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NOTES FROM RIVER FARM

River Farm being transformed for the Eastern Performance Trials, HGI offers new volunteer opportunities for Master Gardeners, new children’s gardening book awards debut in Atlanta.

AHS PARTNERS IN PROFILE
Monrovia Nursery.

GARDENING BY DESIGN
The importance of plants.

ONE ON ONE WITH…
Paul Meyer, director of the Morris Arboretum.

HABITAT GARDENING
The Great Basin Desert.

GARDENER’S NOTEBOOK
Organic cut flowers gaining popularity, rare California wildflower is rediscovered, new Garden Literature Index™ now available, Denver Botanic Gardens partners with Lady Bird Johnson Wildflower Center, Connecticut to initiate ban of invasive plants at town level.

CONSERVATIONIST’S CORNER
Aiding endangered bees and other pollinators.

BOOK REVIEWS
Bulbs for Garden Habitats, On Foreign Soil: American Gardeners Abroad, and Dogwoods. Special focus: Themed gardening books.

REGIONAL HAPPENINGS

RIVER FARM SNAPSHOT
Sunflowers and azure skies.

FEATURES

YOUTH GARDEN SYMPOSIUM 2005
Highlights from the annual AHS National Children & Youth Garden Symposium, which was held in Atlanta in July.

GROUND COVERS FOR SHADE
These attractive plants will reduce maintenance in shady gardens without taking over.

FALL CLEANUP RECONSIDERED
A little restraint can go a long way toward keeping the natural ecosystem in balance.

SPRING BULBS FOR BORDERS
Integrating bulbs with herbaceous perennials and shrubs can extend a garden’s flowering season and create new color combinations.

SIMPLIFYING THE GARDEN
Here’s some expert advice for reducing maintenance in a garden.

OUTLANDISH OUTGROWTHS
Exploring the curious world of plant galls.
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The 2005 member password for the AHS Web site (www.ahs.org) is blooms.
NOTES FROM RIVER FARM

PEOPLE OFTEN ask me, “Who are the members of the American Horticultural Society?” There are many different groups of plant and garden lovers in America—from professionals in the green industry to educators and research scientists, from garden writers to garden designers, from serious long term gardeners to those who have just discovered the joys of gardening. These are all members of the AHS. No matter how seriously some pursue their profession or avocation, we all meet on the same level as passionate gardeners and caretakers of the earth.

This past July, I had the privilege of spending a few days with a number of AHS members who are dedicated to sharing the hopeful, joyful, critically important message of plants and gardens with young people in America. The venue was the AHS’s annual National Children & Youth Garden Symposium in Atlanta. What a spirited, exciting event! Here were educators—from those who offer summer camps in gardening to those connecting kids to plants in public gardens throughout America to those who have set up gardening programs for large networks of schools. Here were designers of children’s gardens and writers who deliver the stories that introduce our youth to the importance of plants and the environment.

Each of the participants shared remarkable stories of success in different aspects of youth gardening. National figures on the youth garden scene like Jane L. Taylor and Marcia Eames-Sheavly offered their perspective. Garden book authors like Felder Rushing and Sharon Lovejoy delighted us with their stories. Designers of children’s gardens, like Cindy Tyler and Ann English, shared their ideas and successes. Leaders in public gardens like Mary Pat Matheson and Sheldon Fleming gave us their personal insights. Educators like Tim O’Keefe, who have developed innovative and effective teaching systems, offered their experience and creativity.

At the AHS, we are committed to offering these kinds of national forums that bring together leaders who can truly make a difference in America—and in our world. Each of these youth garden leaders, whether they are doing big projects or small, are AHS members. If you are an AHS member keenly interested in youth gardening, be sure to put July 27 to 29 on your calendar for next year, when the symposium will be hosted by the Missouri Botanical Garden in St. Louis.

I am looking forward to another exciting opportunity to meet AHS members in late September. The Garden Centers of America is coordinating the first annual Eastern Performance Trials and our AHS headquarters at George Washington’s River Farm is one of the six featured sites. National green industry leaders Campania International, Centerton Nursery, Cherry Lake Tree Farm, Goldsmith Seeds, Proven Winners, and Saunders Brothers Nursery will be showcasing their newest varieties of annuals, perennials, shrubs, trees, and containers right here in our beautiful gardens. Again, the AHS is providing a national forum for sharing information and inspiration. (For more on the trials, see page 8.)

