very first edition in his new series.

The last few months have been a very exciting and busy period for the American Horticultural Society. In September, we hosted a design charette at our River Farm headquarters in which 26 designers, horticulturists, educators, writers, and neighbors participated.

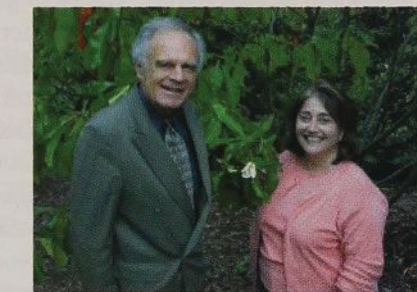
Tres Fromme, a landscape designer with Longwood Gardens, and Tom Underwood, our new director and curator of gardens and buildings, led this team through various brainstorming activities to determine what should be here at River Farm to both honor the site and make it important and relevant to our whole nation of gardeners. Among the exciting concepts that surfaced were: idea gardens, food gardens, kids gardens, gardens as stage sets for multimedia presentations, a bamboo forest, dramatic flower beds, woodlands, meadows, big trees, lawns, and broad views to the Potomac River.

We are dreaming big dreams. With your support, hopefully one day soon we will turn some of these great ideas into real gardens—and maybe even share all the creative gardening concepts contained within them through the various media now available to us.

Great enthusiasm is also building for membership in the Society. Many changes to *The American Gardener* ensure that we continue to offer inspiration for gardeners throughout America. We have lots of new seeds to offer this year through our seed exchange program, including some very special acorns of the Turkish oak (*Quercus sericea*), donated by a great new friend in Newport, Rhode Island. You should try them!

I'd like to bring to your attention a special card in this magazine—located between pages 56 and 57—that makes it simple to give a holiday gift membership in the Society. Please help the AHS grow and give your favorite gardener a gift that can be enjoyed all year long. As we are celebrating our 80th anniversary this year, we will send a unique commemorative 80th Anniversary pin to each member who gives a gift membership this holiday season!


Happy gardening!



Dr. H. Marc Cathey and AHS President Katy Moss Warner enjoy one of River Farm's blooming franklinia trees.

Katy Moss Warner

—Katy Moss Warner, AHS President



Members' Forum

MORE WANTED FOR WARM CLIMATES

I have been a member of the American Horticultural Society for one or two years. As with all your members, I love and enjoy gardening. I live in Puerto Rico, which most of you will know is a Caribbean island with a very hot climate through the whole year. The average daytime temperature is about 85 degrees Fahrenheit.

My concern is that a lot of information in the magazine is not suitable for the island of Puerto Rico because of its warm climate. I was also sad to see that our island is not included in the hardiness and heat zone maps created to help American gardeners. I don't know how many Puerto Rican members you may have, but I think it would be helpful to publish more information useful to gardeners who live in subtropical climates.

*Mercedes Rivera Auffant
San Juan, Puerto Rico*

AHS PRESIDENT KATY MOSS WARNER RESPONDS: *Thank you so much for taking time to share your thoughts with us. I am confident that your letter reflects the concerns of many gardeners in Puerto Rico and other warm-climate areas.*

I am most interested in your comments regarding the inclusion of Puerto Rico in the USDA Plant Hardiness Zone Map and the AHS Plant Heat-Zone Map. I will attend immediately to your concern and ensure that Puerto Rico is included in the preparation of any new gardening material for the United States. How could we not include such a beautiful and horticulturally interesting part of our country! Thanks again for writing and I look forward to hearing from you again.

NAME CHANGE

I was surprised to see one of my favorite plants, *Gillenia trifoliata*, commonly called Bowman's root, identified as *Porteranthus trifoliata* (July/August, 2002 "All-American Herbs"). Is this an old

name being resurrected or a new name? I cannot find *Porteranthus* listed in any of my sources. What is the currently accepted correct name?

*Sara Mauritz
Portland, Oregon*

EDITOR'S NOTE: *Porteranthus is now the accepted name for this genus, but most horticultural references haven't caught up with the change yet.*

MICROCLIMATES

Your July/August SMARTGARDEN™ article, "Microclimates," provides an important reminder—if not a lesson—in gardening technique, for every gardener.

I have gardened in Pennsylvania, Ohio, and Seattle, but it wasn't until I moved to Lompoc, California, that I fully realized how microclimates could be used.

Sunset Western Garden Book lists the Lompoc Valley as being in Sunset Zone 15: "Chilly Winters along the Coast Range influenced by marine air approx. 85% of the time and by inland air by 15% of the time." The USDA hardiness map puts us in Zone 8 or 9. But these zones don't offer a complete picture of Lompoc Valley's climate. Understanding microclimates can often be the difference between success and failure when growing particular species.

We have an east-west mountain range directly to the south and hills directly to the north; Lompoc is nine miles inland, falling within the influence of a marine layer that typically rolls through in the evenings and burns off early the next morning.

This type of climate encourages mildew to grow on roses prone to that disease, but provides just enough moisture for drought-loving native plants. It is tough on lemons and limes, which like temperatures in the range of 60 to 70 degrees, but a few feet away, a 'Royal Gala' apple finds the 50-degree summer nights and occasional winter nights down to the low 30s ideal.

Taking advantage of microclimates, I can grow a *Cornus florida* in a cool shady place, *Hedychium gardnerianum* in full sun 25 feet from that, deciduous azaleas, as well as *Brugmansia*, climbing Tea and Noisette roses, plumerias, alternate cool-season and warm-season vegetables while paying attention to seasonal inclination of the sun for maximum placement, and indulge in some of the lesser-known South African bulbs, *Syringa vulgaris*, and *Jasminum officinale*—all on a standard 60-by-120-foot city lot. Though the Lompoc climate is probably quite unique in regard to the wide variety of genera and species that feel at home, gardeners most anywhere can reach beyond their "normal" limits through microclimate experimentation.

*Al Thompson
Lompoc, California*

ARTICLES WORTH PLANTING

I really appreciate the plant articles and source lists published in *The American Gardener*. Inspired by the article on glory bowers (*Clerodendrum* spp.) in the November/December 2001 issue and the article in the May/June 2002 issue that described the dove tree (*Davidia involucrata*) and fever tree (*Pinkneya bracteata*), I have planted several glory bowers and one dove tree in my garden.

*Glory M. Caldwell
Boca Raton, Florida*

Correction

The phone number for Best Buds Garden Supply, the supplier for a bulb-planting auger profiled in the September/October 2002 issue is (877) 777-2837.

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. ☺

AHS 80th Anniversary: 1922–2002

~ AHS Retrospective ~

VISION FOR A NEW MILLENNIUM (1987–PRESENT)

WHEN Carolyn Marsh Lindsay of Rochester, New York, took over as the 27th president of the American Horticultural Society in 1987, she noted matter-of-factly in her first column in *American Horticulturist* magazine that “this is the first time you have honored a woman to lead you.”

In the 15 years since Lindsay took office, the Society’s top leadership position has been divided almost equally between women and men. During that time, the Society has championed children’s gardening and launched other successful national initiatives, including the AHS Plant Heat-Zone map and the SMARTGARDEN™ program. Bolstered by energetic leadership and an exciting new vision, AHS is now poised to take an even more active role in connecting Americans to gardens.

SUPPORTING CHILDREN’S GARDENING

In 1993, the Society’s first Children’s Gardening Symposium was held in Chevy Chase, Maryland. The aim of the symposium was to draw attention to the vital role horticulture should play in our education system. The symposium was organized by former AHS education coordinator Maureen Heffernan, with the support of former AHS President George C. Ball Jr. and sponsorship by the W. Atlee Burpee Company. “We saw an opportunity to play an active role in nurturing the next generation of gardeners,” says Heffernan, who is now director of public programs with the Cleveland Botanical Garden.

More than 500 people attended that first symposium; the 10th annual installment was held this past summer in San Francisco (see article on page 14). In addition to the symposia, the Society has supported youth gardening through the



Beau Beau's Garden is one of the newest children's gardens at River Farm.

children’s gardens created at River Farm and sponsorship of a national award to recognize individuals and groups involved with kid’s gardening.

COMPOSTING PARK

The Society historically has taken a lead in promoting earth-friendly gardening and environmental stewardship, and one of its most successful programs was the creation of a National Home Composting Park at River Farm in the early 1990s.

Recognizing the value of home composting for both improving garden soil and reducing solid waste, former AHS staff member Joe Keyser began teaching composting classes on the grounds every Saturday. After the *Washington Post* newspaper published an article about the classes, gardeners from across the country visited River Farm to learn more about “black gold.” This led many other local agencies to initiate composting programs of their own.

AHS PLANT HEAT-ZONE MAP

Another initiative designed to help home gardeners was the AHS Plant Heat-Zone map, released in 1997. The map—conceived as a companion to the USDA Hardiness map—was the brainchild of AHS

AHS Presidents 1987–2002

Carolyn Marsh Lindsay (1987–1990)
George C. Ball Jr. (1990–1993)
H. Marc Cathey (1993–1997)
Linda D. Hallman (1997–2002)
Katy Moss Warner (2002–present)

President Emeritus Dr. H. Marc Cathey, who saw a need for a tool gardeners could use to select plants based on their ability to tolerate heat. With the help of experts from around the nation, Dr. Cathey has been assigning plants with heat codes that are now being used in many books and catalogs.

SMARTGARDEN™

Dr. Cathey also spearheaded development of the AHS SMARTGARDEN™ program, initiated in 2000 to give gardeners scientifically sound, earth-friendly advice on all facets of gardening and to show gardeners how to create and maintain a beautiful landscape by working with rather than against nature. Starting next fall, Dorling Kindersley publishers will issue four SMARTGARDEN™ books tailored to different regions of the United States.

NEW VISION AND MISSION

Building upon the achievements of the last decade, the American Horticultural Society’s Board of Directors this past year approved an exciting and challenging new direction for the Society reflected in a new vision and a new mission statement. The Society’s vision is “Making America a nation of gardeners, a land of gardens.”

According to AHS President Katy Moss Warner, “Our new mission is to open the eyes of all Americans to the vital connections between people and plants, to inspire all Americans to become responsible caretakers of the Earth, to celebrate America’s diversity through the arts and sciences of horticulture, and to lead this effort by sharing the Society’s unique national resources with all Americans.”



News

AHS Programs and Events

Stars Shine on Fundraising Gala

NATURE, ART, AND horticultural science conspired to provide a breathtaking setting for the American Horticultural Society's 80th Anniversary Gala, "The Garden as Art," held at River Farm on September 28. On a pristine fall night, with the moon and stars reflecting on the Potomac River, nearly 400 guests strolled the gardens and enjoyed the art displays set up both on the grounds and inside the main house.

"We were blessed in so many ways," says AHS President **Katy Moss Warner**. "The evening could not have been any better and we were fortunate to have an incredible group of artists and guests here to celebrate our anniversary and support River Farm and the American Horticultural Society at this important fund-raising event."

Given the theme, it was not surprising that art was represented in a variety of guises. Not only was there art on display in the gardens, but the gardens reflected the art of horticulture, with empty picture frames placed strategically to focus attention on creative aspects of the landscape. Inside the house and on the dinner tables, art from the garden was represented in creative floral displays. Art was also prominently featured among the donated items offered during silent and live auctions. And the honorary chairman for the gala was **Earl A. "Rusty" Powell III**, director of the National Gallery of Art in Washington, D.C.

Sculptures by internationally known artists **Tomas Fernandez** and **Dorothy Gillespie** adorned the grounds, along with a whimsical "pinaconda"—a snake-shaped sack filled with pine needle mulch—created by local environmental artist **Jeanne Drevas**. Inside the Society's headquarters, the botanical art of **Clarissa Bonde** was displayed in the ballroom and interpretive landscape paintings by members of the Washington Society of Landscape Painters graced other interior walls.



Above: A graceful horse sculpture by **Tomas Fernandez** gallops through one of the gardens at River Farm. **Left:** Gala Honorary Chair **Earl A. "Rusty" Powell III** and Gala Chair **Leslie Ariail**.



The grounds of River Farm provided an artistic display in their own right, with luminous white mums and brightly colored pansies adding a finishing touch to the existing flower beds, stately boxwood hedges, and panoramic view over meadows down to the river. Candle-lit lanterns added to the atmosphere and helped guide guests along the pathways as twilight faded into night.

Thanks to the generosity of many donors, nearly 150 items were auctioned off during silent and live auctions held over the course of the evening. The presence of some of the donors of gifts and services—including AHS Board Chair and nursery owner **Kurt Bluemel**, University of Georgia horticulturist and AHS Board member **Allan Ar-**

mitage, landscape designers **James van Sweden** and **Osamu Shimizu**, and artist **Dorothy Gillespie**—created additional drama during the bidding process for the live auction. The more than \$100,000 raised from the gala will support the American Horticultural Society's new vision and national programs.

"It was a magical night," says Gala Chair **Leslie Ariail**. "River Farm has never looked more beautiful."

Roses—Focus of Intern Project

AHS HORTICULTURAL INTERN **Margot Herrman** had a chance to get up close and personal with pests and diseases this past summer during an evaluation of 14 different cultivars of David Austin English roses at River Farm. Margot applied the concepts of integrated pest management (IPM) while caring for the roses, focusing on monitoring and prevention of pests and diseases and using non-chemical techniques to treat any problems, including hand-picking insect pests or spraying them off with a jet of water, and removing leaves and stems afflicted with fungal diseases such as blackspot and powdery mildew.

David Austin Roses, Ltd., based in Wolverhampton, England, donated the roses for trial in the warm, humid, summer conditions typically experienced in Virginia. Margot kept detailed records for each cultivar, noting by date the onset of any disease or pest problems and what type of treatment she used. She also made observations about the overall appearance and performance of each rose and kept a log of daily temperatures and rainfall.

The roses generally performed well throughout the summer, but Margot did experience consistent problems with Japanese beetles. A few cultivars suffered damage from spider mites or thrips and others showed susceptibility to powdery mildew and blackspot. The best performers in the River Farm trials were the following: 'Anne Boleyn', 'Charlotte', 'Golden Celebration', 'Molineux', 'Noble Anthony', 'Sophy's Rose', 'Tess of the d'Urbervilles', and 'The Pilgrim'.

"Margot's project has shown that we can grow beautiful roses here while at the same time being good stewards of our environment," says **Tom Underwood**, AHS director and curator of gardens and buildings.

Before returning to Rice University in Houston, Texas—where she is a sophomore majoring in earth science and environmental engineering—Margot sent a copy of her evaluation of the roses to the researchers at David Austin so the company can use the information in assessing how well the roses might perform in different regions and climates.

For more information on David Austin roses, visit the company's Web site at www.davidaustinroses.com.

Garden Club Group Donations Benefit River Farm

VISITORS TO River Farm are the beneficiaries of two new picnic tables, two bicycle racks, a bench, and a tree, thanks to generous donations from the Alexandria Council of Garden Clubs. The group's president, **Babs McClendon**, was at River Farm recently for a dedication ceremony for the tree—a sourwood (*Oxydendrum arboreum*)—and the bench, which are located in the Garden Calm.

"The Alexandria Council of Garden Clubs wants to salute our partnership with

the American Horticultural Society at River Farm and honor those who have helped raise funds to fulfill our goals of historic preservation, horticulture education, and the preservation of our environment," says Babs. "We hope the sourwood tree and bench will enhance the peaceful and soothing atmosphere that characterizes Garden Calm."

The new picnic tables, made of durable and environmentally friendly recycled plastic, will replace existing wooden picnic tables that are showing signs of age. The tables will be placed in a shaded picnicking area overlooking the meadows sloping down to the Potomac River.

According to **Tom Underwood**, AHS director and curator of gardens and buildings, the bike racks will encourage visitors to take advantage of River Farm's proximity to a popular bike trail that runs along the George Washington Parkway between Alexandria and Mount Vernon. "The trail makes River Farm very accessible to cyclists and walkers," says Tom.



AHS Intern Margot Herrman removes Japanese beetles from a David Austin rose.



Babs McClendon and Tom Underwood watch as Marty Moore cuts the ribbon on a bench donated to River Farm.

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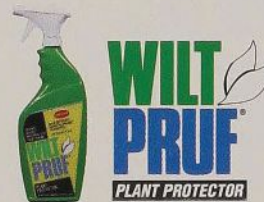
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Landscape Legend Bill Evans Dies

This past September, hundreds of people gathered to celebrate the life of **Morgan "Bill" Evans**, who died August 10 at the age of 92. Bill had for many years been the director of landscape design at Walt Disney Imagineering, where he worked closely with Walt Disney in developing the distinctive landscape design of Disneyland and all of Disney's subsequent theme parks. He retired from a full-time role in 1975, but continued to consult with Disney during a career that spanned over five decades.

Bill's seemingly limitless vision for distinct and creative designs not only revolutionized the theme park industry, it also had a major influence on American horticulture as a whole. He introduced many new subtropical plants, including coral or lucky bean tree (*Erythrina caffra*), a native of South Africa that later was adopted by the City of Los Angeles as its official tree.

"Bill Evans defined Disney theme park landscaping, and trained just about everyone who has created theme park stories in living environments," says **Mark Sklar**, principal creative executive and vice chairman for Walt Disney Imagineering. "He

taught generations of landscape architects how to do their jobs with passion, skill, and tender loving care."

In 1992, Bill was named a Disney Legend and in 1996 the Landscape Architecture Foundation honored him with an award of "Special Tribute." He also received Landscape Design Awards in 1973 and in 1993 from the American Horticultural Society.

Landscape architect **Becky Bishop**, who first met Bill in 1980 when she was an intern for Walt Disney Imagineering, says, "Everyone in the landscaping business thinks of Bill the same way that the world thinks of Walt....He taught us to sculpt, paint, and create movement with plants."

The memorial ceremony for Bill was held at Descanso Gardens, in La Cañada, California. The setting for the service—beneath an enormous oak tree—was appropriate for a man who was known for his love of trees. Guests shared stories about Bill—a fitting tribute to a great man, landscape architect, and horticulturist whose legacy lives on through the countless people he influenced.

—Eva Monheim, Editorial Intern



In this portrait taken in 1970, Bill Evans models one of his many trademark hats.



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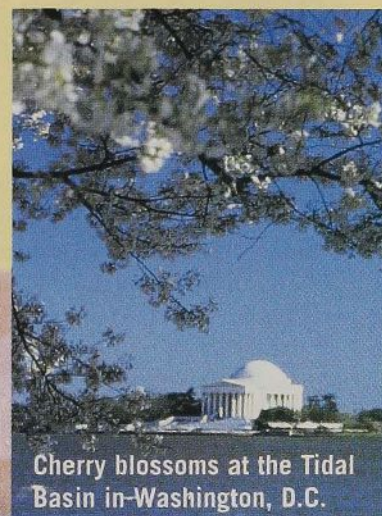
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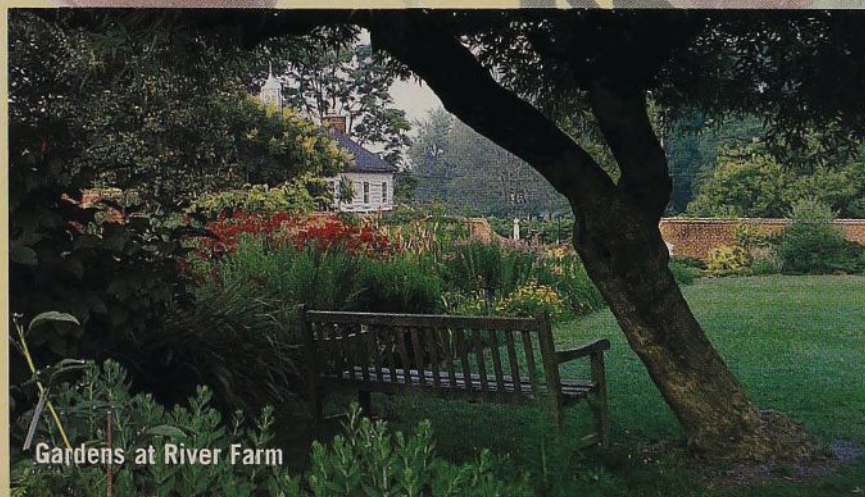
March 29 through April 5, 2003

The American Horticultural Society, in participation with the National Cherry Blossom Festival, launches a Spring Garden Celebration in honor of the unique beauty that is springtime in the nation's capital city. You and your family are invited to join the fun at George Washington's River Farm, AHS headquarters, for an eight-day celebration of blooms and blossoms.

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Cherry blossoms at the Tidal Basin in Washington, D.C.



Gardens at River Farm

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Shaping a Vision for River Farm

A design workshop at River Farm establishes a framework for transforming the Society's headquarters into a national center for American gardening.

BY CAROLE OTTESEN, ASSOCIATE EDITOR

DURING three splendid early fall days in mid-September, 26 people came together from distant parts of the country to participate in a design workshop, or "charette" at the American Horticultural Society's River Farm headquarters. The goal of the charette was to shape a new vision for River Farm as a national showcase for gardening in America. Among the participants were horticulturists, landscape designers, and planners, as well as community residents and AHS staff members.

"It was very stimulating to explore our vision for River Farm with such a creative and diverse group of people," says AHS Board Chair **Kurt Bluemel**, owner of Kurt Bluemel, Inc. nursery in Baldwin, Maryland. "Their passion for gardening and commitment to AHS made the charette a tremendous success."

After touring the grounds and learning about the history of the 25-acre property, the participants split up into small groups to answer such questions as "What do you think a national headquarters that supports the new AHS vision would do?" In the small group sessions, discussions were lively and ideas flowed freely.

By the second day of the charette, it became clear that there was a high degree of consensus among the participants. "It came through over and over again that the vision for River Farm needs to be closely



Tres Fromme, center, of Longwood Gardens leads a group discussion during the design charette at River Farm in September.

connected to the overall philosophy of AHS," says Kurt. "The moment visitors enter the gates, they should begin a learning experience and understand exactly what the Society stands for."

From the group discussions, six important elements of the site were identified. These included the view of the Potomac River, the sense of entrance to the property, the main house and the "village" of outbuildings surrounding it, visitor services and circulation, the meadows, and the children's gardens.

Tres Fromme of Longwood Gardens, one of four facilitators for the charette, likened River Farm to a body, with the river serving as "the heart." **Holly Shimizu**, executive director of the U.S. Botanic Garden in Washington, D.C., described

the combination of meadows and river as adding "a timeless element to the view."

Preliminary discussions about enhancements for the site included the introduction of pedestrian paths that would offer a sense of journey through the garden and adding visitor amenities such as water fountains, and, generally, increasing the horticultural complexity of the gardens.

There was enthusiastic support for the idea of creating a series of small, distinct gardens that would reflect a wide variety of themes, styles, and plant selections. These continuously evolving gardens would have a broad appeal and could serve as "stages" for visiting garden communicators—thus expanding the reach of the programs at River Farm to a national level through radio, television, and other media.