Please encourage your friends and colleagues to join the AHS so that we can continue to offer and expand these important and unique forums for leadership.

Happy gardening!

—Katy Moss Warner, AHS President

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MEMBERS’ FORUM

SOLD ON SOIL ORGANISMS
I just wanted to say that the July/August 2005 issue blew me away. Never have I seen so much helpful information and all in one issue. The article “Mighty Mycorrhizae” by Doreen G. Howard and the interview with soil biologist Elaine Ingham were fantastic. Every Extension office should pass these two articles out at the door.

Agnes D. Kling
Ridgefield, Connecticut

MONARDA FAN
I very much enjoyed the article on “Must-Have Monardas” by Jessie Keith in the July/August issue. They have always been among my favorite garden flowers.

How interesting that the article’s author should teach in a town called Media, because, in the 1968 edition of A Field Guide to Wildflowers: Northeastern/Northcentral North America by Roger Tory Peterson and Margaret McKenny, there is listed a Monarda media, aka purple beebalm. The description reads “similar to wild beebalm but red-purple. Bracts purplish.” I have never seen this species listed in any other wildflower book and am curious why.

Vicki Hill Foster
Fayette, Maine

Jessie Keith’s response: Monarda media is definitely a plant veiled in mystery. In 1809, German plantsman and taxonomist Carl Ludwig von Willdenow described this “species” based on a garden specimen that he found, but he did not actually observe any wild populations of them. Years later, populations were found, but upon closer inspection, specialists believed Monarda media to be a naturally occurring hybrid between Monarda didyma and M. fistulosa. This is still understood to be the case.

Despite its uncertain taxonomic status, a couple of nurseries carry M. media, including Sylvania Natives (www.sylvianatives.com) and Scott Brothers Nursery (www.scottbrothersnursery.com).

CONCERN OVER NANDINA
As a veteran author of gardening articles, I know how hard it is to be comprehensively informed about any particular plant. Even so, given the considerable notoriety of Nandina domestica, how did it make the “recommended” list in “Compact Shrubs” (July/August 2005)? For some time the Nature Conservancy, the Lady Bird Johnson Wildflower Center, and the U.S. Forest Service, among many other national organizations and state agencies, have designated this pretty Chinese native as a Class I invasive “actively disrupting plant communities,” especially in the southern United States.

AHS has usually been sensitive to the problem of such invasives, a topic treated extensively in The American Gardener (March/April 2003).

William J. Scheick
University of Texas at Austin

Editor’s response: In identifying plants with the potential to be invasive, we walk a very fine line. Our philosophy is to take a regional approach to invasiveness and flag only the plants that are known to be serious problems in the wild. Although nandina appears on several invasive plant lists, some southern horticulturists have challenged whether it should be considered on a par with plants like kudzu, privet, and Japanese honeysuckle. Nonetheless, breeders are addressing this concern, and some of the newer compact cultivars—such as GulfStream™ mentioned in our article—are chosen for attractive foliage and produce little or no fruit.

HARBOUR GETS SHORT SHRIFT
In the July/August issue of The American Gardener, I noted the misspelling of the cultivar epithet for Nandina ‘Harbour Dwarf’ on page 31. The misspelling (“Harbor”) is widespread and possibly arose from the assumption that the “Harbour” refers to a harbor. Actually, the name commemorates C.L. Harbour, a North Carolina nurseryman, who was located between Winston-Salem and Greensboro—far from the Atlantic shore and any harbor.

Donald H. Voss
Vienna, Virginia

DR. CATHEY TRIBUTE
Your story about AHS President Emeritus Dr. H. Marc Cathey (July/August 2005) brought back memories of years past when he would ask me to join him in group panels, group lectures and, to my terror, direct phone calls during radio programs.

He has a broad knowledge of the world of horticulture, which he shares with immense modesty and a great sense of humor. He gently taught a lot to so many of us. I am so happy that he is still working at it.

Alfredo F. Siani
Consultant/Horticulturist
Outlands, Loudoun County, Virginia

CORRECTIONS
In “Must-Have Monardas” (July/August 2005), the term “rhizomes” was incorrectly defined as the result of an editorial error. Rhizomes are horizontal, often underground, stems that send out nodal roots and shoots. In the same article, the location of the Morden Research Centre should have been Winnipeg, Manitoba.

Also in the July/August 2005 issue, in an article announcing the election of Harry Rissetto to the AHS Board of Directors, Rissetto’s affiliations with two horticultural groups were misstated. Rissetto is currently a trustee of the American Dahlia Society, of which he is a past president. He is a member of the Royal Horticultural Society.

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.
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River Farm Spruces Up for Eastern Performance Trials

Over the summer, River Farm was abuzz with activity as the AHS and many partner organizations worked together to prepare AHS headquarters for the first ever Eastern Performance Trials (EPT), which will run from September 19 through 24. Coordinated by the Garden Centers of America and designed for green industry professionals, this event will showcase new plant introductions from major national and international plant development companies at six locations in the mid-Atlantic region.

“The AHS is proud to be one of the host sites for the debut of this phenomenal national event,” says AHS President Katy Moss Warner. “We envision that the trials will become an important tradition the green industry will look forward to every year from now on. The annual AHS gala, scheduled for the final day of the trials, will provide an opportunity for us to share this landmark occasion with our members and friends from around the country.”

Landscape architect Ann English, AHS’s EPT project coordinator, worked closely with AHS Horticulturist Peggy Bowers and the other members of the horticultural team to make the changes needed to integrate the individual plant exhibits seamlessly into the River Farm landscape. These included the construction of a new promenade in front of the estate house, the creation of several pathways around the grounds, and expansion of various garden areas and beds.

“Peggy and I have had to meet many challenges in order to coordinate the on-site projects and create the display areas for our partners,” says Ann. “The complexity and scope of this event has required the teamwork of the whole AHS staff, cooperation of the EPT partners, and the generous support of those who have contributed design work, construction assistance, and donations of plants and other materials.”

Green industry professionals who wish to attend EPT must pre-register by going to www.easternperformancetrials.org. The AHS is offering a special day for its members to view the trials at River Farm on September 22. Call (703) 768-5700 ext. 121 or e-mail education@ahs.org for more information about the AHS Member Day.

HGI Offers Master Gardener Volunteer Opportunities

The Horticulture Gardening Institute (HGI), an AHS horticultural partner and recipient of the AHS’s 2005 G. B. Gunlogson Award, is offering unique volunteer opportunities for Master Gardeners. Based in East Lansing, Michigan, HGI brings gardeners from around the country together to learn and share new skills through its online programs.

“I am in the garden all day, so I really look forward to getting online at night to work on the programs and enhance my skills,” says Sheri Ann Richerson, a Bronze Level Advanced Master Gardener in Marion, Indiana, who is completing her fourth HGI online program and is an active volunteer.

Master Gardeners must complete an HGI online program before volunteering. The program topics include: The Art and Science of the SMARTGARDEN®; Herbaceous Perennials for Shade; Herbaceous Perennials for Sun; and The Art and Science of Container Gardening.

“Volunteering has been extremely rewarding because the Internet allows me to help gardeners around the country and learn from them while earning credits, too,” says Sheri.

One volunteer option is to join the Art and Science of Container Gardening program’s "Master Gardener Review Team." Volunteers review container garden plans submitted online.
Great American Gardener Awards in Florida

During the 2005 Great American Gardeners Conference held in Orlando, Florida, this past April, AHS Board of Directors Chair Arabella Dane, left, and AHS President Katy Moss Warner, right, presented the Meritorious Service Award to Duane Kelly of Seattle, Washington. A former AHS Board member, Kelly was instrumental in developing AHS’s vision for its future. He currently chairs Salmon Bay Events, which produces the Northwest and the San Francisco Flower and Garden Shows.

Ornaments for Holiday Trees

Once again, the AHS is extending an invitation to individuals, groups, families, clubs, or classrooms to create ornaments that will decorate River Farm’s holiday trees. The themes for this year’s holiday trees are Americana (red, white, and blue), Lewis and Clark (silver and gold), George Washington (blue and white), Plants and Flowers (multicolored), Solar System (multicolored), and Bountiful Harvest (red and gold). Contact AHS Children’s Programs Coordinator Nancy Busick at (703) 768-7500 ext. 132 or e-mail youthprograms@ahs.org for further details.