By the end of the third day, the groundwork had been laid for achieving the vision of River Farm as a national center for gardening in America.

"The charette helped us to identify the most pressing issues and will assist us in establishing our priorities for the site," says **Tom Underwood**, AHS director and curator of gardens and buildings. "It was an important first step in achieving our vision for River Farm and provides us with a strong foundation to build upon as we work towards creating a headquarters for AHS that is educational as well as inspirational."

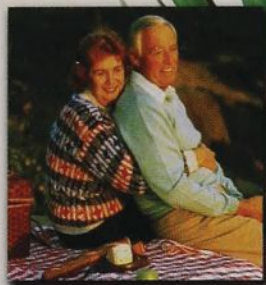
CHARETTE PARTICIPANTS Bill Barrick, executive director of Bellingrath Gardens and Home, Theodore, Alabama ■ Vicki Bendure, Bendure Communications, Inc., Middleburg, Virginia ■ **Kurt Bluemel**, AHS Board chair and owner of Kurt Bluemel, Inc., Baldwin, Maryland ■ **Katherine Stark Bull**, Washington, D.C. ■ Dr. H. Marc Cathey, AHS president emeritus ■ **Laura Coar**, landscape manager at Rollins College in Winter Park, Florida ■ **Tres Fromme**, planning and design specialist at Longwood Gardens, Kennett Square, Pennsylvania ■ **Brian Holley**, director of the Cleveland Botanical Garden, Cleveland, Ohio ■ **Natasha Hopkinson**, landscape designer, New York, New York ■ **Peter Hopkinson**, vice president and principal architect with DMJM+Harris, New York, New York ■ **Ron Kagawa**, associate professor, Virginia Tech's Architecture Center, Alexandria, Virginia ■ **Joe Lamoglia**, AHS director of membership and marketing ■ **Norm Lownds**, assistant professor, Department of Horticulture, Michigan State University ■ **Mark Miller**, AHS national programs and public relations ■ **Missy Marshall**, partner, Marshall Tyler Rausch, Pittsburgh, Pennsylvania ■ **Mary Pat Matheson**, Executive Director, Atlanta Botanical Garden ■ **Kathryn Mathewson**, representing Monrovia Nursery, San Jose, California ■ **Babs McClendon**, president, Alexandria Council of Garden Clubs, Virginia ■ **Suzanne Parrish**, teacher, Alexandria, Virginia ■ **Mary Ann Patterson**, AHS director of national programs and public relations ■ **Sondra Quinn**, president and CEO, Naples Botanic Garden, Florida ■ **Felder Rushing**, retired Mississippi State University Extension Service Specialist, Jackson ■ **Jo Sellers**, National Garden Club Board liaison to AHS, Alexandria, Virginia ■ **Holly Shimizu**, executive director, United States Botanic Garden, Washington, D.C. ■ **Tom Underwood**, AHS director and curator of gardens and buildings ■ **Katherine Ward**, retired U.S. Air Force Colonel, Alexandria, Virginia ■ **Katy Moss Warner**, AHS president.

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During the 10th annual Youth Garden Symposium in San Francisco last August, conference leaders and attendees explored the connection between nutrition and environmental education in school gardens.

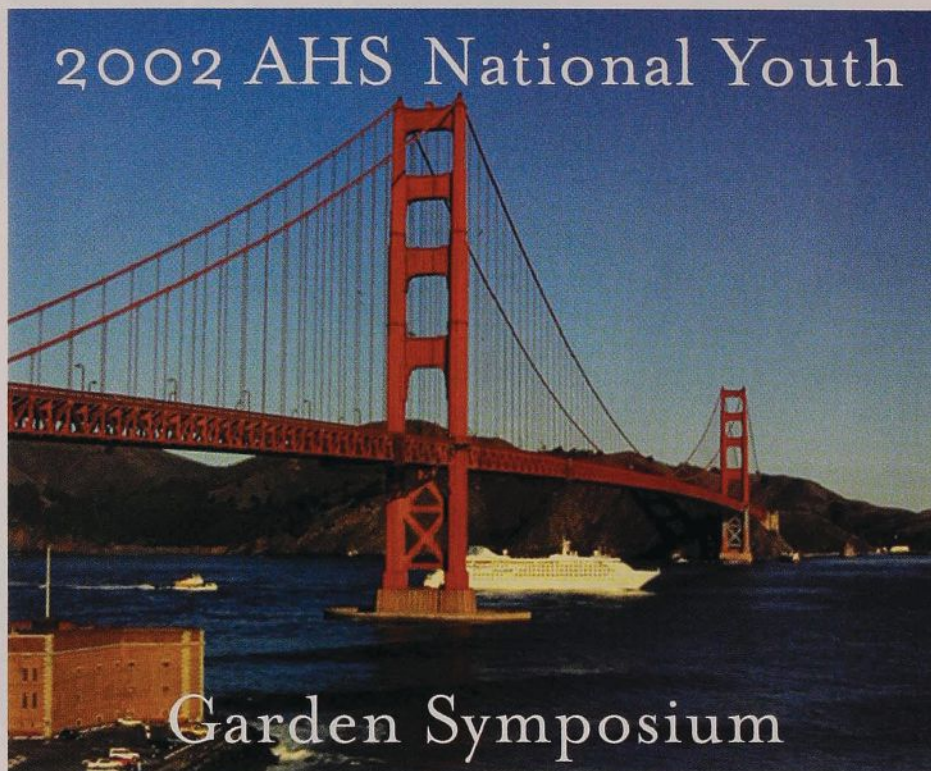
BY LISA VAN CLEEF

TEACHING environmental education and nutrition through the filter of the school garden was the focus of the American Horticultural Society's 10th National Children & Youth Garden Symposium, held August 1 through 3 in San Francisco, California. The broad-based agenda explored the fundamental concerns facing garden-based learning including teaching methodologies, funding issues, standards applicability, and getting a school garden started. The attendees included parents, classroom teachers, outdoor educators, gardeners, and non-profit administrators from across North America.

BAY AREA HOTBED OF SUCCESSFUL SCHOOL PROGRAMS

While the topics were indeed weighty, this was not the typical dull, hotel ballroom-bound conference. Taking advantage of the pioneering work in environmental education and school gardening taking place in the San Francisco Bay area, the bulk of each day was devoted to "field study" at successful local programs.

California has led the way in communicating the value of plants and the environment to its children through the school system. Its state superintendent of public instruction, Delaine Eastin, launched the



groundbreaking "Garden In Every School" initiative, which encourages and supports school gardens, garden-based education, and an increased awareness of children's relationship with plants.

Among the innovative programs conference attendees had an opportunity to visit was the Edible Schoolyard, one of the crown jewels of California public school gardens, located at Berkeley's Martin Luther King Junior Middle School. Founded by famed restaurateur Alice Waters, the garden's mission is to create and sustain an organic garden and landscape

that is wholly integrated into the school's curriculum and lunch program.

The California Native Plant nursery at Presidio National Park was another field study highlight. Here, in the nursery's environmental education program, seventh- to 12th-grade students learn biology, science, social studies and art. The more than 60,000 plants grown at the nursery each year are used throughout the park in a native plant restoration project underway at the 1,480-acre former military post. Students are involved in seed collection, seed germination, and planting. Participants also enjoyed the Roots and Shoots Garden at the Elizabeth Gamble Center in Palo Alto, developed by Dirck and Molly Brown.

Also on the itinerary were stops at several of the area's outstanding botanical gardens, including the Filoli Center in Woodside, the University of California Botanical Garden in Berkeley, and Strybing Arboretum in San Francisco's Golden Gate Park. Strybing has an ambitious youth education program that serves thousands of students annually, as well as a teacher-training program.



Delaine Eastin, left, receives an award from Mary Ann Patterson, right, AHS's director of national programs and public relations.



Organic food grown in the Edible Schoolyard garden is used in school lunches.

PASSIONATE SPEAKERS

In addition to the tours, symposium participants enjoyed listening to lively and inspirational speakers who shared success stories and experiences with children's gardening. Among these was Eastin, California's first woman school superintendent, whose impassioned speech on the value of garden-based education earned her a standing ovation.

Noting that during her tenure, California has added 3,000 school gardens, she said that "contrary to what some detractors say, we can teach curriculum standards in the garden, and gardens can be integrated into the curriculum everyday."

Eastin noted that growing food is a transforming experience for kids. She cited a study that showed 72 percent of the students who had taken environmental education classes scored higher in standardized tests than their peers who had not taken such classes.

Despite the advances made through

The garden "is the ideal place to show children the essential cycle of life that surrounds us, that there is renewal everyday in the garden."

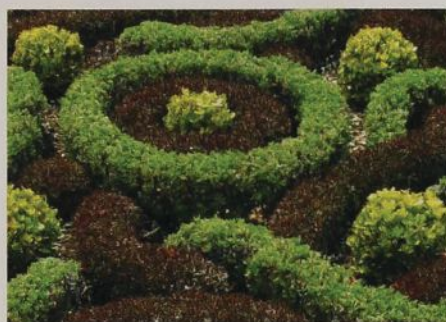
—Sharon Lovejoy

school gardens, Eastin made it clear that many challenges lie ahead. "Most kids still think food comes from the store," she said, and have no true connection to gardening or farming. Eastin vowed to keep pressing until there is a garden in every school.

Eastin spoke during a banquet that also featured the presentation of the Society's Great American Gardener's Award

for youth gardening, the Jane L. Taylor award, to the National Gardening Association (NGA), a non-profit group headquartered in Burlington, Vermont. The NGA received the award because its children's gardening programs promote environmental responsibility, advance multidisciplinary learning and scientific literacy, and create partnerships that restore and enhance communities across the United States and the world. Joan White, NGA program director, accepted the award on behalf of her colleagues.

The symposium's opening day included a general session panel comprised of some heavy-hitters in the world of nutri-



At the Filoli Center, intricate knot gardens appeal to children and adults alike.

tion, environmental education, and kids gardening. These included Sharon Lovejoy, author of children's gardening books; Bill Andrew, from the California Department of Education's Office of Environmental Education; Rodney K. Taylor, director of food and nutrition services for the Santa Monica-Malibu Unified School District; and Joan Dye Gussow, impassioned educator, nutritionist, and author

Andrews stressed that environmental literacy was as fundamentally important as reading and writing. "It is a language older than words," he concluded. The straight-talking Gussow, who suggested that in some cases educators are overstressing nutrition at the expense of simply talking about food. "Kids don't eat nutrients, they eat food," she said. She also encouraged people to allow children to get dirty in the garden without obsessing about hygiene.

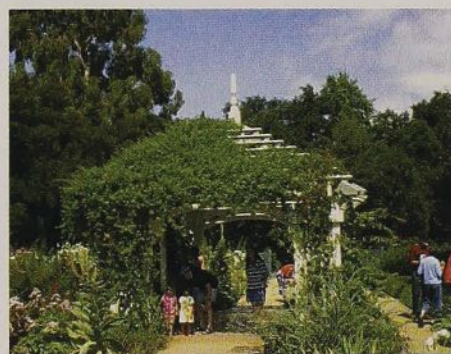
Lovejoy's presentation focused on how the garden could be used to teach

everything from ethnobotany to art. The garden, she said, "is the ideal place to show children the essential cycle of life that surrounds us, that there is renewal everyday in the garden."

The second day's program included a presentation by Michael Abelman, an author, farmer, and founder of the Center for Urban Agriculture. Abelman shared his experiences farming a small piece of land on an island in British Columbia. Speaking as a farmer and father, he noted that in some cases school gardens are the only connection students have to nature. He challenged participants to change this disturbing trend by focusing on achieving small successes at the local level.

The final day's program began with an address from Mary Ann Patterson, the Society's director of national programs and public relations. She described her own experiences of her "moments of truth"—the situations when it became clear to her that today's kids are disconnected from nature. "Everyone in this room has had similar experiences and that's why we are all here today," said Patterson.

What does the future hold? Patterson shared the American Horticultural Society's commitment to providing the public with greater and more comprehensive links to resources, stressing the importance of linking gardens to nutrition, supporting the creation of new smaller public children's gardens across the



Another award-winning garden toured by attendees was the Roots and Shoots Garden.

country, and serving as a national facilitator to unite the efforts of organizations that share similar goals.

Lisa Van Cleef writes a weekly gardening column for the online edition of the San Francisco Chronicle.

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Practicality and beauty can be combined in thoughtfully planned garden paths.

How you move through the landscape influences your perception of it: what you see at close range and how different areas of the landscape relate. A winding path can add intrigue to even the smallest landscape. In larger yards, walkways define spaces and invite visitors to distant corners. And providing access to the interior of beds for easy maintenance can be the difference between frustration and muscle strains from awkward reaches, and a relaxed attitude and physical efficiency that takes full advantage of the insider's view.

DEFINING TRAFFIC PATTERNS

In a well-designed landscape, visitors are guided—almost unconsciously—around and through the gardens and to areas of the yard used for recreation and relaxation. Paths and walkways enhance the visitor's experience of the garden, allowing them to get up close and personal with fragrant and texturally pleasing specimens, to appreciate subtle plant combinations, and to enjoy unexpected, playful displays of garden art. At the same time, paths can be used to draw attention to focal points and vistas that the gardener wants to highlight.

If you decide to construct a path—whether of brick, flagstone, pavers, grass, or the more informal mulch—keep practicality in mind. Where do you and your family travel in the yard? Do you regularly go from the front door to the driveway? From the back door to the pool? From the patio to the front yard? A well-traveled route is usually pretty easy to spot—it's where the grass is thinnest. That's where your path should go.

PRIMARY WALKWAYS

Once you determine the most-traveled routes, you can begin to design your path. First, examine your views and any obstructions along the route. Would a curved design enhance the walk? Would a slight detour around an existing or planned bed create interest? Will it connect

with another path? Primary walkways through your yard should be able to comfortably accommodate two people walking side by side. Plan to make them at least four or five feet wide. And make the curves broad—sharp, unexpected turns should be avoided. Traveling along the path should seem effortless, not challenging.

To view a variety of styles for paths, from formal cut stone to an informal mulched woodland path, and to get tips in path design, revisit "The Perfect Pathway" article by Barbara Blossom Ashmun in our September/October 2000 issue.

SERVICE PATHS

Other areas of the landscape—the compost pile, the woodpile, the tool shed, for example—may require access for purely practical reasons. This type of path is a functional feature, and usually needn't accommodate more than one person at a time, so it can be narrower—two or three feet wide should be adequate unless you have a wide wheel barrow. And generally, it should be fairly direct—you don't want to amble down a winding path with a double armload of firewood. But practical doesn't mean unattractive. A neatly mulched, well-maintained path to the woodpile makes the journey more pleasant and safer.



A casual path of crushed stone leads to a rest stop in this garden. It also draws the eye to the bench as a focal point.

FOLLOWING THE STRAIGHT AND NARROW

The pitter-patter of little feet is not an altogether pleasant concept when said feet are trampling a bed of emerging spring bulbs. But how do you keep kids, dogs, and untrained adults on the straight and narrow—or the wide and winding, as the case may be?

Constructing a raised edge along a path reinforces its parameters. Stone, brick, or formed concrete can be set when constructing your path so their top surface is a couple of inches above the level of the walking surface. If the walk is adjacent to a bed, the edge does double duty, keeping mulch off the walk and in the bed. The

difference in height, even though it is just a couple of inches, is often enough to keep feet from straying.

Edging plants are another way to highlight a path and direct traffic along it. Low-growing plants such as ageratum, globe basil, lavender, calamints, and lilyturf are available to suit any garden style. They provide a pleasing transition between the path and the rest of the bed. Because they would be adjacent to the path and easily accessible for maintenance, this is also an ideal spot for long-blooming annuals that need seasonal replacement.

If a more emphatic method of discouraging traffic from specific areas of the yard is called for, try a barrier planting. A number of thorny or prickly plants are very attractive—from a safe distance. A hedge of holly osmanthus, Chinese holly, or pyracantha is formidable; rarely will kids or dogs take a short-cut through them. Even shrubs lacking lethal armor—such as inkberry, yew, and upright junipers—effectively control foot traffic when planted fairly close together.

ACCESS BEHIND THE SCENES

When you design a bed, access for maintenance must always be considered. How are you going to reach its center to pull weeds or divide a perennial? This is easy for beds that are no deeper than three or four feet, but

for those with a depth that exceeds your arm span, the answer is a discrete interior path.

Keep in mind that traffic through beds should be limited, particularly when the ground is wet, because it causes compaction of the soil, and plants can be easily damaged. But stepping stones provide access with limited trampling. Pieces of flagstone or formed concrete pavers are inconspicuous, efficient, and easy to relocate if plant growth dictates a change. Space them at comfortable intervals so you can reach all parts of the bed.

SAFE PASSAGE

Safety is probably the most important aspect of any garden path. Avoid using a surface material that shifts underfoot—loose gravel may work well for a driveway, but it can be an uncomfortable walking surface. A path should be designed to allow for drainage, otherwise puddles and unexpected patches of ice can create problems. If the path is used at night, lighting may be necessary, particularly if steps are involved.

Planning paths through a landscape requires a great deal of consideration, with convenience, aesthetics, and safety weighing in to accommodate the needs and delights of all who travel through or work in your garden spaces.

Rita Pelczar, Associate Editor

View of the Potomac River from River Farm

take the

LONG VIEW

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Gardener's Notebook

Horticultural News and Research Important to American Gardeners

Amazing Source for New Plastics

MAKING PLASTIC from corn starch and corn oil used to be the stuff of science projects; the end product was recognizable as plastic, but far too crude to be marketable. Twelve years ago, Patrick Gruber, a young chemist and researcher at the



In addition to being an important food staple, corn is now becoming a source for biodegradable plastic.

Cargill Dow Company—with facilities in Minnetonka, Minnesota and, a new, \$300 million plant in Blair, Nebraska—set out to make a high-quality plastic. Working evenings and weekends on his kitchen stove, he finally hit upon the key ingredient: live lactobacilli—the kind of bacteria you find in yogurt. Those early experiments ultimately led to the first polymer to be derived entirely from an annually renewable resource: corn.

“Traditionally, corn was grown for food and feed for livestock,” says Don Hutchens, executive director of the Nebraska Corn Board, “The development of new uses for corn brings agriculture and corn production to a new era.” The location of the Blair plant, in the heart of the Midwest’s corn belt, puts technology close to the harvest. In the Blair facility, carbon stored in plant starches is

broken down into natural sugars that form plastics through a process of fermentation and distillation.

This past June, NatureWorks’ polylactide polymer (PLA) fibers, the first to be derived entirely from plant sugars instead of petroleum, went on the market in comforters, pillows, mattress toppers, and pads, manufactured by the Pacific Coast Feather Company. These fibers, produced by Cargill Dow, are the vanguard of a whole range of PLA-based products—including clothing, carpeting, and compostable packaging.

The technology to produce plastic from corn dextrose has garnered the company several awards, including the U.S. Department of Energy’s 2001 Technology of the Year Award. Deputy Assistant Secretary Denise Swink described it as “a big improvement over making plastics from oil” as well as being “hands-down competitive with petroleum.” Cargill Dow also received an R & D Environmental Innovation Award from *Discover*, a general interest science and technology magazine, in June 2001.

Unlike the polymers manufactured by other companies, such as Dupont’s Sorona, Cargill Dow’s NatureWorks does not come from genetically modified plants. Unlike others, it is also biodegradable.

“We have grown too dependent on crude oil from the Middle East,” says Hutchens. “Anything you make from oil—from ethanol to biodegradable plastics—can be made from corn.”

CAFFEINE FOILS SNAILS AND SLUGS

Beer has lured many a slug or snail to its death. Now there’s a weapon against teetotaler mollusks. While testing caffeine sprays to ward off the coqui frog, an introduced pest species that infests potted plants, research biologist Robert Hollingsworth of the USDA Agricultural Research Service (ARS) in Hilo, Hawaii, and colleagues noticed that the one- to two-percent caffeine solution they were using to repel frogs killed all snails.



A subsequent experiment showed a two-percent caffeine solution to be more effective than a standard dose of the commonly used metaldehyde to kill snails and slugs. Metaldehyde residues in food are

banned in the United States, but caffeine is considered safe.

While further research is needed, caffeine may prove to be an effective remedy for snails and slugs that is benign to the environment.

In the meantime, save your leftover coffee. “In our laborato-

ry leaf-dip tests, a concentration of about 0.1-percent caffeine was associated with partial repellency to large slugs,” says Hollingsworth, noting that “instant coffee has about 0.05 percent caffeine, and brewed coffee is usually stronger.” Just think what espresso could do.

EARTHWORM CASTINGS

Gardeners have long associated the presence of earthworms with soil fertility. Recent research in the United States and abroad not only supports this notion, but demonstrates that the excretions of

worms—earthworm castings—are loaded with beneficial organisms and enzymes that regulate and enhance plant growth, prevent disease, and improve soil tilth. Called “vermicompost,” this nutrient-rich, 100 percent organic, odorless, biologically active fertilizer can be made at home in special containers designed for house redworms (*Eisenia foetida*) that eat kitchen wastes. A number of companies sell finished vermicompost by the pound as pure earthworm castings or in convenient liquid or tea bag forms.



The excrement produced by earthworms, called castings, is beneficial for the soil.

Vermicompost is not a standardized product; its nutrient content varies with the worm species and diet. Yet analyses of nutrient content have shown it to be generally superior to farmyard manure in percentages of organic carbon, total nitrogen, phosphate, and potassium. In addition, the passage through the gut of earthworms makes these nutrients more accessible to plants and the spongy texture of the castings allows for greater air and water retention. Unlike synthetic chemical fertilizers, which actually shut down beneficial microbial activity, earthworm compost is alive.

“It’s so important for people to realize the fundamental importance of biological activity in the soil,” says Scott Subler, former professor of soil ecology at Ohio State University and president of Living Soil, a company in Millheim, Pennsylvania, that sells earthworm castings and related products. “We’ve neglected soil biology. Things are so much better if we actually think and manage it. It’s preventive medicine.”

TOBACCO TURNS OVER NEW LEAF?

The Surgeon General still warns that smoking tobacco is a health hazard, but new research indicates a variant of the

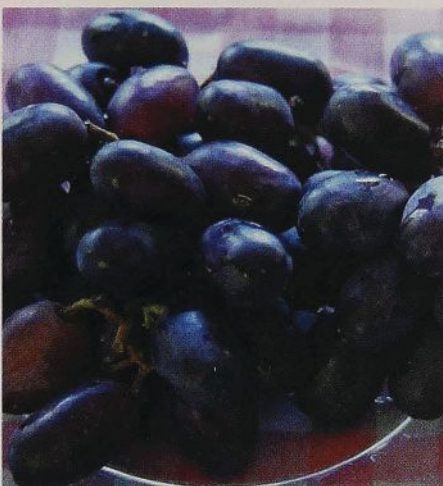
much-maligned plant may one day save the lives of cancer sufferers. Because the plant—an Australian variation of American field tobacco—can be propagated quickly and cheaply, companies such as Large Scale Biology Corporation, based in California, are using it to grow human tumor tissue within plant cells. In one experiment, scientists in Owensboro, Kentucky, hope to create vaccines from the extracted tissue for treatment of lymphoma patients.