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AHS Members Shine in Photography Contest

THE GARDENERS OF AMERICA (TGOA)/Men’s Garden Clubs of America (MGCA), a garden club group that joined AHS as horticultural partners in 2005, generously opened its annual photography competition to AHS members this year.

When the awards were announced earlier this year, several first-time AHS entrants had earned top honors, including AHS Board Chair Arabella Dane of Center Harbor, New Hampshire, who won Best of Show for her photograph of Geranium maderense.

AHS member Donald Bolak of Wheeling, Illinois, earned the title of 2005 Sweepstakes Winner by achieving the highest total score for his combined entries (winning photographs of Dodecatheon meadia ’Shooting Star,’ Echeveria, and Cyclamen). Arabella and Donald also received Judges Awards for their entries.

Other top winners included AHS member Anne C. Allen, who received first runner-up for her photograph of Magnolia ’Ann’, and Melissa Hanlin—a TGOA member from Olathe, Kansas—who took second runner-up for “Spider on Tagetes patula, Marigold.”

“I would like to thank all the photographers who participated in the 2005 Photography Competition,” says Judy Schuck, photography and calendar chairman for TGOA/MGCA. “Thirty one photographers submitted entries, including eight AHS members who were entering for the first time.”

More than 350 images, both slides and digital, were entered. Some of the photographs from this year’s contest will be considered for publication in the 2007 calendar sold annually as a fundraiser for TGOA/MGCA. “We try to pick photos that reflect the different months of the year,” says Judy. “With the high quality photos we have to choose from this year, it’s going to be very hard to narrow them down.”

For more information about the TGOA/MGCA photography competition—including images of the winning photos—visit www.tgoa-mgca.org/photocompet.htm or call (515) 278-0295. The deadline for submitting photographs for the 2006 competition is December 21. Copies of the 2006 calendar may be ordered through the TGOA/MCGA Web site at www.gardenersofamerica.org.

FORF Family Picnic Day

During the inaugural Friends of River Farm (FORF) Family Day on May 15, 2005, AHS Corporate Partner The Care of Trees used some of River Farm’s lofty trees to show delighted young visitors what it’s like to be up high among the leaves like an arborist. Other activities of the day included a picnic, face-painting for children, storytelling, and arts and crafts activities. The next FORF Family Day is scheduled for May 21, 2006.

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Celebrate Dr. Cathey Day with Bulbs

When Dr. H. Marc Cathey retired as AHS’s president emeritus in June, one of the tributes approved by the AHS Board of Directors was to proclaim his birthday, October 23, as Dr. H. Marc Cathey Day and celebrate it every year.

This year’s celebratory project is still in the planning stages, but the concept is for people to plant small purple bulbs such as crocuses or reticulated irises in the shape of X’s and O’s as a spring surprise for a friend. At River Farm, bulbs will be distributed to staff and volunteers on Friday, October 21 for planting on the 23rd.

“We encourage everyone to join us in celebrating the birthday of one of our nation’s great horticulturists,” says AHS President Katy Moss Warner. “It’s an ideal project for children to learn how to plant bulbs as well as create a happy moment for someone special in their lives.”

Updates on the bulb-planting project will be posted on the AHS Web site (www.ahs.org) in early October.
Kids Help Unveil New Book Award in Atlanta

Kids took center stage at the 2005 National Children & Youth Garden Symposium to help unveil the first ever “Growing Good Kids —Excellence in Children’s Literature Awards.”

The goal of this new award program, co-sponsored by the American Horticultural Society and the Junior Master Gardener Program, is to honor children’s books that teach meaningful lessons about gardening and the environment in a well-written, well-illustrated context. During the presentation, children from Atlanta area Junior Master Gardener programs read excerpts from some of this year’s award winning books.

AHS Education Programs Manager Stephanie Jutila says the excerpts “helped to remind people how prevalent these works of literature are in our lives.” The introductory readings also allowed young people to take an active role in the new program. Randy Seagraves, Junior Master Gardener Program national curriculum coordinator and the master of ceremonies at the award presentation, adds, “If you have ever read a book to a child, you have seen how freely a child can become immersed in a story. Books can shape how young people view the world around them.”

In the first year of the award program, “garden and ecology-themed” books published before 2005 were considered in a one-time “Classics” category for originality and significance to the genre. The award review committee included members of the AHS National Children & Youth Garden Symposium Advisory Panel, Junior Master Gardener specialists and coordinators, teachers, youth leaders, and children. 40 books were selected to receive the “Classic” award and are eligible to bear the official Growing Good Kids award seal. Next year, children’s gardening and nature books published in 2005 will be eligible for the award.

“These books were among 40 to receive awards for “Classic” literature.

For many children, books are a critically important introduction to the fascinating world of plants and gardens,” says AHS President Katy Moss Warner. “The awards identify the best literature, and help the JMG Program develop a curriculum that will be available to teachers. They also benefit anyone who has a child in their life by providing a list of inspiring books.”

To see a complete list of the 2005 Growing Good Kids award winners, visit www.ahs.org and click on the “Awards” link.

News written by Assistant Editor Viveka Neveln and Editorial Intern Will Clattenburg.
Since the 1920s, when Harry Rosedale founded Monrovia Nursery, the wholesale company headquartered in Azusa, California, has distinguished itself by its commitment to nurturing healthy plants and developing innovative techniques for producing and marketing them. A plant industry leader, Monrovia virtually invented the containerized plant, pioneered the shipment of plants, created state-of-the-art soil mixes, practiced water recycling, and led the way in coding its plants with both USDA hardiness zones and AHS heat zones.

It’s All About the Plants
Monrovia is best known internationally for its woody ornamentals, but the company also grows herbaceous perennials, grasses, bamboos, and vines. Its six nurseries nationwide produce 22 million plants a year that are sold exclusively through some 5,000 independent garden centers in the United States and Canada.

The decision to sell plants only to independent garden centers is one example of the company’s values. Another is not rushing plants through the development process. “We don’t want to introduce new plants just to say that they’re new,” says Gilbert Resendez, president of sales and marketing. “Our focus is on plants that are superior to what’s in the market currently.”

Monrovia anticipates demand by paying attention to what its customers want. “One trend we’re seeing is a higher demand for regional native plants,” says Resendez. In southern California, he notes, the pre-existing demand for drought-tolerant plants is converging with the newer demand for natives. “We’re augmenting the native plants we grow by adding complementary plants—in particular, those that are water-conserving,” he says.

Commitment to Quality
Over the years, Monrovia has introduced nearly 300 “exclusive plants.” According to Nicholas Staddon, Monrovia’s director of new plants, finding such plants requires the combined efforts of “breeders, hybridizers, plant hunters, great gardeners, and our own craftsmen.”

As in other facets of the industry, Monrovia has taken the initiative in perfecting tests for new plants. “Once a new plant has been identified, we take it to one of our six locations and put it in what we call our ‘bullpens,’ Staddon explains. “There, we look for the right soil, fertilizer, pruning method, dependability as a container plant, attractiveness, and—most importantly—if the plant will hold up in the home garden.”

One new plant Staddon is particularly excited about is a just released magnolia cultivar called Black Tulip™ (*Magnolia x soulangiana* ’JURmag’). “Black Tulip blooms at an early age, and has an extraordinary shape to the flowers, which are almost like tulips and wine-red in color,” says Staddon.

Shared Values
As Monrovia approaches its 80th anniversary, the company continues to expand its role as a major source of high quality plants that enhance the environment.

Becoming an AHS Corporate Partner, says Resendez, illustrates Monrovia’s commitment to the AHS mission. “We value our partnership with AHS, because both of our organizations want to get the message out about the benefits of using plants in their proper locations in the American garden,” says Resendez.

For more information about Monrovia, visit www.monrovia.com. For information on the AHS’s Corporate Partnership program, contact Eva Monheim at emonheim@ahs.org.