The plant’s promise is connected with the so far elusive treatment phenomena termed “personalized medicine.” The concept is that vaccines would be customized to minister to each individual’s form of lymphoma, as opposed to standardized vaccines mass-produced by pharmaceutical companies.

Large Scale Biology was planning to distribute its vaccines this fall as part of the largest test to date on humans. Even if the treatment shows promise in initial tests, however, it generally takes 10 years to bring such vaccines to market.

RESVERATROL IN SMALL FRUITS

Highly pigmented fruits such as blueberries, strawberries, raspberries, and dark-skinned grapes—especially muscadine grapes—have anti-oxidant action, providing intriguing new links between diet and health.



“We have solid evidence that these highly pigmented fruits have either direct or indirect cancer-inhibiting properties,” says ARS research plant pathologist David E. Wedge. “Of all of the fruits tested, muscadine was the most active, containing resveratrol,” the compound thought re-

sponsible for the cholesterol-lowering effects of red wine, he adds.

It is always tempting to look for the one chemical “silver bullet” that will cure cancer, says Wedge, but “the small fruits contain whole classes of compounds that are synergistic with each other. All have anti-oxidant activity, but you lose activity when you start separating them.”

Wedge suggests eating “as many fruits as you can possibly tolerate—especially those that are highly pigmented.”

REEDY WEEDS

When young, giant reed (*Arundo donax*) looks a lot like corn, but this perennial grass grows much higher—over 18 inches a week under favorable conditions—to reach 12 to 18 feet. It grows best in places with abundant moisture such as streambeds, but it will tolerate almost any conditions or types of soil.

“Unfortunately,” says Tom Dudley, of the Department of Integrative Biology at the University of California, Berkeley, “it has escaped cultivation by the rhizomes washing into rivers during floods, and has now occupied tens of thousands of acres throughout California, displacing native riparian plants and providing very poor habitat for wildlife—a particular concern for migrating songbirds.”

Giant reed is an invasive throughout the southern United States, where, in addition to displacing native species, it promotes erosion because it is very shallow rooted and easily undercut.

Native to India, giant reed has long been naturalized in the Mediterranean region, where it was used for thatch, fencing, basketry, and musical wind instruments. Double clarinets made of giant reed—two canes tied side by side—have been excavated from Egyptian tombs of the 1st century B.C.

How it came to this country is uncertain. In California, one theory holds the Spanish mission fathers introduced giant reed as a quick-growing source of building material. Another attributes its introduction to French settlers who used it to stabilize banks. However it happened, this useful grass has become much too much of a good thing.

Compiled by Associate Editor Carole Ottesen. Freelance writer John Wolf contributed to this section.



Gardener's Information Service

WARY OF BLISTER RUST

I am looking for shrubs to plant along the northeast side of my house and was considering rhododendrons and *Tsuga canadensis* 'Bennett'. But in reading about hemlocks, I learned that blister rust can be a problem and is exacerbated by alternate hosts, including rhododendrons. How serious a problem is this and can you recommend alternatives?

—F.R., ALEXANDRIA, VIRGINIA

Unfortunately, blister rust is only one of the myriad pests that prey on Canadian hemlocks, especially those that are stressed by improper siting or drought. "A lot depends on how well Canadian hemlocks are taken care of and your ultimate goal," says John Frett, professor of landscape horticulture at the University of Delaware, who notes that it usually takes a decade or more of stress in the landscape before you see problems.

Of more concern is hemlock woolly adelgid, a cousin of the aphid, which manifests itself as white cottony tufts visible on the needlelike leaves and twigs. Hemlocks also suffer from sun scorch when temperatures reach 95 degrees Fahrenheit and from injury caused by prolonged drought—both common conditions in your area.

For the long haul in light shade, consider mahonias. *Mahonia bealei* offers bold texture. The *M. aquifolium* cultivars 'Atropurpureum' and 'Smaragd' exhibit finer foliage that colors nicely in fall. Cultivars of yew (*Taxus x media*) should also do well, as will big-leaf hydrangea (*Hydrangea macrophylla*), doublefile viburnum (*Viburnum plicatum*), *Pieris japonica*, and their cultivars.

STUNTED DOGWOOD LEAVES

Four years ago, we bought a *Cornus alternifolia* 'Argentea' and planted it in full sun in rich soil on a well-drained slope in our coastal USDA Zone 7 garden. Each spring the tree's leaves unfurl only part-

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.

way, look puckered, and remain stunted. But there is no die-back, and the branches and twigs are flexible. Do you have any suggestions?

—J.L.G., LEWES, DELAWARE

Pagoda dogwood (*Cornus alternifolia*), is an understory tree native to the eastern United States. The cultivar 'Argentea', bred in Europe and uncommon in American gardens, tends to be shrubby, with variegated leaves that are smaller than the species. Like most dogwoods, it does best in part shade and has a shallow, fibrous, spreading root system that requires moist, acid, well-drained soil.

Although it's possible that salt air or some other environmental factor may be causing the problem, the most likely culprit in this case is water deficiency. Your plant is situated on a slope where water tends to run off rather than soak in; it is in full sun where there is increased heat stress, and it is near the ocean, where wind increases moisture loss through transpiration. Make sure the soil in the root zone gets enough water to make it moist to a depth of eight inches weekly. A two- to three-inch layer of mulch will help conserve the moisture.

PRUNING FLOWERING ALMONDS

This past spring I planted three small flowering almonds (*Prunus dulcis*) in the front yard. They are located on the northwest side in open space. Do I need to cut them back for winter or prune them in any way?

—F.F., TACOMA, WASHINGTON

According to AHS's *Pruning and Training* by Christopher Brickell and David Joyce,

flowering almonds should be trained to a central-leader standard. In winter, cut back any branches that are competing leaders and leave up to five feet of trunk clear. Remove suckers from the rootstock in early spring and at any time they appear thereafter. Any other pruning should be done immediately after flowering. Thinning the crown is unnecessary. The twiggy growth produced by young trees usually results in increased flower production. Once established, your trees will need little pruning.

CONTROLLING ENGLISH IVY

English ivy (*Hedera helix*) has escaped from my neighbor's yard and is taking over my trees and garden. How can I get it under control?

—C.V., NEW YORK, NEW YORK

Winter is a good time to start eliminating escaped English ivy. The Wildland Invasive Species Team Web site of the Nature Conservancy suggests relying largely on mechanical control because the waxy coating on ivy leaves reduces the effectiveness of sprayed herbicides.

If you have a large area that needs to be cleared, set achievable goals: Stake off an area to be de-ivied and equip yourself with gloves, digging fork, and pruners. Dig out and pull up every piece of ivy in sight. Repeat at monthly intervals throughout the year or until you no longer see any plants. It will be most effective if you attack ivy after a soaking rain has softened the earth.

If you have ivy growing up trees, cut the stems at ground level and paint the lower face of the cut stems with an herbicide designed for woody plants.

For more information, visit the Nature Conservancy's weed Web site tncweeds.ucdavis.edu/index.html.

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

Offshoots

Backyard

by Victoria L. Spray

LIFE IS A LINE that tends to stretch into a full circle. The line of my life began in the backyard of my childhood home. The earth beneath my feet was stage, bed, and playground. It was there that a sheet thrown over the clothesline was first a fort where offenders were kept at bay by might and imagination and then a shelter where I could sleep like a hound dog beneath the shade of an oak tree. It was in the backyard where I stood for long minutes in the hot sun scowling with concentrated wonder as I watched ants gather an insect part from the top of a fence post. No animal laughed while I leaned over with my

rear end up in the air to observe closely the undersides of a grasshopper. In the backyard I was free to be "me."

The backyard was where I watched the rain seep into the dirt, heard the birds grow quiet as the leaves were pelted, and smelled the pungent wet earth that simultaneously sustained life and consumed the dead. It was where I first witnessed sex: Two moths in motionless union on the wooden-plank door of the shed created a curious shadow that stayed on my mind for the rest of the day. And because the yard was bordered by dark woods, I learned early on that lawn and garden—without the continued effort of mower and saw—would soon be reclaimed by nature.

At 40, I realized that for 20 years what I had been missing was a backyard. In a life of moving from one location to another, education gained in classrooms, relationships, and changing jobs in a world rushing toward the next red light, I had forgotten what it felt like to nap beneath a sheet thrown over a clothesline.

So recently, I decided the time had come to settle in a house with a yard and garden. Why hadn't I carved a backyard haven for myself sooner—someplace where the human world did not rule? Perhaps I worried life would become too small in a fenced-in area bordered with flowers. Or I was too used to a world fed by dramas in front of a television where fights, make-ups, and shootouts kept my adrenaline pumping 30 minutes at a time. Maybe I feared life would be too dull outside the bounds of human invention.



A scream of terror interrupts my tomato-gazing thoughts and brings me to the mouth of my cat where an unfortunate and terrified squirrel dangles. I chase the cat through the hosta bed to convince it to release the squirrel, and when the squirrel is freed, it almost scurries up my leg in its desperate escape. No, the backyard is not a dull place. And when I pluck a four-inch oak tree seedling from the ground around my green peppers and hold the strong and sinewy roots up to the sunlight, I am conscious of the drama of my having altered, for a short while, this small cleared place called a backyard.

As a child, the backyard was a school-ground for learning the sorrow of life in the sight of an ant-encrusted dead baby bird and the horror of the movement of

maggots inside the belly of a decomposing rat. Those difficult lessons still prompt me to observe anxiously as a hawk perches on the garden fence watching for small-bodies scurrying beneath the canopy of my eight-by-eight-foot plot of corn.

During periods of drought when I was a child, I would will the rain to fall by whooping with my hands to my mouth and dancing in circles. These days, when it has been dry for a frightening period of time, I feel a tightness in my chest and send furtive pleas up into the sky. Though the coincidence of rain after a particularly spectacular dance led my youthful mind to believe in the power of whoops and high steps, now I am almost convinced my silent request has little effect on the amount of moisture that falls from the sky.

But I am happy to discover that I am able to dream in the backyard as I did when a child, even though I now know of life's highways that lead to sameness and intrigue. I am no longer Alice in Wonderland, but I am willing to consider the possibility of rabbits playing croquet.

While one part of the world is frantic with the loud machinery of buying and selling, with appointment A followed by appointment B—with just enough time in between to wait in a fast-food expressway—and with human interactions conducted via cc-mail and e-mail, I think today I'll put a sheet over the clothesline and take a nap in my backyard.

Victoria L. Spray is a free-lance writer living in Tallahassee, Florida.

Much more than a great magazine,

"It's hard to imagine any part of my life that hasn't been touched by my passion for plants—food, friends, work, and weekends puttering in the garden. *AHS is all about creating this passion in children and supporting it in adults.* I give to AHS because it shares my values."

—Brian E. Holley, Director, Cleveland Botanical Garden

"AHS is a remarkable organization with *an extraordinary mission to share with all Americans the joy of gardening* and the crucial role gardeners play in stewardship of the Earth."

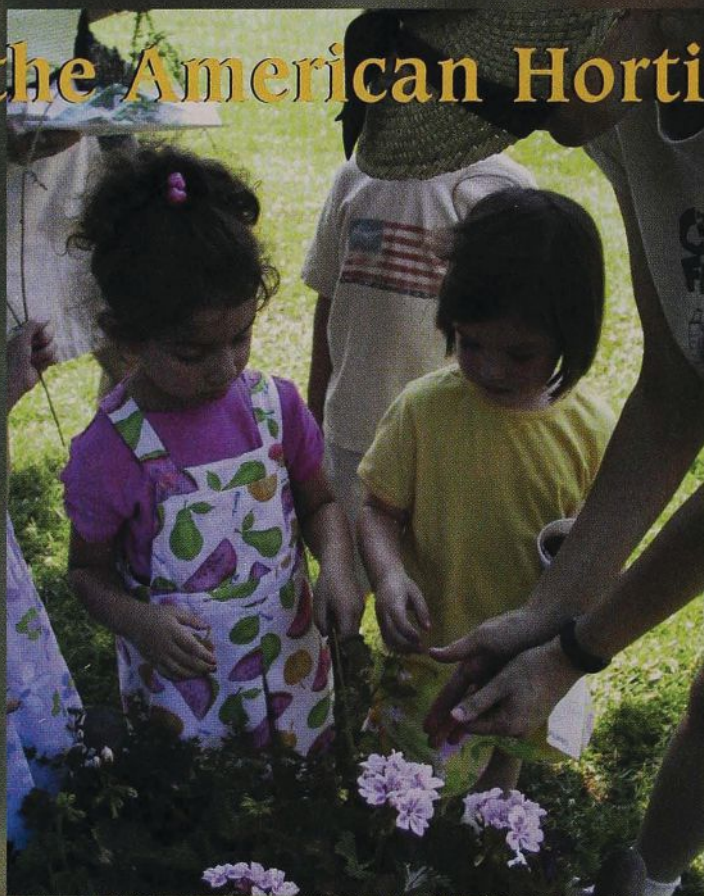
—Katy Moss Warner, AHS President and CEO



the American Horticultural Society

"I believe there is a moral dimension to horticulture: *Gardening makes us better people, and gardens make our communities better places to live.* That's why I and all gardeners should be supporting AHS."

—Duane Kelly, Producer of the Northwest and San Francisco Flower & Garden Shows



connects people to gardens.



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Contact Joe Lamoglia at (800) 777-7931 ext. 115 to find out how you can help.

Plants that Heal the Earth

BY CARMEN THÉRIAULT

CENTURIES AGO, European prospectors knew when they saw alpine pennycress (*Thlaspi alpestre*) growing in the rocky soil of mountainsides that precious metal ores weren't too far away. The scrappy perennial thrives on soils laden with abundant quantities of zinc and nickel. The plant's ability to assimilate amounts of these metals that would be toxic to most other plants makes it immune to certain diseases and protects it from being devoured by insects, thereby enhancing its chances of survival. Hundreds of years later, the plant's unique characteristics have made it one of the star players in the developing field of phytoremediation.

This emerging science is taking advantage of a growing roster of plants such as pennycress that have demonstrated the amazing ability to accumulate organic chemicals, heavy metals, and other toxins from water and soil at contaminated sites. The plants either take up and store the toxins in their tissue—after which they can be harvested and safely disposed of—or they alter the chemical composition of the toxins to form less harmful compounds. Some plants can also trap toxins on their roots through a process known as adsorption—the chemicals literally “stick” to the surface of the roots.

Phytoremediation first crept into public view in 1993, when scientists at Chernobyl, in what was then the Soviet Union, used sunflowers grown hydroponically on floating Styrofoam rafts to “vacuum” radioactive water contaminated by the horrific accident



All plants are not equal in their ability to remove toxins from soil. Top: Native flax, lupine, and hebe grow on tailings at the abandoned Tui Mine located on New Zealand's North Island, extracting significant levels of arsenic and lead. Left: The edenfern is being tested to determine its efficiency in cleaning up arsenic from backyards.

at the city's nuclear facility.

Today, phytoremediation is being used to clean up petroleum fields, abandoned mines, weaponry testing sites, fertilizer spills, and contaminated water.

21ST-CENTURY FLOWER POWER

Phytoremediation employs plants that are perfectly tailored for the job—you can't just randomly set plants on a toxic

site and expect them to act as a cleanup crew. Scientists have identified a number of plants that are quite specific to their tasks: brake fern is used to accumulate arsenic, while alfalfa sucks up spills of nitrogen fertilizers. Poplars have demonstrated an amazing capacity to absorb mercury as well as the pesticide atrazine from soil and groundwater. Alyssum, boxwood, and several mem-

HOW PHYTOREMEDIATION WORKS

- Plants are used like solar-driven hydraulic pumps to transport and concentrate pollutants.
- Some plants absorb metals, others break down organic compounds or interact with soil bacteria to detoxify them.
- Some plants stimulate growth of chemical-degrading bacteria.
- Surfactants—wetting agents—are sometimes used to enhance the process.
- Plants that have absorbed toxins are harvested and disposed of in hazardous waste sites or the toxins are released as harmless gasses.

bers of the euphorbia family (Euphorbiaceae) have all been shown to remove nickel. Common tomatoes have demonstrated their ability to vacuum up lead, zinc, and cadmium.

The ideal clean-up plant is able to survive in contaminated soil or groundwater and, at the same time, generate the type of symbiotic microbial and fungal growth required to draw toxins into its root system.

BENEFITS AND SHORTCOMINGS

Phytoremediation seems to have unlimited potential and offers many benefits over traditional methods for cleaning up toxic sites, which often involve digging up and removing all soil. Instead, phytoremediation reclaims the land, minimizing disruption of the ecosystem, and reducing the volume of contaminated material that needs to be transported and disposed of elsewhere.

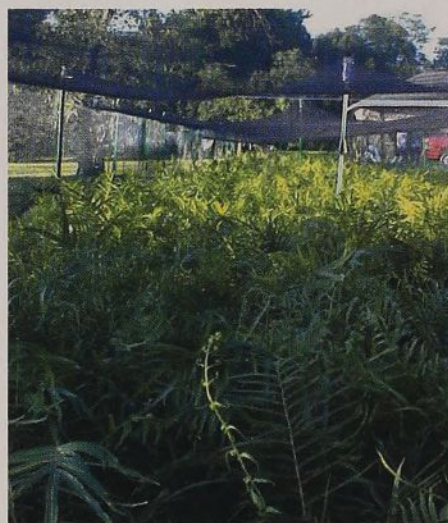
Phytoremediation has long-term applicability, can be efficient in either terrestrial or aquatic environments, and is often suitable for use in tight, inaccessible sites. It is often much less costly than methods that require off-site disposal by incineration or solvent washing of soils.

And phytoremediation has aesthetic benefits. Polluted sites are often eyesores, especially if soil is being removed; covering a polluted site with plants is almost

always a more attractive alternative.

But phytoremediation does have certain limitations and the technique has its detractors. For instance, climatic differences can affect what plants can be used in certain sites. Cold weather can also disrupt the course of phytoremediation if tender or annual plants are being used—thus it may take several growing seasons to complete a project. Many companies need to complete cleanups rapidly in order to meet deadlines or speed development. There are also depth limitations—phytoremediation is generally only effective to a depth of three feet for soil and 10 feet for groundwater.

Some observers have expressed concern that animals and insects feeding off pollutant-laden plants could reintroduce contaminants into the food chain. And as more researchers explore the possibility that plants could be bioengineered—genetically altered—to make them better suited to specific cleanup tasks, critics of genetic engineering argue that escaped pollen from such plants could alter natural plant populations.



The edenferns growing in this test plot will be harvested and analyzed to determine how much arsenic they extracted from the soil.

ARSENIC-EATING FERN

In the late 1990s, Lena Ma of the University of Florida's Institute of Food and Agriculture Sciences discovered that ladder brake ferns (*Pteris vittata*) growing on a site contaminated by arsenic-treated lumber had an astonishing capability to take up the poisonous element in their fronds. Ma led a research team that determined

the fern can take up arsenic at a rate more than 200 times higher than any other plant yet tested—often showing marked increase of the toxin within two weeks after planting. Once the fern has absorbed as much arsenic as it can, its fronds can be harvested and safely disposed of.

The University of Florida subsequently patented the arsenic-extracting capabilities of the fern and partnered with Edenspace Systems Corporation, a Northern Virginia company specializing in phytoextraction, which has licensed the plant—trademarked edenfern—for commercial use.

According to Bruce Ferguson, president and CEO of Edenspace, his company is focused on finding ways to remove toxic substances from micro-environments around homes and businesses. "Edenspace wants to provide people with do-it-yourself cleanup tools," he says.

In partnership with the American Horticultural Society and the National Capitol Area Federation of Garden Clubs, Edenspace is working with gardeners in the Washington, D.C., area on a pilot project to test the edenfern's ability to remove arsenic from home gardens (see box, page 26).

Although brake fern is native to the subtropics, tests by Edenspace staff have shown it is an easy-to-grow perennial that is reliably hardy in USDA Hardiness Zones 8 to 11. It grows best in part shade, but has shown tolerance for full sun in sites that are consistently moist.

Given its phenomenal ability to take up arsenic and the fact it will grow year-round in a broad region, the edenfern also holds great promise for cleaning up larger-scale sites contaminated with arsenic by certain herbicides, mining operations, and industries such as glass and semiconductor manufacturing.

A major demonstration project sponsored by the U.S. Army Corps of Engineers is underway at the Army's Picatinny Arsenal in New Jersey, which is one of the Superfund cleanup sites administered by the U.S. Environmental Protection Agency (EPA).

MONEY MAY GROW ON TREES

In the Southern Hemisphere, Chris Anderson, a New Zealand scientist from Massey University in Palmerston, has



Test plots at the abandoned Tui Mine in New Zealand show areas laden with acid-based metal tailings planted with a variety of native plants. Top: The early stages revegetation. Bottom: The same plot after a few months showing significant growth.

revegetated fields of tailings—the residues left by mining—at the Tui Mine, abandoned since 1974. Located on Mount Te Aroha in the Coromandel Coast region of the country's North Island, the site abounds in acid-based metal tailings, and for decades has failed to support significant plant life.

The New Zealand Ministry for the En-

vironment has allocated money to research conventional means of cleanup. However, Anderson, in conjunction with Phytomine Environmental Ltd., has successfully revegetated a number of plots at the tailings dam to mitigate metal leaching into the water and create a working ecosystem. First planted in April, 2001 with native hebes, flaxes, and lupines, the

level of organic material in the area has risen due to the decomposition of leaf debris, and the soil has stabilized, lessening the effects of wind and water erosion. Native grasses and mosses have begun to take root among the flourishing plants.

Adding value to the project, Anderson has shown the same technology that removes arsenic and lead from contaminated sites works to extract what gold remains in the tailings. He developed his breakthrough mining techniques in the laboratory, using carrots to extract metal from tailings brought in from another mine. Following successful lab trials, he moved on to using native plants, which were grown to maturity and then harvested. After further treatment with ammonium followed by incineration, the ash was separated into its components to recover gold.

Field trials and greenhouse research is also ongoing at sites in Australia and South Africa, and several locations in Brazil are being targeted for the near future. Anderson says his goal is to have “a button of gold” to show for his efforts.

CHOCOLATE MELTDOWN

Plants are used in two dramatic applications at the Henderson, Nevada, manufacturing facility of Ethel M Chocolates. Chocolatier Forrest Mars named his out-of-retirement venture after his mother and, according to her vision, planted acres of desert landscape surrounding the business, which attracts hundreds of thousands of visitors each year.