William Clattenburg is an editorial intern for The American Gardener.
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ENTHUSIASTIC, PASSIONATE, creative, energized—these are the kind of adjectives that captured the spirit of the presenters and attendees at the AHS 2005 National Children & Youth Garden Symposium in Atlanta, Georgia, this past July. Nearly 200 participants from around the United States and overseas shared ideas and inspirational stories during the three-day symposium, which was jointly hosted by Atlanta Botanical Garden and Wonderland Gardens. Educational sessions were held on the campus of Emory University.

From the opening general session headlined by keynote speaker Sharon Lovejoy, to 20 educational presentations, and behind-the-scenes tours of regional gardens, there were ample opportunities to learn how to use gardens and nature for interdisciplinary teaching across all age levels.

Several national organizations that have strong youth gardening programs were represented at the symposium, including the Junior Master Gardeners, the National Gardening Association, the National Wildlife Federation, and the Life Lab Science Program. Local groups that participated included EEin-Georgia, a statewide environmental education consortium.

“It was exciting to witness leaders in youth gardening in America sharing enthusiasm for their successes so selflessly

This page, top left: Symposium attendees check out a whimsical oversized watering can with rabbit ears at the Children’s Garden at the Atlanta Botanical Garden (ABG); bottom left: the fountain in the Parterre Garden at ABG features a Dale Chihuly glass sculpture. Above: AHS staffers Charlotte Albers, left, and Nancy Busick, right, with, left to right, symposium attendee Jane Dicus and featured speaker Sharon Lovejoy. Opposite page, top: Wonderland Gardens founder Sheldon Fleming recounts the garden’s history to the symposium group.
and so powerfully,” says AHS President Katy Moss Warner. “There are so many great programs throughout America, and so many inspired leaders. It was a proud moment for the AHS.”

MAKING CONNECTIONS

Keynote speakers Sharon Lovejoy, Tim O’Keefe, and Marcia Eames-Sheavly are involved in very different aspects of youth gardening, but their experience and insight offer universal lessons.

Lovejoy, an award-winning author and illustrator of garden books, focused on the benefits young people receive from experiences with nature. She spoke about the calming, restorative aspects of natural experiences for children suffering from ADHD and other maladies. She advocated for un-designed areas that allow children to explore, noting that American children in 1981 had, on average, 100 minutes per week of unstructured play and discovery compared to 50 minutes in 2005. “Children need dream time,” said Lovejoy. “They need wild places and un-designed areas: a spot for the wild things.”

In his address, O’Keefe shared stories, videos, and classroom strategies that he has successfully used to get children to make connections with the natural world. A second-grade teacher at the Center for Inquiry in Columbia, South Carolina, O’Keefe and his classroom projects have been featured in professional development videos. He also discussed how to encourage budding biologists and botanists to develop authentic scientific methods as they explore their subject matter.

Marcia Eames-Sheavly, recipient of the 2005 AHS Jane L. Taylor Award for her work as an Extension educator at Cornell University, addressed how garden-based educational programs can be designed to integrate critical life lessons and developmental skills that children and young people really need. Among the most important components of any curriculum, she said, are lessons that give children a sense of belonging, make them feel they are successful, demonstrate they can influence people and events, show them the value of helping others, and are fun and at the same time physically and intellectually stimulating.

EDUCATIONAL SESSIONS

Diverse educational presentations and hands-on workshops during the symposium ranged from the study of medicinal plants to instructions on how to make a class herbarium for plant research, and lessons about the ruby-throated hummingbird.

This year’s symposium was particularly rich in presentations relating to the
creation of outdoor classrooms or school gardens that allow children to explore the idea of habitats, or interconnected natural systems. Among the creative projects profiled was one on creating a rain garden and another that addressed turning an inner courtyard into an outdoor classroom.

At Cedar Shoals High School in Athens, Georgia, construction left a major eyesore in the form of a large detention pond. “It was an ugly mudpit,” notes landscape architect Ann English, who used the site as a field study assignment for undergraduate students in a landscape design class she taught at the University of Georgia.

English engaged her class in assessing what kind of garden would appeal to the high school students. Based on that feedback, the final design created by English and colleague Lauren Zeichner was centered on a spiral planting of trees that tolerate “wet feet,” including bald cypress (Taxodium distichum), water tupelo (Nyssa aquatica), and river birch (Betula nigra). The design was inspired by the Fibonacci number sequence, a mathematical relationship that has been observed in many natural phenomena, including the spiral shape of shells and the arrangement of scales on pine cones.