Plants are the means by which the factory has literally become a zero-discharge operation. All waste from the manufacturing process—as well as effluent from cleaning equipment, boilers, and utensils—ends up in a Living Machine™—a massive vat planted with an assortment of tropical and subtropical plants, and stocked with freshwater shrimp and snails.

The wastewater is first processed in sealed aerobic reactors where microbes begin the work. After filtering out odors, the water is moved to the phytoremediation vats, which were developed by Living Machine Systems in Taos, New Mexico. Living Machine executive Erik Alm describes the plants his company uses in the cleaning process—which include bananas, papyrus, and taros—as “freaks” because they have such abundant

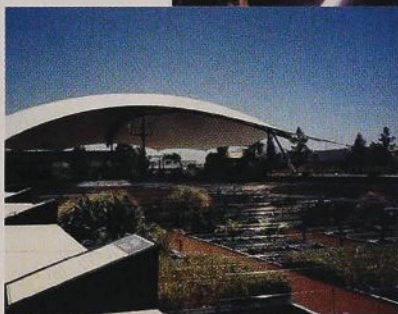
root systems. Alm explains that normal vegetation grown in such nutrient-rich environments typically does not develop the long root mass needed for efficient phytoremediation.

The Living Machine system at Ethel M is able to process up to 32,000 gallons of production wastewater per day. The cleaned water is used to irrigate the facility's vast gardens, with excess being siphoned off to a pond and, eventually, to constructed wetlands. Excess sludge is composted in a reed bed. Last spring, a mother duck with 11 ducklings moved into the wetlands.

CARTOON CATS AND CLEAN WATER

Paws, Inc., employs a staff of 50 for the business of marketing materials related to cartoonist Jim Davis' comic strip cat, Garfield.

When Davis relocated the company to a rural area in Indiana, no public sewers were available to handle waste at the new site. This sparked the idea for a solar aquatic waste treatment facility. Horticulturist Russ Vernon who manages the operation, in place since 1990, claims the method is cheaper than conventional techniques for wastewater treatment. It has the added



Left: Hydroponically grown plants growing in specially designed vats at Ethel M Chocolates in Henderson, Nevada, clean the facility's wastewater. Above: At Paws, Inc., in Albany, Indiana, the wastewater cleaning process begins in transparent tanks where aquatic plants and bacteria begin to remove impurities.

value of enabling him to grow the plants used on the grounds and in offices.

Wastewater from the facility is first carried into holding tanks in a greenhouse where it is evenly released into clear fiberglass tanks. Bacterial growth, stimulated by sun streaming into the transparent tanks, begins the cleaning process, aided by algae, water hyacinths, duckweed, azol-

Japanese blood grass, papyrus, hibiscus, watercress, caladium, angel's trumpet (*Brugmansia* spp.), reed canary grass, and other temperate and tropical plants. These plants grow very rapidly in this environment, requiring frequent rotation as they outgrow their space. The lagoon, which is home to four species of fish, will soon support hydroponically grown hybrid tea

la—a free-floating fern—and snails. Black willow tree seedlings were first used in the process, but had to be discarded because they were too successful—they kept sinking under the weight of their captured materials. Water is constantly aerated using common drip hoses as it is moved through a series of tanks with increasingly higher forms of plant life.

In the final stages, the treated water is moved into constructed wetlands planted with

AHS AND GARDEN CLUB GROUP GIVE EDENFERN HOME TRIAL

In partnership with the American Horticultural Society, Edenspace Systems Corporation set up a pilot project involving a team of 38 Washington, D.C., area gardeners who planted edenferns in their home gardens last spring. The gardeners, members of the National Capital Area Federation of Garden Clubs, took initial soil samples near the site where they planned to plant the fern. The soil samples were sent to Edenspace for testing to determine the initial concentration of arsenic.

The gardeners were asked to plant the ferns near retaining walls, fences, playground equipment, and decks where building materials treated with rot-preventing arsenic compounds are most likely to be found. At the conclusion of the study this fall, the gardeners provided Edenspace with clippings from their ferns for testing to determine how much arsenic had accumulated.

Despite a decision last year by the lumber industry to phase out the use of arsenic in chemicals used to preserve wood, Edenspace President Bruce Ferguson believes that as much as 98 percent of all lumber sold for outdoor building use still contains the toxic element. The Washington area was also selected as a testing ground because 80 to 90 years ago the region was used extensively for testing weapons and storing munitions. Soils in what are now developed suburbs remain contaminated with arsenic and other toxic chemicals.

In spite of the drought that withered gardens throughout the Northeast this summer, more than half of the participants in the pilot project reported that their ferns had survived. Some had provided regular supplemental water to their ferns, but others had watered only intermittently or not at all. AHS President Emeritus Dr. H. Marc Cathey, who arranged for the garden club to participate in the pilot project, says he was surprised and pleased that so many of the ferns made it through the drought. "Given the conditions we experienced here this summer, it's a real testament to the gardening skills of this group that so many were still able to provide samples of their ferns for testing," he says.

—C.T.

roses once again; Vernon has grown them there before, decorating the company offices with the cut flowers.

TUNNEL VISION

In 1997, deep inside a Colorado mountain, Frank Burcik set out to prove that torrents of acid runoff from an abandoned mine-shaft could be cleaned by plants, leaving the treated water pure enough to be discharged into the Arkansas River.

The portal to the mine outside of Leadville, Colorado, stands at 10,000 feet above sea level. It is one of thousands of abandoned mines in the region. Burcik who describes himself as "an ordinary person with ideas," had 20 years of experience with open pit and underground mining industries before venturing into

the world of phytoremediation. He says, "As soon you open up the earth, oxygen and rainwater enter in and you begin to have problems with leaching."

Runoff from other mines had been stored in nearby EPA Superfund site ponds, which hold what Burcik describes as "some very nasty water." He initially set up a "grotto greenhouse" as a sort of feasibility study to determine if putting the contaminated water through the cleanup process was effective. To Burcik's satisfaction, the plants proved able to clean the toxic cocktail of arsenic, selenium, iron, manganese, zinc, and cadmium at a rate of 600 gallons a minute.

In the continuously lighted subterranean facility, the contaminated water passes through a mixture of canola, Indian mustard, sunflowers, and safflowers set in Styrofoam trays. Because it is underground, the environment in the greenhouse remains constant, with an ambient temperature of 60 to 65 degrees Fahrenheit and water temperature at 43 degrees.

In trial runs, Burcik tried all kinds of plants from banana trees and Hawaiian orchids to strawberries. The last bore fruit when

Top left: Frank Burcik waters seedlings in a subterranean mine in Leadville, Colorado. Bottom: Burcik displays the roots of hydroponically grown mustard plants that are nearing harvest after having absorbed a "toxic cocktail" of metals from the water.

there was three feet of snowpack on the mountain above and the temperature outside had plummeted to -26 degrees Fahrenheit.

The metal-saturated plants used in the process must be harvested before they decay and release their accumulated metals into discharged water, so they need to be replaced frequently. At first, Burcik used offsite greenhouses to germinate seed for the constant replanting, but the process proved too costly and he resorted to seeding new plants in the tunnel itself. In a fascinating sidelight to the project, crop and

Resources

Growing Clean Water: Nature's Solution to Water Pollution by B. C. Wolverton and John D. Wolverton. Wolverton Environmental Services, Inc., 2001.

Phytoremediation of Contaminated Soil and Water by Norman Terry, editor. Lewis Publishers, Inc., 1999.

Phytoremediation of Toxic Metals: Using Plants to Clean Up the Environment by Ilya Raskin et al. Wiley Interscience, 1999.

Web Sites

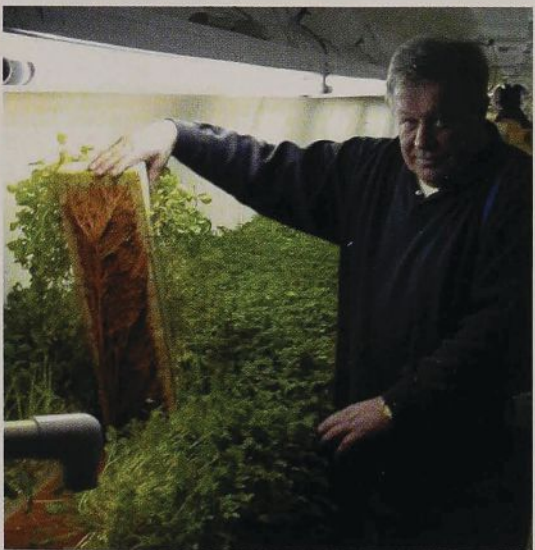
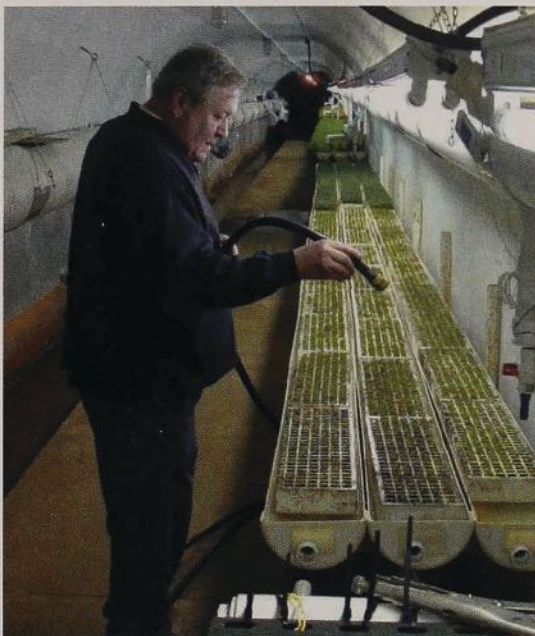
Edenspace Systems Corporation,
www.edenspace.com

U.S. Environmental Protection Agency, EPA's Web site offers a fact sheet called "A Citizen's Guide to Phytoremediation"
www.clu-in.org/products/citguide/

soil scientists at the University of Colorado at Fort Collins have determined that six species of tunnel-propagated plants used in the mineshaft, most notably canola, are showing an important adaptation to the round-the-clock growing environment—they can take up two-and-a-half to three times as much heavy metal as plants propagated off site.

As he prepares to move into the next phase, the success of his project has left Burcik amazed not only at its success in cleaning up water but by its implications for growing food for populations worldwide. "You can use this technology in the North Pole or the Sahara Desert, if you get out of the above-ground environment," he says. The potential for growing a wide variety of high quality food crops in such a below-ground, hydroponic environment adds even greater value to the results of his phytoremediation research.

Carmen Thériault is a California-based freelance writer whose work has appeared in magazines, newspapers, and e-zines in the United States, Australia, and Europe.



Stems of Distinction

By early winter, diligent Autumn has completed her great task—the amazing transformation of the garden's geography. What was a summer surfeit of green layers crowding for the sun, she has thinned relentlessly and discarded. What was once incomprehensibly dense volume is now a space that is open, eloquent, and spare.

Autumn has fashioned a minimalist winter landscape punctuated by the garden's beautiful bones. Subtle lines and textures, stems and barks, long hidden by herbaceous superfluity, become prominent in winter's soft, gray light. Stems of elegance and distinction now articulate space with grace and surprising color.

BY CAROLE OTTESEN, *Associate Editor*



MARK TURNER

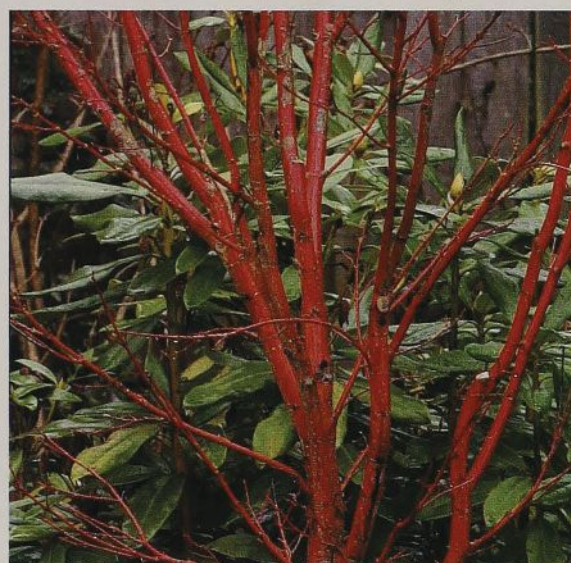
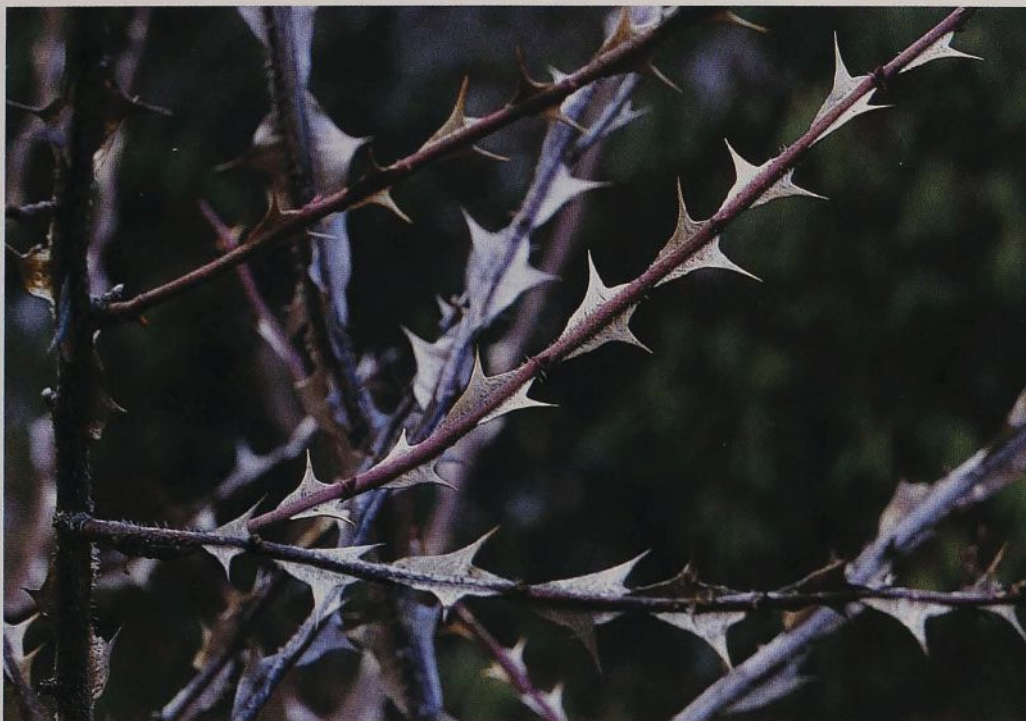


Above: Aptly named, the leafless stems of the 'Winter Flame' cultivar of bloodtwig dogwood (*Cornus sanguinea*, USDA Zones 5–7, AHS Zones 7–5) shoot upward like tongues of fire. The bright golden orange stems, tipped with coral, bring warmth into the snowy landscape at the Washington State Park Arboretum in Seattle.

Opposite: Cutting *Rubus biflorus* (Zones 6–9, 9–6) to the ground early each spring—coppicing, in horticulturist's jargon—keeps its stems juvenile, thin, and malleable. Ghostly gray, tinted lavender by fine red hairs, they arch with grace into an elegant sculpture.



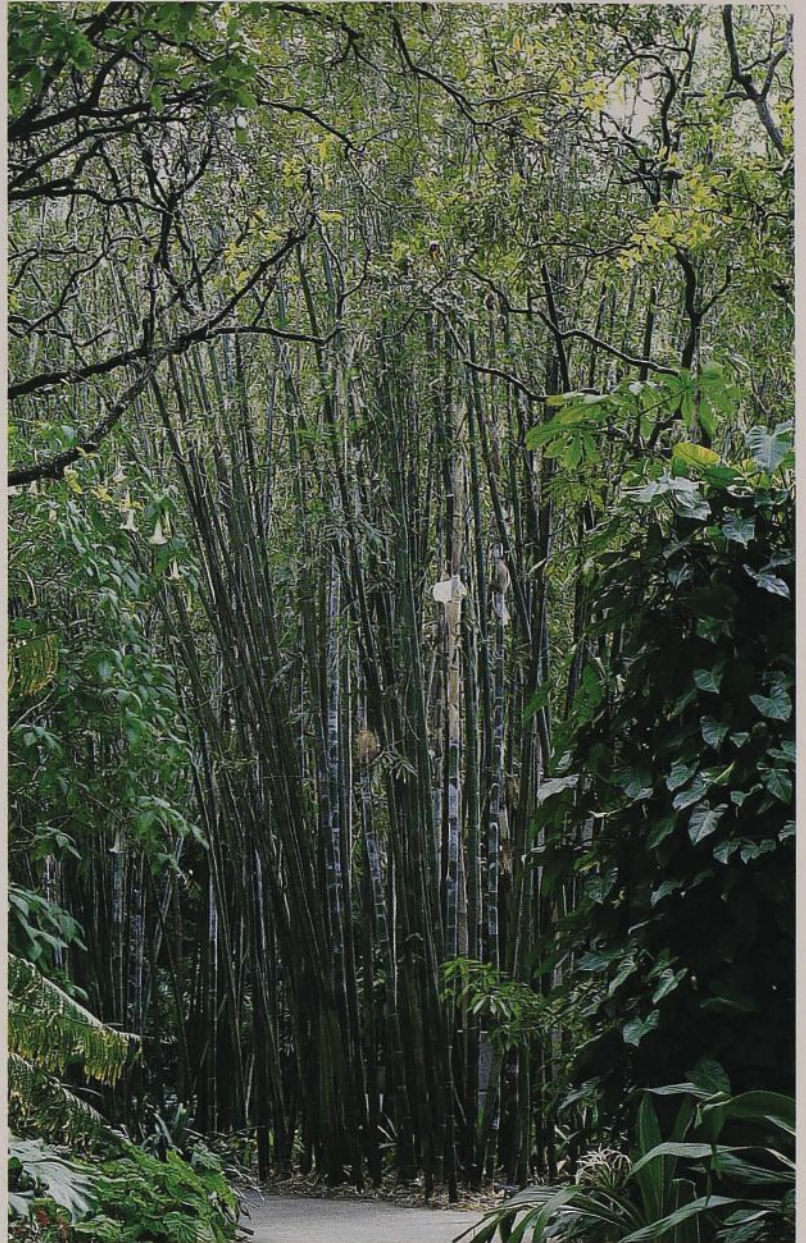
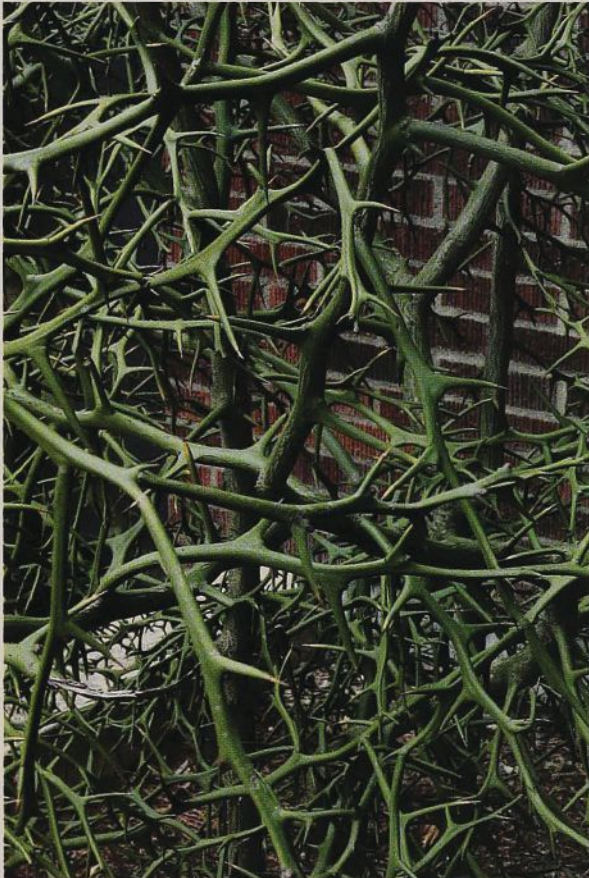
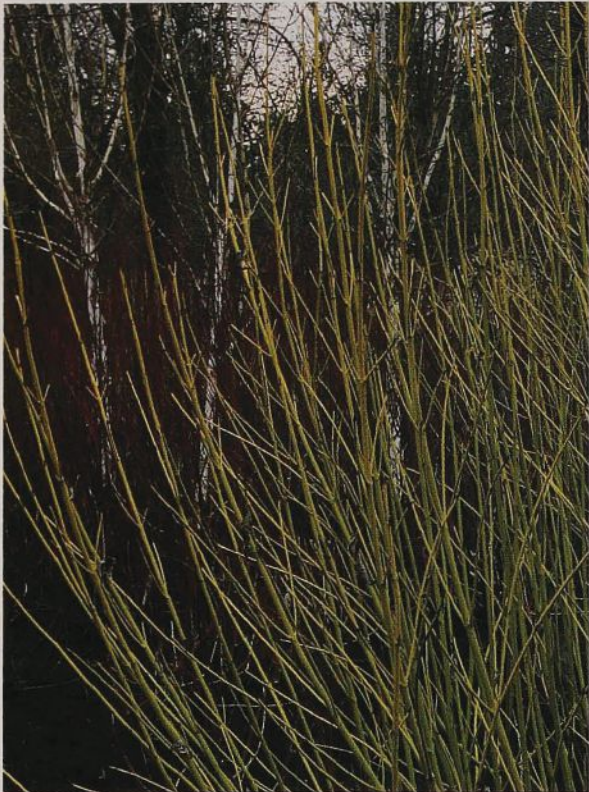
It isn't until winter that Harry Lauder's walking stick, *Corylus avellana* 'Contorta' (Zones 3–9, 9–1), truly shines in its role as the garden's contortionist. The baroque curlicues of its shiny, brown limbs are further adorned with hanging catkins.



Top: Even in full summer bloom, it is the conspicuous thorns of the winged thorn rose (*Rosa sericea* subsp. *omeiensis* forma *pteracantha*, Zones 6–9, 9–6) that catch the eye. In winter, although their color fades from scarlet to silvery gray, the crenulated stems retain their protective armor.

Above: For a welcome splash of color in the winter landscape, few plants are the equal of coral bark maple (*Acer palmatum* 'Sango-kaku', Zones 5–8, 8–2). The pinkish-red bark, brightest on the newest stems, glows on even the gloomiest days.

Left: The stems of the golden willow (*Salix alba* var. *vitellina*, Zones 4–9, 9–7) bristle starkly upright from coppiced limbs. The yellow-green wands are a muted foil for the bright yellow 'February Gold' daffodils.



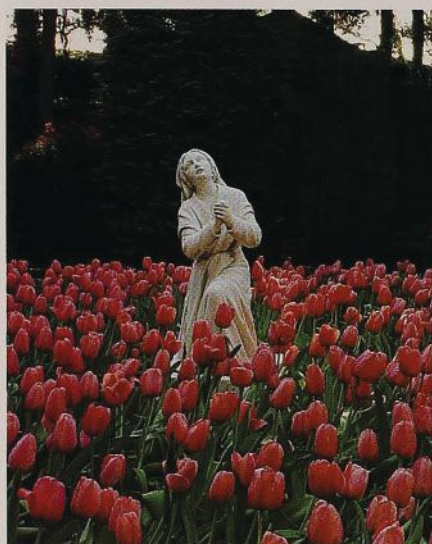
Above: Deep blue-green and starkly upright, the canes of the giant timber bamboo (*Bambusa oldhamii*, Zones 8–11, 12–8) are a focal point at the Marie Selby Gardens in Sarasota, Florida. Impressive in size, timber bamboo adds a musical element to the garden when the wind plays on its percussive canes.

Top left: Hardy red osier dogwood (*Cornus sericea*, Zones 2–8, 8–1), brightens northern gardens with its bright red stems, seen here in the background. In the foreground, a yellow form of the same plant (*C. sericea* 'Flaviramea') broadens the color palette and makes for engaging contrast.

Left: Hardy or trifoliolate orange (*Poncirus trifoliata*, Zones 5–9, 9–5) bears delicate, fragrant white flowers in spring, followed by green fruits that turn yellow in fall. In winter, the smooth green bark of its stems, adorned with fierce thorns as large as twigs, form intricate patterns.



Ocotillo (*Fouquieria splendens*, Zones 10–11, 12–1), framed here against an adobe wall at the Desert Botanical Garden in Phoenix, goes dormant in periods of drought, but sends forth small leaves and flowers when it rains. The stems of ocotillo and the shadows they cast are striking in the dazzling desert sunlight, and its often vase-shaped form shows up admirably in silhouette at dusk.



The Cloistered Garden

BY JANE BERGER

Newly renovated, the Franciscan Monastery Garden is one of Washington, D.C.'s best-kept secrets.



Tour Monastery Gardens with AHS

A tour of the Franciscan Monastery gardens is one of the events planned in association with AHS's Spring Garden Celebration: Washington Blooms!, to be held from March 29 to April 5, 2003. Preliminary information about the Spring Garden Celebration can be found on page 11 and additional details will be published in the January/February issue of *The American Gardener*.

looked much as they did in 1897, when Father Godfrey Schilling toured the run-down, abandoned McCeoney estate sitting high atop a hill in what is now the Brookland neighborhood in northeastern Washington, D.C. The Franciscan friar saw the 44-acre tract—part of the territory granted by King Charles I to the Calvert family of Maryland in 1632—as the perfect site for a vineyard and dairy farm, for construction of a church, and for gardens and shrines that would replicate the look and feel of the Holy Land—sacred areas in the Middle East and Mediterranean region where the Franciscan order has been guardian of religious sites since the early 13th century.

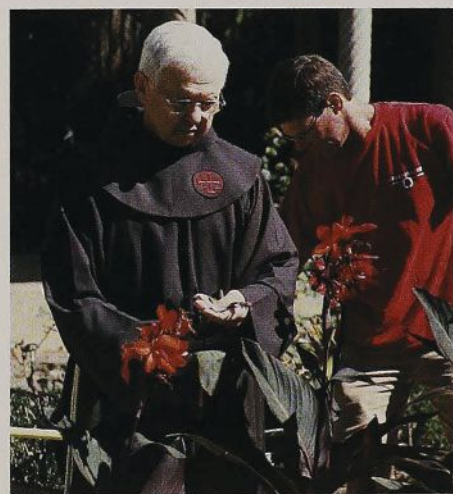
Within a few years, the overgrown estate was transformed: A large church was erected in a simple Byzantine-Romanesque style. It was sited in the midst of a court-

ORNAMENTAL GRASSES sway sweetly in the late summer breeze, and bees, birds, and butterflies are busy all over the courtyard, overseen, fittingly by a statue of St. Francis. Brother Roger, wearing the long brown robe of the Franciscan monastic order, gazes across scores of rose beds amid the almost overpowering mingled scents of butterfly bush, angel's trumpet, and boxwood. "It's not exactly what Brother Meinrad would have liked because a lot of his evergreens are missing," he said, "but I think sometimes it looks

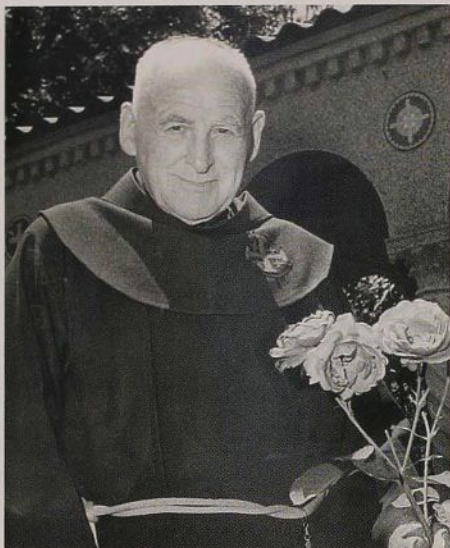
even better than the way it was in the time of Meinrad."

Just a few years ago, the celebrated garden on the grounds of the Franciscan Monastery in Washington, D.C., which once drew as many as a half million visitors a year, was in deep decline. The 44-acre site was overrun with weeds and rampant vines. The unkempt gardens had also fostered a wave of petty crimes; cars in the parking lot were being broken into, and there had even been some purse snatchings in the monastery's main courtyard.

At that point, the garden probably



Opposite page and above: Spring brings an explosion of color from thousands of tulips, pansies, and other plants to the monastery gardens. Right: Brother Roger Petras helps a member of Greensmiths, Inc., deadhead cannas.



Brother Meinrad Wiget, above, laid out the monastery's gardens, right, around 1905 and cared for them for nearly half a century.



yard two blocks long and surrounded by a graceful buff-colored colonnade or walkway called the Rosary Portico. Shrines and chapels designed as exact replicas of Holy Land sites were carved out of and into the gently sloping hillside, providing a natural oasis for visitors and habitat for birds and other wildlife.

The monastery gardens are among the oldest gardens in the Washington, D.C., area, predating the U.S. National Arboretum and Dumbarton Oaks, and open to visitors long before the gardens at George

Washington's home, Mount Vernon. A monk named Meinrad Wiget laid the gardens out starting around 1905. Despite a lack of formal training in horticulture or landscape design, over time Brother Meinrad proved himself a visionary horticulturist, blending both unusual and traditional plantings in formal and natural landscapes.

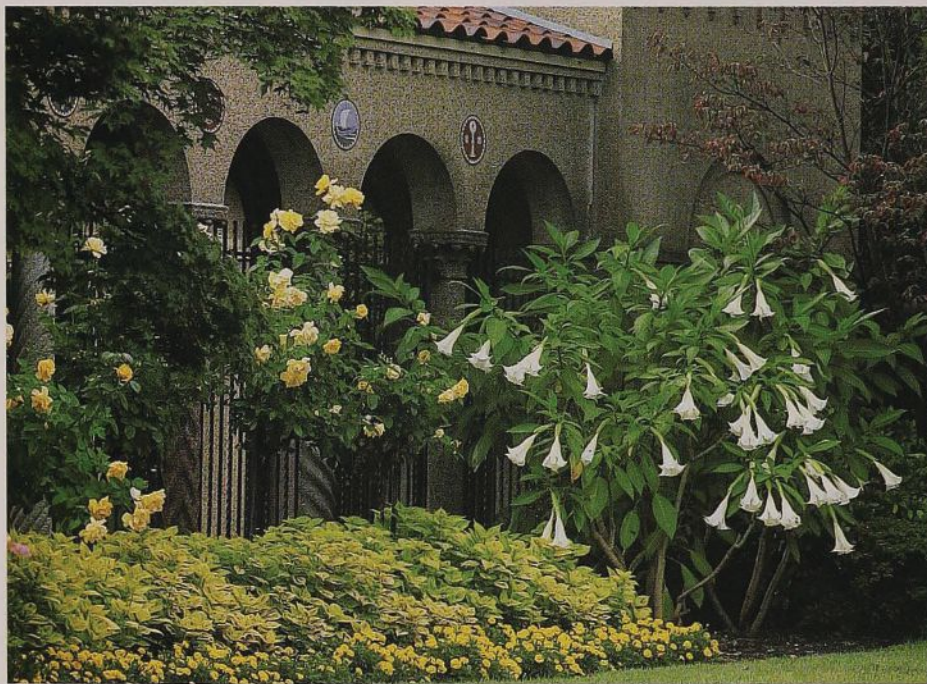
A SINGULAR VISION

Brother Meinrad, who died in 1967, would also have fit right in with current horticultural

trends, favoring flower borders over expansive lawns and using tropical plants to embellish the summer garden. "A lawn you have to work at all the time," he said in an article published in the *Washington Post* newspaper in 1955. "You get a nice one and it turns to crabgrass. With flowers you just go in and pull the weeds."

In summer, he liked to plant out tropical and subtropical plants comparable to those found in the Holy Land, including bananas (*Musa* spp.), angel's trumpets (*Brugmansia* spp.)—which some of his Franciscan brothers brought back from Africa—oleanders (*Nerium* spp.), date palms (*Phoenix dactylifera*), and lantanas (*Lantana camara*). According to Brother Roger, who worked with Meinrad for about 10 years, the tropicals added a "mystical, mysterious atmosphere" to the gardens and surprised visitors who were unfamiliar with them.

Meinrad also established the monastery's famed rose gardens and he planted the woodland oasis with oaks, Eastern hemlocks (*Tsuga canadensis*), tulip poplars (*Liriodendron tulipifera*), maples (*Acer* spp.), ashes (*Fraxinus* spp.), yews (*Taxus* spp.), Eastern dogwoods (*Cornus florida*), and many shade-loving shrubs, including *Aucuba japonica*, mountain laurels (*Kalmia* spp.), and rhododendrons. In other areas, he tucked in evergreens such as false cypress (*Chamaecyparis* spp.) arborvitae (*Thuja* spp.), Japanese cedars (*Cryptomeria japonica*), southern magno-



Yellow standard roses and a fragrant white angel's trumpets tower over a bed of annuals.

lias (*Magnolia grandiflora*), junipers (*Juniperus* spp.), English boxwood (*Buxus sempervirens* 'Suffruticosa'), and all kinds of hollies (*Ilex* spp).

After Meinrad died, none of his fellow friars had the horticultural expertise to maintain the thousands of trees, shrubs, roses, and herbaceous perennials that he had so painstakingly planted. Without his leadership the gardens went into a slow but steady downward spiral.

RESURRECTING THE GARDENS

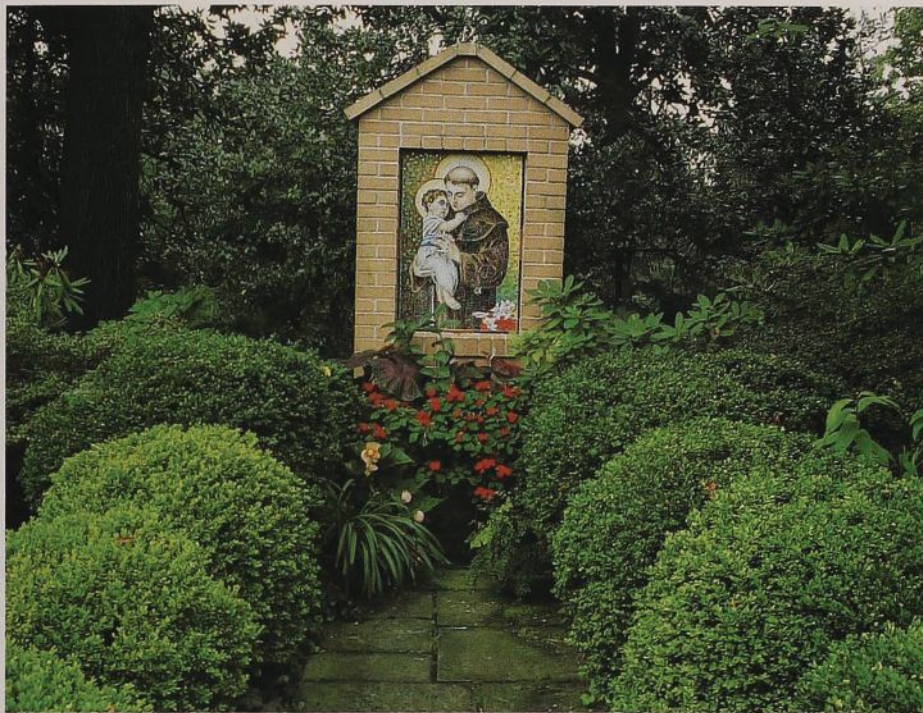
In 1995, the brothers finally decided to bring in landscape contractor Joe Arseneault and his firm, Greensmiths, Inc., to reverse the deterioration. Arseneault still remembers vividly the nightmare he faced when he visited the gardens for the first time. "Some areas of the garden were completely covered with vines," he says, and "the weeds in the rose beds were so thick, they were like sod." It took a full two years for Arseneault and his crew to reclaim areas that were overrun with vines and weeds. He then began to pore through old monastery photographs in search of ways to restore the garden to its former glory.

All along, Arseneault's main goal has been to "incorporate good design principles" and to preserve "at least some signature from each gardener who has been here before me." That meant a major renovation of the courtyard and rose gardens, as well as new native plantings and erection of bird houses in woodland areas.

Arseneault also keeps up the long-time monastery tradition of planting huge sweeps of spring-blooming bulbs to create a show that goes on for a month or more. The formal courtyard is planted with more than 12,000 tulips, accompanied by thousands of other bulbs, including snowdrops (*Galanthus* spp.), Siberian squill (*Scilla siberica*), and wood hyacinths or Spanish bluebells (*Hyacinthoides hispanica*).

In summer, the bulbs give way to annual bedding plants and tropicals, a Victorian touch that has always been a standard monastery feature.

Large containers planted with palms or butterfly bushes (*Buddleia* spp.) and overflowing with lantanas, deep pink petunias, and chartreuse-colored sweet potato vine (*Ipomoea batatas*) welcome visitors entering the main gates. Just through the gates,



Globular boxwoods flank the flagstone path leading to a small shrine.

a statue of St. Christopher is surrounded by angel's trumpets (*Brugmansia* spp.), elephant's ears (*Colocasia* spp.), roses, pink geraniums, and deep purple globe amaranths (*Gomphrena globosa*). Peeking through almost everywhere are oleanders, hibiscuses, cannas, and standard roses.

Rose beds edged in English boxwood ring the outer edge of the main courtyard, as they have for nearly 100 years. Arse-

neault replaced all the soil and managed to save about 300 of Meinrad's old hybrid tea roses—most of which have not yet been identified. These are now planted together in three beds opposite the north side of the main church.

To the beds Arseneault has added many more antique cultivars, including the delightfully fragrant French 'Reine des Violettes,' the clear pink Bourbon rose



A well-grown standard lantana—here in August bloom—testifies to years of careful pruning.

'Souvenir de la Malmaison', and the repeat-blooming magenta 'Rose de Rescht'. Climbing 'Blaze' and 'Golden Showers' scramble over arbors and up and around pillars and doorways. *Rosa* 'Lovely Fairy' surrounds the statue of St. Francis, which in turn is ringed by pink petunias, lawn, and another ring of *Rosa* 'Yellow Jacket'.

Spaced at intervals throughout the courtyard are roses whose names reflect religious themes: the David Austin rose 'St. Cecelia', the floribunda 'Our Lady of Guadalupe', the hybrid tea 'Ave Maria', and the climber 'Joseph's Coat'.

OLD HABITS DIE HARD

Arseneault's desire for basing the renovation on "good design" was perhaps the most difficult issue he faced. In the main courtyard, he says, the evergreens originally planted by Brother Meinrad were so overgrown that they were obscuring the buildings and obstructing the pathways. "You had to turn sideways to go down the walks," he recalls.

According to Arseneault, it was "rough on some of the brothers" when he suggested that, both for aesthetic and security reasons, the evergreens would have to go. But Arseneault eventually made his case and a crew of volunteers led by one of the brothers cut down and removed what amounted to five dump-truck loads of arborvitae, Leyland cypresses, and junipers. "Now," says Arseneault, "you can see the Rosary Portico and realize you're in a courtyard, surrounded in this cloister by beautiful architecture."

Visiting the Monastery

The Franciscan Monastery is located at 1400 Quincy Street, N.E. in Washington, D.C. Tours of the monastery are held on the hour from 9 a.m. to 4 p.m. Monday through Saturday and from 1 p.m. to 4 p.m. on Sundays. Tours are free but donations are welcomed. For further information, call the monastery at (202) 526-6800, visit its Web site at www.pressroom.com/~franciscan, or write to 1400 Quincy Street, N.E., Washington, D.C. 20017.



The influence of Japanese design is evident in "Mary's Garden," where spring-flowering trees and azaleas combine harmoniously with evergreen shrubs.

To the rear of the portico stands a small chapel, a replica of one near Assisi, Italy, that honors St. Mary. Just behind it is "Mary's Garden," designed by Ed Hall in the 1970s as an evergreen garden with a Japanese-style theme. It's a lovely, contemplative area graced by a small, melodious waterfall and a diverse array of trees. These range from a delicate cut-leaf Japanese maple (*Acer palmatum* var. *dissectum*), to Eastern dogwoods (*Cornus florida*), white-flowering redbuds (*Cercis canadensis* 'Alba'), dwarf Alberta spruce (*Picea glauca* 'Conica'), Sawara false cypress (*Chamaecyparis pisifera*), spreading English yews (*Taxus baccata* 'Repandens'), Japanese andromeda (*Pieris japonica*), and azaleas.

COMMUNITY SUPPORT

The initial work on the gardens sparked interest from local residents and monastery supporters. This led to formation of the Franciscan Monastery Garden Guild, whose members help to raise money for renovation of other garden areas. The guild presented the Franciscan friars with a master plan for the courtyard renovation, which is being done by Maryland-based landscape designer Louise Kane; the plantings are now about three-quarters complete. The

guild has also raised money for installation of a memorial holly hedge (*Ilex opaca* 'Miss Helen'), planted a biblical garden next to the friary entrance, erected purple martin and bluebird houses, and installed a water feature to cater to avian visitors.

Arseneault says a recent survey by the U.S. Fish and Wildlife Service found that more than 60 species of migrating birds stop at the monastery grounds each year. New native plantings for the woodland area are expected to attract even more, a philosophy that is certainly appropriate for a religious order whose founding figure had a very special relationship with birds.

Next on Arseneault's agenda is renovation of the woodland area, including replacing a camellia collection. Eventually, he'd like to turn some of the property into a native meadow, although he admits that project is probably a long way off. In the meantime, he's content with continuing to restore a garden that has a long and proud history. As Brother Meinrad once put it, "To be a good gardener is a gift of God. It's nothing to be proud about, because it's given to you."

A landscape designer and free-lance writer, Jane Berger lives in Washington, D.C.

c o l d - h a r d y

BY KATHLEEN FISHER

Camellias

Thanks to the work of two devoted plant breeders, gardeners in cooler regions can now enjoy these elegant fall- and spring-blooming shrubs.

JUST AS YOU can't say "goatee" without stroking your chin, it's almost impossible to say "camellia" without a southern accent. If you grew up north of the Mason-Dixon line, you may have worn 'Pink Perfection' to a long-ago prom; it probably seemed as exotic as a rain-forest orchid. If you hail from the former Confederacy, however, camellia growing may be a competitive sport, with face-offs between miniatures like 'Man Size' or the cabbage-size blooms of *Camellia reticulata* cultivars.

In the last two decades, an effort has been underway to change the camellia's image, with two breeders in particular working to prove that the camellia can be a tough landscape workhorse rather than just a pampered show-pony.

A 1958 reference, J. Robert Sealy's *A Revision of the Genus Camellia*, documented only 82 camellia species, but with the opening of China to western plant collectors, this had increased to well over 270 by the mid-1980s. Although many of the species are clearly hot-house plants, others thrive in the landscape given conditions similar to azaleas.

In fact, professional growers point out that some species are more tolerant of both drought and poorly drained soil than azaleas, and they bloom longer—for as much as six weeks in late fall or earliest spring. Their deep green, burnished leaves adapt happily to pruning for hedges or trellising; yet they don't need pruning at all, or much feeding either. Their flowers resemble those of roses, yet they grow well in shade.

And many have survived temperatures as low as minus 10 or 15 degrees



'Fire 'N Ice' was developed by William Ackerman by crossing a variety of *C. japonica* with the hardy *C. oleifera*. It bears roselike flowers in March and April against dark, semi-glossy foliage.

Fahrenheit. That might persuade the unwary to believe they can be grown throughout USDA Zone 6, which would include much of Kansas and parts of New Mexico. We all know, however, that cold hardiness is just one piece of the gardening puzzle.

LUCKY DISASTERS

It was unexpectedly harsh winters in the South and Mid-Atlantic that hastened

two breeders toward producing camellias that would survive outside Scarlett O'Hara territory.

Clifford Parks had started his career in the early 1960s at the Los Angeles State and County Arboretum. There's only one camellia he knows of that isn't completely hardy there, so to test for cold tolerance his program had to ship all their plants to co-operators around the country, such as Longwood Gardens in Pennsylvania. In

1967 he moved to the University of North Carolina (UNC) and what seemed to be an only slightly more challenging environment, with tens of thousands of camellias in tow.

Then in 1985, the temperature in Chapel Hill dropped to 9 below, breaking the all-time record by nine degrees and killing 98 percent of two acres of camellias to the ground. Among the survivors were several selections of tea-oil camellia (*C. oleifera*), already known to be tough, but also some of the more showy Japanese camellia (*C. japonica*). From these came Parks' spring-blooming 'April' series, introduced into the trade beginning in 1995.

In all, Parks has named almost 100 varieties, but says even the most reliable of them shouldn't be considered bulletproof north of the warmer half of USDA Zone 6—what earlier USDA hardiness zone maps called Zone 6b. Although the most recent version of the USDA hardiness map no longer shows the division of zones into two parts, the distinction between "a" and "b" zones pops up often in the debate about where camellias will grow and bloom reliably.

Says Parks: "The new breed of camellias is just one step hardier" than their traditional growing region—a line he describes as running from Winston-Salem, North Carolina, to Richmond, Virginia, and up along the Atlantic Coast through Washington, D.C., to Long Island—"although some people make claims to more."

Parks, who is now professor emeritus at UNC, doesn't want buyers misunderstanding the difference between plant hardiness and bud hardiness, particularly among spring-flowering camellias, whose buds have to withstand the vagaries of winter. But even if plants are root hardy, winter damage can range from flowers that bloom but look ragged and burned, through totally blitzed buds or scattered stem dieback, to the shrub dying all the way to the ground.