When work began last year, students wore hip boots to dig plants into the heavy clay soil and shovel mulch.

In addition to the trees, students planted moisture tolerant shrubs and perennials such as red chokeberry (Aronia arbutifolia), Virginia sweetspire (Itea virginica), and swamp milkweed (Asclepias incarnata ‘Ice
GARDEN EXPLORATIONS

Splashing fountains were a welcome sight at the entrance to the Children’s Garden at the Atlanta Botanical Garden (ABG). Symposium attendees toured the lushly planted two-acre garden and engaged in a question and answer session with Cindy Tyler, a principal with Marshall+Tyler+Rausch Landscape Architects, and Tracy McLendon, ABG’s education director. A special garden railway exhibit—Locomotion in the Garden—set up outside the Fuqua Conservatory, delighted guests before a banquet dinner that featured opening remarks from ABG Executive Director Mary Pat Masterson, AHS President Katy Moss Warner, and AHS Board Chair Arabella Dane. The highlight of the evening was the debut of the “Growing Good Kids—Excellence in Children’s Literature” awards (see page 11 for more on the book awards).

At nearby Wonderland Gardens, Columbia High School students and Sheldon Fleming, the garden’s founder and executive director, gave tours of the community garden complex, which includes a butterfly meadow and pond used for nature study. The student guides, who volunteer at the garden during the year, addressed ecological issues like composting organic waste and recycling post-consumer plastic and rubber.

An optional field trip to Callaway Gardens in nearby Pine Mountain offered an opportunity to learn about Lepidoptera in the Cecil B. Day Butterfly Center conservatory, where hundreds of exotic tropical insects fluttered amid languid blooms and cut-fruit feeding stations. Program staff also guided guests through the John A. Sibley Horticultural Center, Mr. Cason’s Vegetable Garden, and Virginia Hand Callaway Discovery Center, where a final dinner brought the symposium to a close. —C.A.

ST. LOUIS

will provide the backdrop for the 14th annual symposium, hosted by the Missouri Botanical Garden (MOBOT) July 27 to 29, 2006. Highlights include a guided tour of the new children’s garden that the MOBOT is unveiling next spring. Look for more details soon at www.ahs.org.

Charlotte Albers is coordinator of AHS’s The Growing Connection program.
One of the most common questions I get at my nursery is, “What do you recommend for ground covers in my shade garden?” Many of these people have had bad experiences with overly aggressive spreaders like English ivy and bishop’s weed. Fortunately, woodland gardens lend themselves to a range of low-growing and spreading flora that reduce weeds and look good.

The concept of ground-covering plants implies using plants that have a bit of wanderlust, but not too much. There’s a difference between assertive plants and aggressively spreading plants. Sometimes a plant will fall into the former category in one region or soil type and into the latter category in another situation.

Before I place a ground cover in my garden, I research its growth habits and match its predicted expansion to the size of the area I want covered.

It’s also good to know how quickly a plant will grow to its mature dimensions. Some plants spread above ground by sending out branches that form roots when they touch the soil; others spread beneath the soil’s surface by roots or rhizomes.

Also consider a plant’s size in relation to its companions. Beware of planting aggressive ground covers near small, delicate, or slow-growing plants.

Ideally, garden ground covers should appear to flow smoothly, so that they resemble a gentle stream that winds around other plants. To me, many mound-forming ground covers look like gas bubbles rising to the surface of a still pond; they disrupt the garden’s visual flow and com-

Anemone nemorosa, a woodland ephemeral, produces a veritable carpet of flowers.
pete with, rather than complement, the plants they surround. Plants that have uniform low growth are generally easier to incorporate into a design.

Here are a few of my favorite ground covers for a shady spot. Before you plant them in your garden, however, check with gardening friends or your local botanical garden to make sure they are not a problem in your region.

**EPHEMERAL BEAUTY**

European wood anemone (*Anemone nemorosa*, Zones 4–8, 8–1) is a spring-blooming ephemeral that goes dormant by midsummer. From mid-March through July, however, it tops my ground cover list. European wood anemone is a collector's dream, and so variable in nature that many forms have been selected, named, and passed along to fellow enthusiasts.