"People at the Arnold Arboretum outside Boston tell me, 'Sure, we can grow camellias—as herbaceous perennials,'" Parks relates. "If you live where the temperature goes below zero frequently, you should be growing something else."

A half dozen years before Parks' pivotal



Top: 'Twilight Glow' is a Parks introduction with a compact habit and single flowers. Its blooms tend to open all at once around Thanksgiving, providing an outstanding display.

Above: The double-flowered 'April Snow' is one of Parks' April series of *Camellia japonica* hybrids. A relatively slow-growing camellia, it blooms in late spring.

freeze, a series of mean winters had wiped the U.S. National Arboretum's collection of 956 mature plants down to fewer than a dozen bedraggled specimens. Only one plant remained blemish free and bloom-

ing its head off—a *C. oleifera* received from China in 1948. Asians had been cultivating the species for some 5,000 years, not for show—since its flowers are unassuming—and its leaves rather small, but

for its seed oil, which they used for cooking and cosmetics.

Nonetheless, this climatic misfortune switched research horticulturist William Ackerman and his colleagues into high gear. "We became opportunists," he says, capitalizing on this plant's acclimatization through a broad swath of Asia over the past several centuries. In the quarter century since, he's found that first survivor, later named 'Lu Shan Snow', and a second, *C. oleifera* 'Plain Jane', to be perfect progenitors of exceptionally cold-hardy landscape plants when crossed with showier autumn- and spring-flowering camellias.

Just as Parks is known best for his spring-flowering *C. japonica* 'April' series, Ackerman is most famous for his *C. oleifera* fall bloomers. You'll usually recognize them from the word 'Winter' in their cultivar name, although there are exceptions like 'Ashton's Pride' and 'Ashton's Ballet', which are named for the Maryland farm to which he's now officially retired. In all, Ackerman can claim introducing 24 fall bloomers and 11 spring-flowering camellias in the trade.

PUSHING THE ENVELOPE

Because Ackerman describes his plants not by USDA Zone—which is based on average minimum temperatures—but on the basis of their exposure to minimum temperatures over up to 20 years at numerous widely separated locations, consumers as far north as the colder regions of USDA Zone 6 may be tempted to give them a try. In fact, there's a Polar Bear Camellia Club with members in places like Toronto, Canada, and Kalamazoo, Michigan, just itching for a really nasty winter to challenge their plants.

One is biology teacher Mike Heim. "Pushing the limits of what is possible to grow here in northern Wisconsin (USDA Zone 3) is a favorite pastime of mine," he explains. He's been experimenting with camellias since 1987, and has high hopes from some 'Plain Jane' seedlings that have escaped winter injury. Others die back to the ground, even if kept low-growing so that they receive protection from his area's reliable winter snowcover. "They would never survive a hard Zone 3 winter completely exposed," he says.

Other "Polar Bears" are in relatively milder regions that profit from benign mi-

croclimates, but in the winter they provide other forms of protection. Mary Dragan of Mississauga, Ontario—about 20 miles west of Toronto—has been growing several varieties of camellias in her yard for the past 11 years. She notes that her climate is modified by Lake Ontario only a mile north. She's amended her plants' soil heavily and to help them through the winter, wraps them in a couple layers of burlap and plastic, leaving the top open for ventilation. She's had her share of failures over the years, she says, not because the plants aren't hardy, but from mistakes like overwatering and overfeeding in spring and, especially, mulching too close to the bark.

Clearly, these gardeners understand that growing any camellia in the north is

hardly a no-brainer. In fact, Ackerman emphasizes that for the purposes of his research he doesn't use them as references too often. "I'm looking mainly at conditions here in Maryland and in Pennsylvania, where cold isn't as prolonged," says Ackerman. "Of course, our prolonged warm spells in January can be a problem, too, since after 72 hours of such conditions plants can come out of dormancy."

But northern growers can find camellias rewarding even in years they don't bloom. Heim, for instance, would be surprised and delighted if his camellias ever got tall enough to bloom, but still calls them "one of my favorite broad-leaved evergreens, with their 'living jade' foliage and attractive form."

A 'RIVER FARM' CAMELLIA?

In 1982, the American Horticultural Society's River Farm headquarters in Alexandria, Virginia, became one of 14 field-test sites from western North Carolina to eastern Pennsylvania for Ackerman's camellias. On the banks of the Potomac River and enjoying the moderating influences of the Chesapeake Bay, River Farm is a

perfect site for growing flawless camellias. For testing cold hardiness, however, it's been a dud, since the thermometer rarely dips below zero.

By contrast, Ackerman's own seven-and-a-half-acre garden in Ashton, Maryland, inland and a few miles north, sits in a cold pocket. He didn't plan it that way and it would hardly have been an advantage for any other avid gardener, but an occasional dip to 10 below helps separate the wheat from the chaff for his research. Even the Hendersonville, North Carolina, area, because it's on the plateau of the Blue Ridge Mountains, served its purpose when former U.S. National Arboretum colleagues John Creech and Augustus Kehr tested—and largely lost—Ackerman camellias there.



A number of camellias from Ackerman's breeding program, including this pink selection, are growing at AHS headquarters at River Farm.

Still, Ackerman returns to River Farm occasionally to check the shrubs for flower quality and he has chosen one—a red, spring-flowering anemone form—to get the acid test in Ashton. If it proves worthy, he plans to introduce it into the trade under the name 'River Farm'. —K.F.

A Quick Guide to Common Camellia Species

Botanical name Common name	Height/Width (ft.)	Range of Bloom Time*	Provenance	USDA/AHS Zones
<i>C. japonica</i> (Japanese camellia)	10-15/5-10	November to April	China and Japan	7-9, 10-8
<i>C. oleifera</i> (Tea-oil camellia)	10-15/6-8	October to January	China	6-9, 10-7
<i>C. reticulata</i>	8-15/6-12	December to March	China	9-11, 11-9
<i>C. sasanqua</i> (Sasanqua camellia)	6-10/5-8	September to March	China and Japan	7-9, 10-8
<i>C. sinensis</i> (Tea)	4-10/4-8	September to November	China	6-9, 10-7

*Note: Most camellias bloom for about six weeks and bloom times can vary greatly within a species and by different regions.

The often dense, glossy foliage comes in a variety of habits: The columnar 'Winter's Dream', 'Winter's Joy', and 'Winter's Snowman', all about nine to 10 feet tall and not more than four feet wide; the globular 'Winter's Waterlily', eight feet tall and nine feet wide; the horizontal 'Ashton's Pride', nine feet tall but 12 feet wide; the dwarf 'Red Rider', a three-foot-high-and-wide butterball after 20 years; and his all-time favorite, the semi-dwarf 'Winter's Rose', about four and a half feet tall and six feet wide after two decades.

Ackerman feels that the main reason northern gardeners are struggling with the new camellias is that they follow advice in references written by and for southerners. Thus, his new book, *Growing Camellias*

in Cold Climates, points to two key differences in cultural needs once you cross into the colder portions of Zone 7: planting time and sun exposure.

As to the first, plants need to become established before the most stressful time of the year, which in the South is the sweltering summer. Thus, fall planting makes sense there. The ground remains warm sufficiently long for roots to make some headway. In the North, however, plants have most to fear from wintery blasts, and if planted in fall, "they'll go into winter unestablished," he points out.

You might guess that southern exposure would be better in the North than in the South. In fact, northerners need to plant camellias on the north or west to avoid early morning sun in winter, since

the effect of its rays on night-chilled leaves can draw moisture out of the leaves, causing an effect not unlike freeze drying.

VIEW FROM THE TRADE

Everyone agrees that camellias need a couple of years in the ground to become established and that they can profit from microclimates provided by walls, plus wraps with burlap or other insulation during their first winters.

Understory plants by nature, they need to be grown under trees to moderate their exposures to sun and wind. Ray Watson, president and owner of Cam Too wholesale nursery in Greensboro, North Carolina, says he's grown camellias to -9 degrees "under oaks, pines, maples, and dogwoods, with no water or fertilizing."

On Long Island, Roslyn Nursery has been growing the cold-hardy camellias since 1985. Owner Philip Waldman says he has customers growing camellias in the Boston area. "Ours bloom reliably every year, even with a little bit of dieback." He gets very few complaints from customers, he adds, and many repeat purchases. "The Ackerman hybrids do better than the *C. japonicas*, which aren't going to bloom if they have winter damage."

Fairweather Gardens in Greenwich, New Jersey, grows about an equal number of the Ackerman and Parks camellias plus some "traditional" varieties. Co-owner Bob Hoffman notes an advantage of growing camellias in the North—an almost total absence of the diseases that plague them in the South. The advent of cold-hardy selections was "a huge deal," he says, and customers in Zone 6 were thrilled to learn they might succeed with plants they associated with the deep South.



'Winter's Waterlily' bears large, double, white flowers from November to January. Hardy to -15 degrees Fahrenheit, its partially opened buds are more resistant to frost than most varieties.



A cross between *C. japonica* 'Shikishima' and *C. oleifera* yielded Ackerman's 'Ashton's Ballet', which has soft-pink, double flowers that open in November and December.

WHAT'S NEXT?

It can take up to 20 years to get a new camellia into the retail market place—four or five for a cross to bloom from seed, possibly as many years to make a backcross, and equally long periods for testing out around the country, then building up of stock.

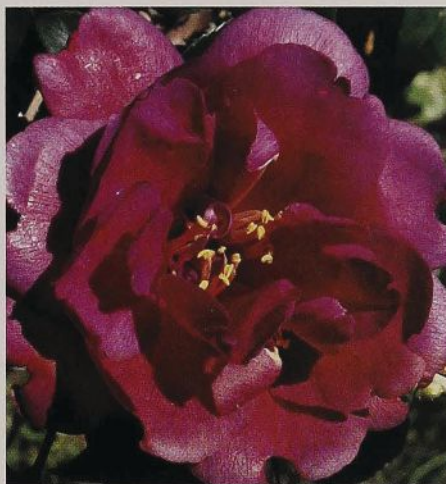
Parks continues to explore other species—he made a trip to southwestern China in 2000 with growers from Longwood Gardens and Descanso Gardens, among others.

Their target was species growing at altitudes of some 11,000 feet, which Parks has found cross readily with *C. japonica*. So far though, none of these crosses have bloomed.

He hopes to do more next year with *C. sinensis*—the source of green tea—and its close relatives. Their white flowers are small but cluster three to four at a node, and most are cold hardy. In fact, Cam Too's Watson is an enthusiastic marketer of the species, which not only has reddish new foliage, but, unlike other common camellia species, have fragrant flowers. He distributes them with directions for harvesting the leaves to make tea in a microwave.

The spring-blooming 'Kuro Delight', another Ackerman introduction, is hardy to -15 degrees Fahrenheit.

Parks notes that central North Carolina is still too hot to serve as good testing grounds for cold hardiness, since a below zero blitz like the one in 1985 may come along once in a lifetime. A partner like Longwood Gardens is ideal: 150 miles north of the camellia belt, they can probe the limits of older plants but also have ex-



tensive facilities for new seedlings.

Bob Hoffman of Fairweather envisions further melding of the tough *C. oleifera* and *C. sasanqua* genes with those of *C. japonica* for richer saturated color and waxy blooms set off against the glossy leaves of *C. japonica*. "They are definitely plants that are hard to resist."

Sources

Camellia Forest Nursery, Chapel Hill, NC. (919) 967-5529. Catalog \$2.

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

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

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

Resources

American Camellia Society, 100 Massee Lane, Fort Valley, GA 31030. (478) 967-2358. www.camellias-acs.com

Growing Camellias in Cold Climates by William Ackerman. Noble House, Baltimore, Maryland, 2002.

While Ackerman shares Bob Hoffman's hopes for more *C. japonica* characteristics in cold-tolerant plants, he explains that they don't cross well with *C. oleifera* and *C. sasanqua* because they have a different number of chromosomes. Of his attempts, he says, "If I get five seed capsules out of 100 crosses I'm lucky."

This year, his greenhouses are at full capacity with recent crosses, and he has no new plants under test outdoors. "I made a mistake a couple years ago and planted out some three to four inches high, and I lost 50 percent."

Ackerman does have a couple of new spring bloomers that are nearly ready for the public. "The nursery trade is anxious for nice red flowers," he says.

Given the success of both Ackerman and Parks' introductions, many more gardeners outside of the South are likely to want to make space for one or more of these irresistible bloomers.

Kathleen Fisher's most recent books include The Complete Guide to Shrubs and The Complete Guide to Water Gardens. She lives in Alexandria, Virginia.

Designing the



Woodland Garden

Creating a woodland garden requires a synthesis of art, architecture, and forest ecology.

TEXT AND PHOTOGRAPHS BY RICK DARKE

Excerpted and adapted from *The American Woodland Garden* by Rick Darke, published by Timber Press. Used with permission.



I'VE BEEN enchanted by the woods since childhood. Though I've lived in various places, all have been within the borders of the North American deciduous forest. Asked what it is about the woodlands that I find so spellbinding, I'd probably say it is the strength and individuality of the seasons, but the images that come to mind are not simple changes in the weather. I'd perhaps picture myriad translucent leaves filling in the canopy, building a new roof over the spring woods while bathing it in a lime glow. I might recall sunlight streaming laser-like in the moist air that fills the forest in midsummer, or maybe the voluptuous curves of an ancient oak, silhouetted by the winter moon. Sound and scent memories are equally compelling; the wind's singing through the high branches, the rustle of fall leaves underfoot, the sweetness of spring breezes, or autumn's intoxicating pungency. Such delights are among the dramas that play each year within the framework of the forest, and they are worthy of celebration in any garden.

A garden designed to capture the spirit of the deciduous forest need not be a faithful replication of the forest community. The emotional and persuasive power of art results from selection, distillation, and enhancement, and so the most artful, evocative woodland gardens may borrow from any number of patterns and signatures that define the native forest—its lines and framework, its layers, luminous qualities, color cycles, sounds, and scents—melding them into an insightful yet livable landscape.

FRAMING AND ENCLOSING

Whether creating vistas or enclosing and defining garden spaces, the natural architecture of the deciduous forest can be as effective as any made of masonry or steel. Sometimes there is opportunity to frame views or spaces through the selective removal of existing trees. In other situations, tree plantings can be made to define and organize garden vistas and rooms. In most instances, using trees and other natural elements of the forest is considerably less expensive than traditional architectural means.

It's surprising how rapidly you can define or enclose a garden space or outdoor room solely by planting trees and associated lower layers. When I first moved from a tiny urban garden to one and one-half acres near the edge of suburbia, I was elated by the overall expanded scale but missed the sense of enclosure I'd known. The new landscape consisted mostly of lawn with individual trees scattered about, and none of them worked together to organize the space.

In the rear section of the property, off the south-facing side of the house, a large spreading thornless honey locust (*Gleditsia triacanthos* var. *inermis* 'Moraine'), offered the best opportunity to build on existing conditions. Allowing this broad-spreading tree to form the basis for a garden room, I planned a semicircular border at the periphery of its canopy on the south side. Loosely modeling the picturesque hedgerows that edge and define agricultural lands and old farm fields in the local landscape, I planted an ir-

Top: The North American deciduous forest—here in autumn color in northern Delaware—is the source of inspiration for the author's woodland garden in Pennsylvania. **Opposite page:** An elevated view of the author's woodland garden provides a perspective on the relationship of trees, walk, and house in early November. The presence of two evergreens—inconspicuous during the summer—becomes noticeable as deciduous plants drop their leaves; a native leucothoe (*Leucothoe axillaris*), planted directly under the birches, also planted by the author, and a non-native Hinoki cypress (*Chamaecyparis obtusa* 'Nana Gracilis'), in the space adjacent to the door of the house.



Comprised of an herbaceous layer, a shrub layer, and a tree layer, the author's Pennsylvania woodland border acts as an architectural framework for an outdoor sitting and dining area, and offers interest throughout the seasons, following the natural color and flowering cycles typical of this part of the mid-Atlantic region.

Top: From late April into early May, fothergilla blooms with Carolina silverbell and mountain silverbell against the backdrop of a distant redbud, while purple-leaved *Heuchera americana* 'Montrose Ruby' provides color in the herbaceous layer. Above left: The border is enlivened in late July and early August by the spicy scent of sweet pepperbush. Above right: Leaves turn color and begin to drop by mid-October, further opening the view to native Indian grass (*Sorghastrum nutans*) turning tawny and translucent in the sunny meadow beyond. Right: A late-January ice storm reveals the elementary architecture of the border's shrub and tree layers, which, though leafless, still create a sense of enclosure and separation from the meadow.



regular mix of trees and shrubs to form the basic architecture of the border. I used small trees so they would acclimate quickly and establish strong root systems that would contribute to long-term health. For trees, I chose three different silverbells, the Carolina silverbell (*Halesia tetraptera*), the mountain silverbell (*Halesia tetraptera* var. *monticola*), and the large-flowered form of two-winged silverbell (*Halesia diptera* var. *magniflora*). The large-flowered form begins blooming just after the others have finished. By integrating different species of silverbell, we enjoy more than three weeks of continuous bloom.

Fothergilla (*Fothergilla gardenii*), sweet pepperbush (*Clethra alnifolia*), and coast azalea (*Rhododendron atlanticum*) form the shrub layer. Coast azalea blooms in mid-May with the later silverbells, infusing the area with its sweet fragrance.

Initially, the most important complement of the herbaceous layer was a sweep of non-native feather-reed grass (*Calamagrostis xacutiflora* 'Karl Foerster'). The purpose of this seed-sterile grass was to grow quickly and hold the space together until the trees and shrubs grew and developed an enclosing presence of their own: It would eventually diminish and disappear as shade increased. Grasses are often useful in



Silverbells have the delightful habit of dropping their blossoms while they're still pure white. Depending upon the temperatures, they'll decorate the ground for nearly a week. The author and his wife, Melinda, celebrate this spring event in the garden, refraining from any mowing or raking during this brief but beautiful second show.

this way, acting as transient agents of change in the evolution of garden spaces from open meadowlike conditions to woodland.

In just a few years, the border grew into a significant wall of vegetation, creating the desired sense of enclosure and privacy, and introducing all-season interest to the landscape. With more than a decade's growth, the border is now a main architectural presence in the rear garden.

ENTRY PLANTINGS

Entry plantings do a great deal to establish the mood and sense of any garden. In our Pennsylvania garden, the main walk from the drive into the house is simple and direct but was completely bare of plantings when I first moved to the property. To turn this passage into more of a woodland experience, I cut a new border out of the lawn on the side of the walk away from the house, planting it closely with river birches (*Betula nigra* 'Heritage')—in informal drifts to emulate spacing often encountered in wild populations—fothergilla (*Fothergilla gardenii*) and Virginia sweetspire (*Itea virginica* 'Henry's Garnet'). Before planting, the tree positions were evaluated from inside the house as well as from the garden perspective.

Under the shrubs I planted herbaceous species. Multiple layers and planting diversity add to the border's all-seasons interest and ease of maintenance. Bluebells (*Mertensia virginica*), planted underneath a fothergilla begin blooming in mid-April, while the new foliage of white wood aster (*Aster divaricatus*), serves as a weed-reducing ground cover. The bluebells recede into dormancy during summer, unperturbed by the shade of the overtopping shrub. The asters put on a floral display in late summer and autumn.

Only shrubs were planted between the walk and the house. The border has matured to create an immediate



The entry walk between garage and house provides a woodsy welcome, enclosed by river birches and fothergilla, flowering in early May.

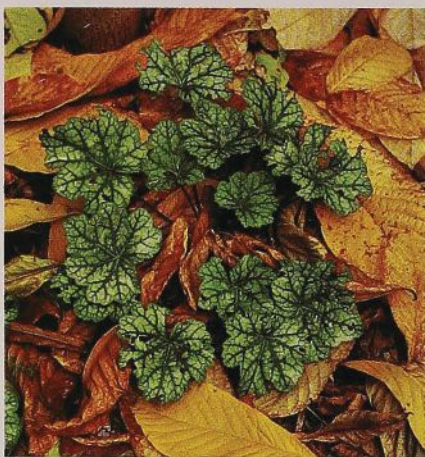
woody intimacy, practical and easy to maintain, yet inviting and interesting in all seasons.

LIGHT AND SHADE

Passing alternately between sunlit and shaded spaces is among the most stimulating experiences of a walk in the deciduous forest, and a woodland garden that includes such transitions is certain to invite repeated exploration. This design strategy can be very effective even in modest scale.

At home, we've been gradually reducing the amount of sunny lawn area, creating enclosures and passages that have a sense of the woods and provide growing conditions suitable for herbaceous woodland species such as Culver's root (*Veronicastrum virginicum*) and *Heuchera americana* 'Dale's Strain'. We planted pawpaws (*Asimina triloba*) to create a transition between the sunny front garden and a woodland room fashioned around an old apple tree.

Older, existing deciduous trees, native or non-native, may provide the best immediate opportunity for creating woodland enclosures and developing growing conditions necessary for woodland perennials. In our home garden, the large apple survives from plantings by the original owners. A half century old, the tree's branches now drape to the ground, creating an enclosure we call our "apple cave." The pawpaw path leads directly into this space, which has become one of the most intimate outdoor rooms in the garden, furnished with seating for a meal, a conversation, or quite contemplation.



The colorful natural mulch of fallen pawpaw foliage complements *Heuchera americana* 'Dale's Strain' and other herbaceous perennials in early November.

Started from seed about 12 years ago, the pawpaws are now nearly 12 feet tall. Larger-leaved than most deciduous trees, pawpaws have a bold-textured presence in the garden. In the autumn, their leaves turn a glorious gold that sets off the amber hues of the beeches (*Fagus grandifolia*) planted nearby.

The ground slopes gently toward the apple, and the soil under the tree's pe-



Seedling beeches (*Fagus grandifolia*) are planted in a group northeast of the pawpaw path. They will mature to overtop the pawpaws and create a shady canopy. In the meantime, the space between these trees is planted with a mix of herbaceous species adapted to the intermediate light conditions, including New England asters (*Aster novae-angliae*), prairie dropseed (*Sporobolus heterolepis*), willow-leaved sunflower (*Helianthus salicifolius*), and switch grass (*Panicum virgatum*).

riphery is moist compared with many areas of the garden. It has proved ideal for many woodland perennials, including twinleaf (*Jeffersonia diphylla*), mayapple (*Podophyllum peltatum*), black snakeroot (*Cimicifuga racemosa*), various heucheras such as *Heuchera macrorhiza*, as well as showy trillium (*Trillium cordifolia* var. *collina*). Rather than pave the entire area under the apple, we created just enough of a walkway to invite visitors into the space, using native stone from a local Pennsylvania quarry.

A FOREST LEGACY

Celebrating the spirit of the deciduous forest in our garden brings it close, making it an integral part of our everyday experience. For many of us living in 21st-century North America, the deciduous forest is somewhere in our daily view, even if only at the periphery. Its deciduous nature is the basis of its supreme seasonality, and the translucent quality of its predominant foliage makes it one of the most luminous landscapes on earth. Although gardeners and foresters are often focused on trees, the forest community is an intricate complex, including higher plants, animals, fungi, oxygen, carbon dioxide, water, minerals, and dead and decaying organic matter.

Today, though the notion of wilderness lingers as an ideal, in fact our hand is evident everywhere and "all the world's a garden." If that garden is to be eminently fit for human habitation while respecting the resources and requirements of other living communities, its making will depend partly on an understanding of ecological principles and partly on creative skills and techniques that are in the gardener's domain.

Rick Darke is a landscape design consultant, author, and photographer based in Landenberg, Pennsylvania. The American Woodland Garden was published in November by Timber Press.



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Mahonias

Associate Editor Carole Ottesen asked Dan Hinkley, co-founder of Heronswood Nursery in Kingston, Washington, to pick a favorite group of underused garden plants. Here are his thoughts on mahonias (*Mahonia* spp.).

Why do you love mahonias?

Dan Hinkley: There are two reasons I love mahonias. The first is the year-round textural quality of their foliage—it's such a good dash of ever-greenness. Some of the species pick up good autumn hues as well and hold them all winter long. The second reason I love them is that a good share of them are winter bloomers.

What are some good ones?

Here on the West Coast, we're growing a good number of the medias, the cross between *M. lomariifolia* and *M. japonica*, and find them to be outstanding. One of the best is *Mahonia* × *media* 'Lionel Fortescue', a selection shared with us by the late J.C. Raulston. It was made at Garden House near Buckland Monochorum in southwest England, the home and garden of Lionel Fortescue. It blossoms dependably on Thanksgiving. Enormous upright trusses of yellow flowers bring birds into the garden; migrating warblers and the Anna, a Northwest native hummingbird, depend on some of these winter bloomers as a food source to get through. On top of that, the fruit display after the flower is just phenomenal—enormous grapelike clusters of blue fruit.

How suitable are they for other areas of the country?

The medias combine *M. japonica* with the more tender *M. lomariifolia*, and the hardiness seems to come sailing through. They haven't been tested on the East Coast as they should be, but I think could grow quite well. Heat isn't a problem. On the East Coast, you grow *M. bealei*, a form of *M. japonica*, much better than we grow it. I've seen plants much more full and lush than ours from North Carolina all the way up to Washington, D.C.; they not only



Mahonia × *media* 'Lionel Fortescue'

tolerate, but benefit from, the summer heat. What we don't have in the Northwest are the spikes of temperatures you have in the East—60 degrees Fahrenheit one day and 20 below the next. The winter-flowering plants—including the mahonias—are not going to appreciate that.

How do you use them?

In our garden, we shoot for getting things in bloom 12 months of the year. If you concentrate on the winter-blossoming things, by default you end up with bloom year round. There are mahonias that bloom from September to March. Starting in September and October, two species, *M. gracilipes* and *M. confusa*, bloom. These are fairly new introductions to North America and quite extraordinary in that they have red and yellow flowers, rather than the common yellow.

At Christmas, we have 'Arthur Menzies' and 'Charity' in blossom. By the end of January, we have *M. lomariifolia*, another wonderful species that is a parent of the media group, which includes 'Lionel Fortescue', 'Charity', and others. By the first of March, we'll have our first blossoms of *M. aquifolium* and some of the other western species, including one we cultivate, *M. piperiana*; we have a selection of that called 'Ken Howard'.

There's just something about bamboo and mahonias together; they set each other off beautifully. Any of the *Phyllostachys*—*P. aurea* or *P. nigra*—or a *Fargesia* would look good with them. We like to have a ground cover of a deep purple hellebore nearby to complement the yellow flowers of the media group.

Can you give some pointers on how to grow them?

Mahonias are shade plants. That's how we employ them here: on the north side of the house, or in the woodland, or under a tall tree. Even a deciduous tree gives protection during the wintertime. For the most part, mahonias need really good humus, good drainage, and a little bit of overstory protection.

For any of the taller ones, including 'Lionel Fortescue,' I strongly suggest heavy pruning at a young age to get them to branch from the base as much as possible. They tend to grow straight up and not branch much on their own until they get older, which makes them top heavy. If you can get them to branch low down early on, then you've got a beautiful, full plant. 🌿

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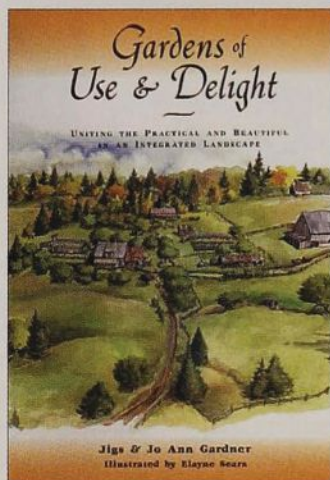
Gardens of Use and Delight: Uniting the Practical and the Beautiful in an Integrated Landscape.

Jigs and Jo Ann Gardner. Illustrated by Elayne Sears. Fulcrum Publishing, Golden, Colorado, 2002. 304 pages. Publisher's price, softcover: \$29.95

MORE THAN 30 years ago, Jigs and Jo Ann Gardner bought a vacant farm on Cape Breton Island, attracted by its hillside site, remnant apple orchard, and handful of surviving perennials and flowering shrubs. They planted dozens of fruit trees and bushes that first year, the genesis of a later jam business and the source of many future meals. Although clearly useful, those apples, plums, pears, blueberries, currants, elderberries, blackberries, and raspberries were also the beginnings of their efforts to create beauty in their surroundings.

Over time, the Gardners rescued the surviving apple trees, and added extensive vegetable, herb, and flower gardens. These are lovingly captured in dozens of charming water colors by Elayne Sears. But this is not a story about waving a magic checkbook and acquiring an instant garden. Rather, it relates the evolution of a landscape planted by two people who wanted to enjoy the daily walk to the barn, the woodshed, the chicken coop, and the mailbox—while feeding their family of six, and producing jams, herbs, flowers, cheese, eggs, bacon, and other products for sale.

Divided into three parts, the book begins with an overview of the farm as it is today, with reflections on how it has changed over the years since the Gardners purchased the property.



The bulk of the book—"The Gardens"—describes each garden area and how it has evolved, with lists of favorite vegetables, fruit, annuals, perennials, roses, and herbs. The book sometimes feels as though it's from a distant century, recounting as it does a life rooted in one place. "The Kitchen Garden" is filled with favorite family recipes for preserving the garden's bounty, enticing reminders of a time when people routinely practiced the nearly-lost art of canning. "An Old-Fashioned Fruit Garden" includes frugal methods for producing sumptuous results, such as apple ginger, black currant sorbet, blueberry preserves, and rhubarb marmalade.

In "Part Three: The Integrated Landscape," practical issues are addressed. "The Growing Guide" offers techniques and strategies that have proven successful, from controlling diseases and insects to saving seed. The final chapter, "A Summary of Practical & Aesthetic Principles," neatly merges the many topics covered in the book into a simple philosophy: that a garden should develop according to life's needs, with accommodations for change, rather than from a static, predetermined blueprint.

The impetus for the book is the Gardners' desire to pass along their concept of an integrated landscape: simplicity is a virtue, time is your ally; don't make separate realms for flowers and the productive areas of a landscape. Instead, unify the practical and the beautiful in a satisfying whole.

—Renée Beaulieu

Renée Beaulieu is the internet editor for White Flower Farm nursery in Litchfield, Connecticut.

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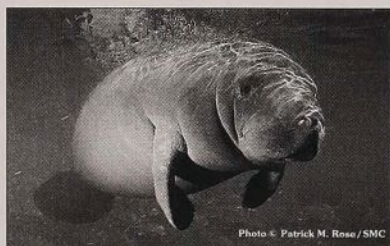


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Bulbs, Revised Edition.

John E. Bryan. Timber Press, Portland, Oregon, 2002. 896 pages. Publisher's price, hardcover: \$89.95.

THE TROUBLE with revised editions is that they always need to be compared with the original. And in this case the competition is stiff—the first edition of Bryan's *Bulbs*, published in 1989, was named one of 75 Great American Garden books by the American Horticultural Society. But the second edition outshines its predecessor. In short, Bryan has made a great book even better.

Like the earlier edition, this book covers both hardy and tender bulbs, making it the most complete reference available on geophytes—plants that grow from underground organs, including true bulbs, corms, rhizomes, and tubers.

Without doubt, the encyclopedia is the book's most important feature, though there is plenty of front matter to keep you busy and increase your knowledge. Concise yet fairly complete chapters cover History, Botany and Classification, Propagation, Cultivation Techniques, Bulbs in the Landscape, and Pests and Diseases. *Growing Bulbs Out of Season* describes forcing techniques for both enthusiasts and commercial growers.

The alphabetical listing of genera includes popular bulbs such as *Crocus*, *Dahlia*, and *Tulipa*, as well as collector's plants like *Fritillaria* and *Trillium*. My favorite native and exotic bulbs are all covered, as are dozens of lesser-known selections destined to become new garden treasures. In all, more than 5,000 species in 230 genera are included. Although the classification of hybrid groups in popular genera such as *Narcissus* is included, the book is primarily a reference to species and their most prominent cultivars. The no-nonsense text is seldom terse and at times is relaxed and lyrical. Excellent botanical descriptions and historical notes accompany each generic entry, along

with cultural information, propagation techniques, and pests and diseases.

The second edition features a number of improvements. The best news—for those with good upper arm strength—is that two volumes have been condensed into one. Topping the list of substantive changes is the expanded encyclopedia coverage. Next on the list is the increased number of photographs and beautiful botanical illustrations—nearly twice as many as before. The up-to-date taxonomy

is particularly helpful, and reflects the breakup of the lily family (Liliaceae) and the realignment of the amaryllis family (Amaryllidaceae). Check the complete list of synonyms to keep abreast of name changes.

What's missing, you ask? Very little. Keys to the genera and species would have been useful for serious bulb stu-

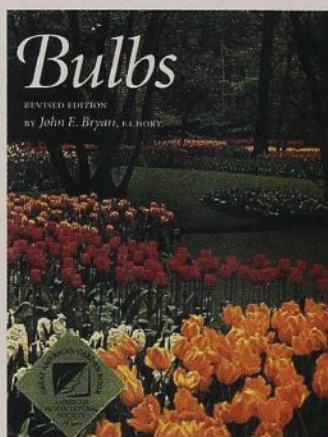
dents. The lack of an index may not seem a hardship at first (considering that the encyclopedia is alphabetic by botanical name), but it makes finding information outside the encyclopedia a bit cumbersome.

Some gardeners may be taken aback by the omission of USDA hardiness zones. Although I think zones inhibit gardeners from experimenting, this book covers tender and hardy bulbs, as well as widely divergent species, so zones would have been helpful to less-experienced gardeners. Minimum temperature is given for each genus, which provides some indication of hardiness and makes the book broadly applicable to readers outside North America.

At a cover price of \$89.95, this volume is not for everyone. *Bulbs* will have strong appeal to curious amateurs and ambitious gardeners; it is a must for serious bulb enthusiasts.

—C. Colston Burrell

Landscape designer and author C. Colston Burrell, who has written several books on herbaceous perennials and wildflowers, owns and operates *Native Landscape Design and Restoration* located near Charlottesville, Virginia.



Gardeners' Gift Books

Need a good holiday gift idea for a gardener? Take a look at the following new titles. Whether the gardener on your list enjoys tales of plants from around the world, wants to encourage backyard wildlife, or seeks a bit of advice about incorporating art into the landscape, the information and inspiration they need can be found between the covers of the following new books.

The City Gardener's Handbook.

Linda Yang. Storey Books, North Adams, Massachusetts, 2002. 317 pages. Publisher's price, softcover: \$19.95.

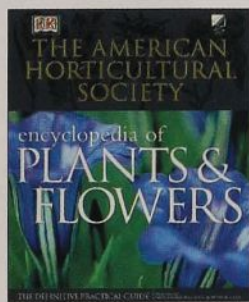
THIS PRACTICAL guide to urban gardening will help you get big results from a small space. In her down-to-earth, practical style, Yang covers design, planting, and maintenance, from soil preparation and coping with wind, to plant selection and size control.

Originally published in 1990, this edition has been expanded to include new drawings, garden plans, and updated advice on organic techniques and pest control. Several detailed plans and abundant garden photographs illustrate the ideas and techniques presented.

The American Horticultural Society Encyclopedia of Plants and Flowers

Christopher Brickell and Trevor Cole, editors. Dorling Kindersley, New York, New York, 2002. Publisher's price, hardcover: \$60.

LIKE THE other encyclopedic books published by DK in association with the American Horticultural Society, this definitive guide to flowering plants is des-



and contains practical and down-to-earth advice on every conceivable garden topic from propagation to planting, fertilizing, pruning, and controlling pests and diseases. Buy one for yourself and give a second copy to that favorite gardener in your life.

Attracting Butterflies & Hummingbirds to Your Backyard.

Sally Roth. Rodale Books, Emmaus, Pennsylvania, 2001. 304 pages. Publisher's price, softcover: \$16.95.

The Bird Lover's Garden.

Margaret MacAvoy and Pat Kite. Friedman/Fairfax Publishers, distributed by Sterling Publishing Co., New York, 2001. 128 pages. Publisher's price, softcover: \$17.95.

BOTH THE above volumes discuss the advantages of sharing your garden with birds, and techniques to make them welcome. Both suggest plants and structures that encourage avian visitors by providing food and nesting sites.

And both include richly colored photographs of birds and gardens.

Roth's book examines the many species of hummingbirds and includes butterflies as well. A discussion of their behavior will enhance your appreciation for these

tined to become one of the most thumbed references on your garden bookshelf.

It is filled with more than 4,000 full-color photographs

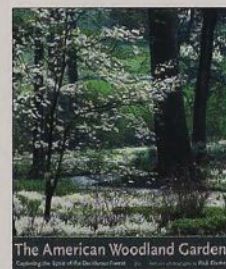
and contains practical and down-to-earth advice on every conceivable garden topic from propagation to planting, fertilizing, pruning, and controlling pests and diseases. Buy one for yourself and give a second copy to that favorite gardener in your life.

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The American Woodland Garden.

Rick Darke. Timber Press, Portland, Oregon, 2002. 378 pages. Publisher's price, hardcover: \$49.95.

IN THIS NEW book, designer, photographer, and award-winning author Rick Darke shares his love of the eastern deciduous forest through his stunning photographs and insightful prose, making the ordinary seem remarkable. Nature's seasonal transitions become a magical journey that the reader is invited to witness.



Color photographs of the author's garden help readers understand the importance of detail: sunlight filtered through the spring canopy; the stark and stunning sculpture of winter branches against the sky; and the mosaic patterns of autumn leaves on the forest floor. Included is an alphabetical listing of plants—together with photographs—to help the reader recreate a garden that reflects this spirit of the woodland. (To read an article adapted from this book, turn to page 45 of this issue.)

Gifts for the Gardener



Wildflower Calendars

Make 2003 a year of beauty with these calendars from the Lady Bird Johnson Wildflower Center. The wall calendar features 13 photos of native wildflowers (\$16.49, includes shipping and handling); the engagement calendar features over 30 images (\$17.49). Sales support the wildflower center's education and research programs. To order, call toll-free (877) 945-3357 or visit www.wildflower.org.



Soil Testing Kit

Every gardener needs a good soil testing kit, and the LaMotte Soil Test Kit has it all: Bottled solutions for testing pH and nutrient levels, two handbooks, charts, and vials. It retails for \$39.95 to \$49.95, and is available from National Gardening (800) 538-7476; Peaceful Valley Farm Supply (530) 272-4769; and Johnny's Select Seeds (207) 437-4301.

Sunflower Wreath

Beat wintertime blues with this wreath that evokes thoughts of sunshine and summer days. Dried sunflower, orange safflower, lavender, flax, oak leaves, and eucalyptus on a 14-inch-diameter base of lemon leaves. Retail for \$39. White Flower Farm. (800) 503-9624. www.whiteflowerfarm.com.



Green Man Planter

This faux stone planter is made of resin and features Green Man—the classical “Guardian of the Forest”—sculpted on the side. Available as a 20-inch planter (\$24.99); a 16-inch planter (\$17.99); and a 16-inch urn (\$24.99) in stone or terra-cotta color. Contact Bemis Manufacturing at (800) 558-7651 or visit www.BemisMfg.com for local retail suppliers.

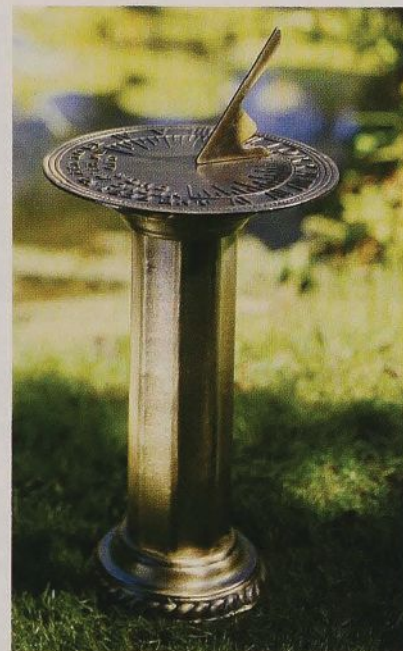


Hanging Plant Rooter

Both functional and decorative, this plant rooster is made of glass, wood, and copper-plated wire. It's 15 by 8 inches (excluding the hanger). Hang freely or attach to a window with a suction cup. The rooster is \$24.95; the suction cup, \$1.25. Lee Valley Garden Tools. (613) 596-0350. www.leevalley.com.

Copper Watering Can

Here's an attractive and sizeable copper watering can that won't strain your gift-giving budget. This handcrafted 13-inch-wide-by-8½-inch-high vessel has a 1½-gallon capacity. Features a front splash guard. Retail for \$38 from Gardeners Eden. (800) 822-9600. www.gardenerseden.com.



Sundial and Stand

There's nothing like a brass sundial to bring old-fashioned charm to a garden. This 11-inch-diameter dial is cast with words from the poet Robert Browning: "Grow old along with me, the best is yet to be!" Use the dial alone or place atop the 16-inch-high brass-plated stand.

The sundial is \$24.98; the stand is \$69.98; or \$89.98 for both.

Lillian Vernon, (800) 545-5426. www.lillianvernon.com.



Gift of a Tree

For \$8.95 the Gift of a Tree program will plant a mahogany, cedar, or white pine in honor of your recipient in a protected area in El Salvador to beautify the lives of the local population. Recipients receive a card, shown above, announcing their gift. For more information, visit www.YourTrueNature.com or call (800) 992-4769.



Foxgloves

Weed and plant in style with colorful gloves from Foxglove. The stretchable, water-resistant gloves are machine-washable and come in three sizes and in a variety of fashionable colors, including periwinkle blue, moss green, tulip red, and purple. Retail for \$25 a pair. Visit www.foxglovesgardengloves.com or call (888) 322-4450 to order or to locate retail suppliers.

Regional Happenings

NORTHEAST

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

NOV. 24. **Old Westbury Gardens Presents Music in the Red Ballroom.** Old Westbury, New York. (516) 333-0048. www.oldwestburygardens.org.

DEC. 10. **Boxwood Topiary with Loretta Stagen.** Class. The Garden Education Center of Greenwich. Cos Cob, Connecticut. (203) 869-9242.

DEC. 15. **Hearthside Reading—Native American History and Lore.** Wave Hill. Bronx, New York. (718) 549-3200. www.wavehill.org.

JAN. 1. **First Day At Old Sturbridge Village.** A special day of visiting and hospitality while participating in some daily activities of a rural New England village. Sturbridge, Massachusetts. (508) 347-3362, ext. 325.

MID-ATLANTIC

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

NOV. 17. **Domestic Dyeing Processes in the 18th Century.** Historic Bartram's Gardens. Philadelphia, Pennsylvania. (215) 729-5281. www.bartramsgarden.org.

NOV. 22 & 23. **Holiday Flower Show and Display.** U.S. National Arboretum. Washington, D.C. (202) 245-5898. www.nationalarboretum.usda.gov.

NOV. 29–DEC. 30. **GardenFest of Lights.** Lewis Ginter Botanical Garden. Richmond, Virginia. (804) 262-9887. www.lewisginter.org.

AHS DEC. 5–31. **Holiday Display at River Farm.** Trees decorated with vintage ornaments from the Smithsonian. American Horticultural Society. George Washington's River Farm, Alexandria, Virginia. (703) 768-5700. www.ahs.org.

DEC. 6–8. **Christmas Open House.** Ladew Topiary Gardens. Monkton, Maryland. (410)-557-9466. www.LadewGardens.com.

DEC. 8. **Christmas Tea & Holiday Tour.** Gunston Hall Plantation. Mason Neck, Virginia. (703) 339-0460.

DEC. 8. **Lenape Foodways.** Lecture and demonstration. Historic Bartram's Garden. Philadelphia, Pennsylvania. (215) 729-5281. www.bartramsgardens.org.

DEC. 10–29. **Candlelight Evenings at Phipps Conservatory and Botanical Gardens.** Schenley Park. Pittsburgh, Pennsylvania. (412) 622-6915. www.phipps.conservatory.org.

DEC. 14–JAN. 5. **Holiday Collection.** Seasonal displays. Brookside Gardens. Wheaton, Maryland. (310) 949-8230. www.brooksidegardens.org.

EDUCATING the Horticulturists of Tomorrow



Whether students attending college or adults changing careers, generations of horticulturists have benefited from American Horticultural Society internships. At George Washington's River Farm (AHS Headquarters), interns gain experience in:

- **Integrated Pest Management**—by answering questions in our Gardeners Information Service and scouting the grounds
- **Education**—through leading activities for children in our Living Lab Program and giving tours of our public garden
- **Garden Management**—by maintaining our plant collections and working on our grounds
- **Interpretation**—through developing signs and labels to explain our collections to visitors
- **Propagation**—by germinating seeds for River Farm gardens and plant sales

Interns gain knowledge from other horticultural professionals by visiting public gardens such as Brookside Gardens and the U.S. National Arboretum, and by attending regional conferences and seminars.

AHS internships are not supported by member dues—they are supported through the generosity of people who believe horticultural education is paramount.

For more information about the AHS internship program or how you can be a supporter, contact Trish Gibson at (800) 777-7931 ext. 136 or via e-mail at tgibson@ahs.org, or visit our Web site at www.ahs.org.

Great Basin Gardens Open in Chicago



EVENING ISLAND is the focal point of three new "Gardens of the Great Basin" at the Chicago Botanic Garden in Glencoe, Illinois. The gardens get their name from the large body of water that encircles the island—one of nine islands that make up the freshwater ecosystem of the Skokie River.

At the garden opening this past September, guests witnessed a phenomenal warm colored spectrum of light at sunset, one of the important elements in the garden's design, according to landscape architect James van Sweden. Van Sweden's firm Oehme, van Sweden and Associates, Inc., in Washington, D.C., designed the gardens in the "New American Garden" style. Their new style, made up of hundreds of different types of herbaceous perennials, grasses, shrubs, and trees, provides visitors the visual sensation of the expansiveness of the great west with its large sweeps of lush color, texture and form—an ever-changing source of beauty.

The three newly designed gardens—Evening Island, Lakeside Gardens, and the Water Gardens and Shorelines (the latter is shown in the photograph above)—are unique unto themselves. Evening Island creates a transition between the Main Island and its formal gardens and the natural habitat of the Dixon Prairie. Two new bridges join all three features, creating a fluid movement between them.

The Lakeside Gardens furnish a revel for spring with blooming daffodils, tulips, and crab apples. The newly created overlook, designed in the English style, provides a vista view of the "Gardens of the Great Basin."

Water Gardens and Shorelines is a showcase for hundreds of native aquatic plants. This garden exhibits innovative uses of stone, as well as plastic mesh and web materials to help stabilize the shoreline and provide vital ecosystems for wildlife.

The Chicago Botanic Garden is working with the Illinois Department of Natural Resources, the Illinois and U.S. Environmental Protection Agencies and the Illinois Department of Commerce and Community Affairs to improve water quality and animal habitats with the restorative efforts of the three new gardens.

The gardens are open daily from 8 a.m. to sunset. For more information, call (847) 835-5440 or visit the garden's Web site (www.chicagobotanic.org).

—Eva Monheim, Editorial Intern

JAN. 14–16. **43rd Virginia Turf and Landscape Conference and Trade Show.** Richmond Marriott. Richmond, Virginia. (540) 942-8873. E-mail: thetvc@cfw.com.

SOUTHEAST

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

NOV. 8–JAN. 31. **Orchid Daze.** Holiday exhibit highlighting orchids. Atlanta Botanical Gar-

den. Atlanta, Georgia. (404) 876-5859. www.atlantabotanicalgarden.org.

NOV. 21. **Front Yard Gardening with Lee Anne White from Fine Gardening.** Georgia Perennial Plant Association. Atlanta, Georgia. (404) 237-8071. www.georgiaperennial.org.

NOV. 22. **Orchid Photography.** Workshop/class. American Orchid Society. International Or-

chid Center, Delray Beach, Florida. (561) 404-2066.

NOV. 22–DEC. 28. **Fantasy in Lights.** Callaway Gardens. Pine Mountain, Georgia. (800) 225-5292. www.callawaygardens.com.

NOV. 22–JAN. 5. **Garden of Lights Holiday Festival.** Cypress Gardens. Cypress Gardens, Florida. (863) 324-2111. www.cypressgardens.com.

NOV. 23 & 24. **Bradenton-Sarasota Rose Society Rose Show.** Selby Botanical Gardens. Sarasota, Florida. (941) 922-6006. E-mail: therosequeen@comcast.net.

DEC. 3. **Our Favorite Plants for 2002.** Lecture. Daniel Stowe Botanical Garden. Belmont, North Carolina. (704) 825-4490. www.dsbg.org.

DEC. 6 & 7. **The Great Southern Tree Conference.** Florida Nurserymen and Growers Association. Gainesville, Florida. (407) 295-7994. www.fnga.org.

DEC. 21–23. **Nights of a Thousand Candles.** Seasonal light display. Daniel Stowe Botanical Garden. Belmont, North Carolina. (704) 825-4490. www.dsbg.org.

JAN. 11. **The Tampa Bay Area Camellia Society 15th Annual Camellia Show.** The Tampa Women's Club, Tampa, Florida. (813) 920-2987.

NORTH CENTRAL

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

NOV. 1–JAN. 4. **Deck the Hall Holiday Celebration.** Stan Hywet Hall & Gardens. Akron, Ohio. (330) 836-5533. www.stanhywet.org.

NOV. 24. **Midwestern Farm Women: A Century on the Land.** Lecture. Morton Arboretum. Lisle, Illinois. (630) 719-2465. www.mortonarb.org.

NOV. 29–JAN. 5. **Celebrations! A Festival of Flowers, Light, and Music.** Chicago Botanic Garden. Glencoe, Illinois. (847) 835-5440. www.chicagobotanic.org.

DEC. 7–31. **Olbrich's Holiday Express.** Flower and model train show. Olbrich Botanical Gardens. Madison, Wisconsin. (608) 246-4550. www.olbrich.org.

Dec. 8–Jan. 5. **Winter Celebration.** Mill Creek MetroParks–Fellows Riverside Gardens. Youngstown, Ohio. (330) 740-7116.

DEC. 14–JAN. 5. **Chicago Park District Conservatory's Holiday Train Exhibit.** Chicago, Illinois. (312) 742-4787. www.chicagoparkdistrict.com.

SOUTH CENTRAL

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

NOV. 22. **Teacher Workshop.** Aquatic Project Wild.Houston Arboretum and Nature Center. Houston, Texas. (713) 681-8433.

NOV. 27–JAN. 1. **Animals on Parade.** Holiday flower show. Missouri Botanical Garden. St. Louis, Missouri. (314) 577-9400. (800) 642-8842. www.mobot.org.

DEC. 1, 5–8. **Illuminations.** Holiday light display. Botanica-Witchita Gardens, Wichita, Kansas. (316) 264-0448. www.botanica.org.

SOUTHWEST

AZ, NM, CO, UT

NOV. 30. **Fall Color Festival.** Live music, arts and crafts, storytelling, and refreshments. Boyce Thompson Arboretum, Superior, Arizona. (520) 689-5248.

DEC. 5–7. **Las Noches de las Luminarias.** Holiday light display. Desert Botanical Garden, Phoenix, Arizona. (480) 941-1225.

DEC. 6 & 7. **Annual Holiday Fair.** Fundraiser for Council of Albuquerque Garden Clubs featuring seasonal plant decorations, hand-crafted gifts, and food items. Albuquerque Garden Center. Albuquerque, New Mexico. (505) 296-6020.

DEC. 6–8. **Luminaria Nights.** Light Display. Tucson Botanical Gardens, Tucson, Arizona. (520) 326-9686. www.tucsonbotanical.org.

WEST COAST

CA, NV, HI

NOV. 24. **Lovely Trees in Winter.** Guided tour. University of California–Davis Arboretum, Davis, California. (530) 752-4880. www.arboretum.ucdavis.edu.

DEC. 6. **Holiday Open House and Sale.** Mendocino Coast Botanical Gardens, Fort Bragg, California. (707) 964-4352.

DEC. 6–8. **Blessing of the Olives Weekend.** Various activities centered on olives. The Sonoma Valley Olive Festival. Sonoma, California. (707) 996-1090 ext. 22. E-mail: olivefestival@sonomavalley.com.

DEC. 14. **Seed Gardens Holiday Gift Workshop.** Theodore Payne Foundation, Sun Valley, California. (818) 768-1802. www.theodorepayne.org.

DEC. 17. **Los Angeles International Geranium Society Meeting.** The Arboretum of Los Angeles County. Arcadia, California. (626) 795-0008. www.arboretum.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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NORTHWEST

AK, ID, MT, OR, WA, WY

NOV. 18–24. **Celebrating Oregon Agriculture: Cranberry Week.** Cranberry samplings. The Oregon Garden. Silverton, Oregon. (503) 874-8100. www.oregongarden.org.

DEC. 1–31. **Garden d'Lights.** Holiday light display and live musical entertainment. Bellevue Botanical Garden, Bellevue, Washington. (425) 451-3755. www.bellevuebotanical.org.

DEC. 7–JAN. 2. **Winter Garden Aglow.** Holiday light display. Idaho Botanical Garden. Boise, Idaho. (208) 343-8649.



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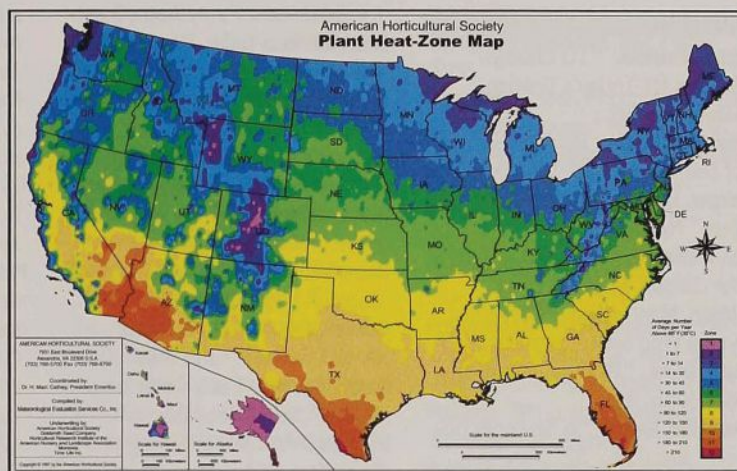
DEC. 1–JAN. 6. **Christmas at the Gardens.** Holiday light display and traditional holiday music. Butchart Garden, Victoria, British Columbia. (866) 652-4422. www.butchartgardens.com.

DEC. 3–5. **Auxiliary Christmas Workshop.** Creating holiday wreaths and other decorations with natural greenery. Royal Botanical Gardens. Burlington, Ontario. (905)-527-5577. www.rbg.ca.

DEC. 6–31. **Festival of Lights.** VanDusen Botanical Garden Association. Vancouver, British Columbia. (604) 878-9274. www.vandusengarden.org.

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-F

***Acer palmatum* 'Sango-kaku'** AY-ser pal-MAY-tum (USDA 5-8, AHS 8-2)
A. palmatum* var. *dissectum A. p. var. dis-SEK-tum (5-8, 8-2)
Asimina triloba uh-SIH-mih-nuh try-LO-buh (4-8, 9-5)
Aster divaricatus ASS-ter dih-vair-ih-KAY-tus (3-9, 9-1)
A. novae-angliae A. NO-vee-ANG-lee-ay (3-9, 9-1)
Aucuba japonica aw-KYEW-buh jah-PON-ih-kuh (7-10, 12-6)
***Betula nigra* 'Heritage'** BET-yew-luh NY-gruh (4-8, 9-2)
***Buxus sempervirens* 'Suffruticosa'** BUCKS-us sem-pur-VY-renz (6-8, 8-4)
Camellia japonica kuh-MEEL-yuh jah-PON-ih-kuh (8-10, 10-3)
C. oleifera C. o-lee-IF-ur-uh (6-9, 9-5)
C. reticulata C. reh-tik-yew-LAY-tuh (7-9, 9-5)
C. sasanqua C. sah-SAHNG-kwuh (7-9, 9-5)
C. sinensis C. sy-NEN-siss (7-10, 10-3)
Cercis canadensis SUR-siss kan-uh-DEN-siss (4-9, 9-2)
***Chamaecyparis obtusa* 'Nana Gracilis'** kam-ee-SIP-uh-riss ahb-TOO-suh (4-8, 8-3)
Chamaecyparis pisifera C. pih-SIF-er-uh (4-8, 8-3)
Cimicifuga racemosa sih-mih-SIF-yew-guh ras-eh-MO-suh (3-8, 12-1)
Clethra alnifolia KLETH-ruh al-nih-FO-lee-uh (3-9, 9-1)
Cornus alternifolia KOR-nus al-tur-nih-FO-lee-uh (4-8, 8-1)

C. florida C. FLOR-ih-duh (5-8, 8-3)
C. sanguinea C. san-GWIN-ee-uh (5-7, 7-5)
C. sericea seh-RISS-ee-uh (2-8, 8-1)
***Corylus avellana* 'Contorta'** COR-ih-lus ah-vel-LAN-uh (3-9, 9-1)
Cryptomeria japonica krip-toh-MAIR-ee-uh jah-PON-ih-kuh (6-9, 9-4)
Fagus grandifolia FAY-gus gran-dih-FO-lee-uh (3-9, 9-1)
Fothergilla gardenii fah-thur-GIL-uh gar-DEN-ee-eye (4-9, 9-1)
Fouquieria splendens foo-kee-AIR-ee-uh SPLEN-denz (10-11, 12-1)

G-L

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H. tetraptera H. teh-TRAP-ter-uh (5-8, 8-4)
H. tetraptera* var. *monticola H. teh-TRAP-ter-uh var. mon-tih-KO-luh (5-8, 8-4)
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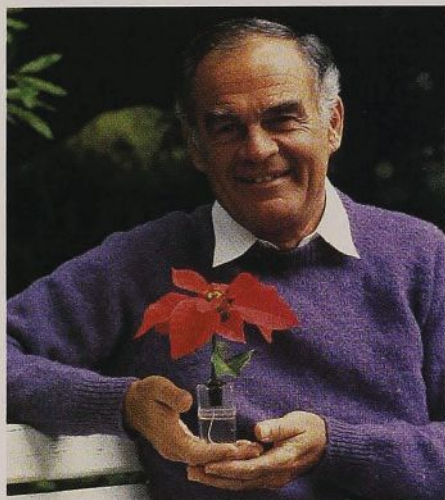
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Everyday Garden Science

Alien Encounters in the Poinsettia House

by H. Marc Cathey



THE PHONE calls to the Paul Ecke Poinsettia Ranch in Encinitas, California, in the early '60s came from flight controllers, pilots, naval officers, police, and even the owner of an organic food restaurant, but they were all asking the same question: Was the nighttime lighting recently installed in the nursery's plastic houses being used to communicate with aliens? For years the lights in the blocks of plastic houses had stayed on almost all night, but suddenly they were being turned on and off frequently in the middle of the night. From a distance it appeared as if it might be an attempt to send a message into space.

On my next visit to the ranch, owner Paul Ecke Jr. arranged for me to meet with many of the callers to explain that the flashing lights were my idea. It was based on a research paper I published in 1963 that showed that exposing poinsettias to intermittent incandescent lighting—anywhere from three seconds per minute to three minutes per half-hour—for two to four hours in the middle of the night would delay flowering until the plants were ready for sale. Using intermit-

tent lighting allowed poinsettia growers to reduce the cost of lighting up to 90 percent compared with the previous practice of leaving lights on all night.

DAYLENGTH IS CRITICAL

Flowering in poinsettias is controlled by a critical daylength of 12 hours and 20 minutes. This means that when poinsettias are exposed to days longer than the critical daylength they will continue to produce leaves rather than set flowers. Nights longer than the critical nightlength promote initiation of the flowers—technically known as cyathia—and their brightly colored supporting bracts.

Poinsettias are so sensitive to changes in light that even a flashlight carried through a greenhouse or lights from cars and planes can delay flowering. As little as 0.01-foot candles of light—the equivalent of the light given off by one candle placed 100 feet away—burning all night, can delay flowering. To ensure poinsettias flowered at the desired time—just before

the Christmas holiday season—my recommendation to the Ecke Ranch was to cover the greenhouse benches with black shade cloth from 4 p.m. to 8 a.m. daily from September 25 through November 5.

WORKS AT HOME, TOO

By understanding the light requirements of poinsettias, home gardeners can get a poinsettia to rebloom year after year. Once the holidays are over, continue to water your poinsettia regularly, making sure the soil doesn't dry out between waterings. Feed it with a half-strength balanced liquid fertilizer every other week.

In summer, you can move your poinsettia outdoors where it is in shade through the hottest part of the day; never allow the soil to dry out. As with all plants being moved outdoors, allow time for it to acclimate to brighter light and wind, or it will suffer foliage damage. If your plant begins to grow "leggy" in mid-summer, cut back the stems to six inches to stimulate bushier new growth.

It will take eight to 10 weeks to induce your poinsettia to flower, so starting the 25th of September, place it where it will receive eight hours of direct sunlight daily, then transfer it to a cool draft-free place in complete darkness (a closet in an unheated room is perfect) for 16 hours. Repeat this cycle daily. This manipulation of daylength will stimulate the plant to set flower buds and come into bloom just in time for the holidays.

Getting a poinsettia to rebloom requires patience, but if you have young children, it can be an enjoyable and rewarding

way to teach them how plants respond to light and changing daylength.

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



Above: One of the newest poinsettias to come from the Paul Ecke Ranch, 'Enduring Pink' will be available in 2003. **Top:** Dr. H. Marc Cathey in the late 1980s showing a rooted cutting of an Ecke poinsettia.

CELEBRATE GARDENING IN OHIO RIVER THE VALLEY



But what is a gardeners' conference without SHOPPING? There will be three days of power garden shopping at our Gardeners' Market and Trade Show featuring all the latest and greatest tools and garden accessories. If this is not enough, there will be food to munch while you shop, book signings by our speakers, special GM&TS presentations, and daily door prize giveaways. Our GM&TS shopping opportunities complement nicely the shopping already built into many of our conference tours. Don't worry about getting your purchases home...MAIL BOXES, ETC. will be right on the Trade Show floor for your shipping convenience.

For detailed, up-to-the-minute information regarding this Master Gardening happening, log on to our web site, <http://mastergardener.osu.edu/imgc2003>. You can also register on-line by following the simple instructions. What? No computer at home? No problem, contact your local extension

Get out your calendars and mark a big "X" through these dates — June 18th – 21st, 2003 — because you're going to be in the Cincinnati area for the greatest meeting of Master Gardeners ever! It's the International Master Gardener Conference 2003, and the Greater Cincinnati Master Gardeners can't wait to welcome you to our area to wine you, dine you, educate you, amaze you, and just plain show you a great time!

The excitement begins Wednesday when the early arrivals take part in the historic planting of the first-ever pedestrian-only bridge to link Northern Kentucky to Cincinnati. Then the Conference kicks in to full gear on Thursday with the Welcome Ceremony and kick off lecture by Keynote Speaker Holly Shimizu who is not only the Director of the U. S. Botanical Garden and past curator of the U. S. National Arboretum, you've probably seen her many times on PBS' and HGTV's "Victory Garden." In addition to her keynote speech she will be lecturing on a favorite subject, "Herbs in the Landscape," giving you a chance to meet her "up close and personal."

Our great lineup of speakers includes an afternoon sponsored by the American Horticultural Society featuring: Katy Moss Warner, President of the AHS, who will speak on "Gardening for a Greener World;" famed grower Kurt Bluemel talking about his favorite perennials and grasses; Carole Ottesen, author of "The Herbal Epicure," who will speak about "Gardening for Food and Health;" and the well-known author and radio show host, Felder Rushing, who

will tell you how to "Share the Fun with Passalong Plants." Plus you'll hear from Tracy DiSabato-Aust, author of "The Well-Tended Perennial Garden;" and Dr. Lonnie Thompson, the "Ice Man" chosen by Time Magazine as one of the best scientists in the world, who will talk to you about global warming.

Four exciting gardening days continue with 5 all-day, Pre-Conference Tours



Greater Cincinnati Master Gardeners look forward to sharing their neighborhoods, their beautiful gardens, and their zest for gardening with you. Y'all come!

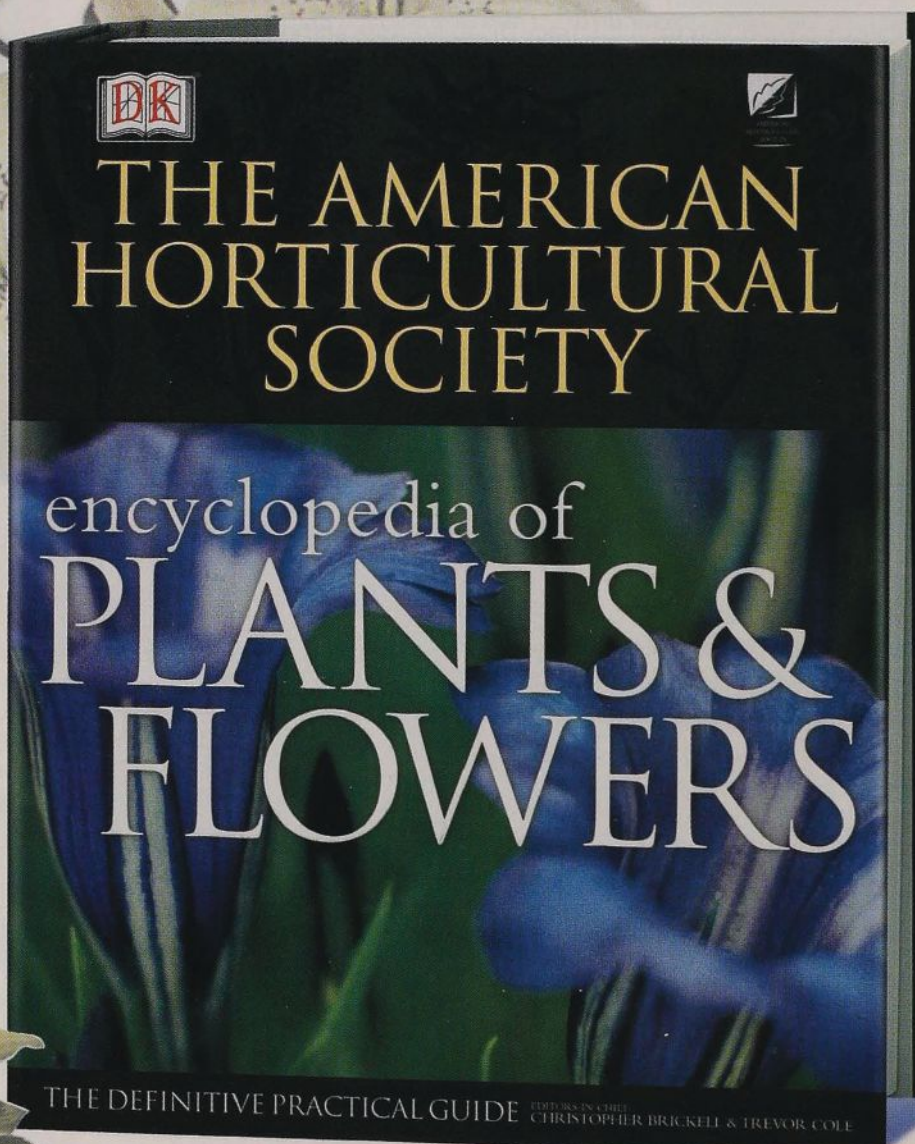
covering points in Ohio, Kentucky and Indiana; 74 Educational Sessions and Workshops; 10 half-day tours showcasing both public and private gardens; 3 fun-filled evenings — at the Cincinnati Zoo and Botanical Garden, at a Bourbon and Wine Tasting, and on an old-fashioned riverboat cruise; and maybe a little time to explore the Greater Cincinnati area on your own.

and they'll be happy to let you use theirs, and maybe they'll even have a copy of our Registration Brochure for you to take home. What? Not a Master Gardener? Ask your local Extension agent how to become one; there may still be time! Whatever it takes, do not miss this garden extravaganza!



Grow.

Boost your gardening skills with this definitive guide to plants and flowers from DK, in association with The American Horticultural Society. With over 4,250 full-color photographs and practical advice on everything from cultivation to identifying pests and diseases, it's the essential reference for gardeners of every level.



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