Wood anemone spreads by slender, woody rhizomes that resemble little twigs with eyes. The three-inch-long rhizomes branch outward just below the ground's surface, gradually forming a mat. Anemone foliage has deeply segmented leaves on six- to eight-inch-tall stems. Flowers of the species are white and sometimes have a reddish back. None that I have grown are shy about blooming; they put on quite a show in open shade, closing at night and on cloudy days. You can find cultivars with single or double flowers in white, blue, lavender, pink, or combinations thereof.

Buttercup anemone (*Anemone ranunculoides*, Zone 4–8, 8–1) resembles *A. nemorosa* but sports yellow blooms. Semi- and fully double forms are available, as well as a hybrid between the two species. In alpine climates, try meadow anemone (*A. canadensis*, Zones 3–7, 7–1), but be aware that it can be invasive in warmer regions. All are easily grown in reasonably good garden soil; mulch with a thin layer of chopped leaves in fall.

**SPICY AND SHY FLOWERS**

Native from New Brunswick to North Carolina, Canadian wild ginger (*Asarum canadense*, Zones 2–8, 8–1) gets its common name from the aroma of culinary ginger that arises when its leaves or roots are bruised. In the early years of American settlement, pioneers candied the native *Asarum* roots and used them as a ginger substitute. Its striking leaves are large and heart-shaped with silvery hairs that become less silken as the plants mature. Individual leaves can reach eight to 10 inches across and stand a bit taller than one foot in height; the fleshy, branched rhizomes extend six inches or more.

Canadian wild ginger's shy blooms hide beneath its foliage and face the ground for easy pollination by beetles. The blooms are quite unique, however, and are worth turning the leaves over to enjoy. The flowers form seedpods containing masses of fleshy-tailed seeds. These are often dispersed by ants, which carry them off for the sugars in the seed tail. As a result, I have wild ginger growing in locations where I could never have transplanted or sown it successfully.

A good option for gardeners in the Northwest is *Asarum caudatum* (Zones 5–8, 8–4), which has shiny semi-evergreen foliage and burgundy flowers.

Wild ginger can be quite assertive in good, well-drained garden soil, so give it plenty of room to grow. It also performs well in nutrient-poor, rocky soil.

Wild ginger's odd-looking ground-level flowers are designed for pollination by beetles.

The adaptable bulblet fern is suitable to both wetlands and drier, rocky sites.
EASY-SPREADING FERNS
The bulblet or bladder fern (*Cystopteris bulbifera*, Zones 4–8, 8–1) has gemmae (bulblets) on the underside of the fronds toward the tip. When the tiny green balls mature, they drop to the ground and form new ferns. This method of propagation lends itself to hillsides where the little balls can bounce and roll down a slope. When the parent fern is planted at the top of a hill or embankment, its off-spring form a cascade of green fronds that, waterlike, flow downward around rocks and other plants.

The bulblet fern’s slender, bent-tipped fronds are light green and reach 12 to 18 inches in length. When they first emerge, stems are almost the color of Merlot wine, especially with the spring sun behind them. As spring progresses, the midribs turn a mahogany color. Bulblet fern is native to the eastern United States, where it is found in wet woodlands or on limestone that is moist from seepage. But this deciduous fern does not demand those conditions to thrive in the garden. Good garden soil or rocky ground suits its needs. If the fern gets too dry, its fronds turn crisp and brown, but it will green up again when it receives moisture.

From California to Alaska and east to Montana, try native Western sword fern (*Polystichum munitum*, Zones 3–8, 8–1), and in tropical regions consider another spreading sword fern, *Nephrolepis cordifolia* (Zones 9–11, 12–1). In the South, southern lady fern (*Athyrium filix-femina* subsp. *asplenioides*, Zones 6–9, 9–1) will quickly cover ground, so keep it confined to a specific area.

NATIVE IRIS
Dwarf crested iris (*Iris cristata*, Zones 4–10, 10–1) is native to the eastern and southern United States. Quite often it is found growing in sparse patches in deep shade, where I’ve completely ignored its presence. One day, however, I came upon a large drift that had not been overshadowed by shrubs and trees. That sighting inspired me, and I have since used *I. cristata* in favored areas of my garden.

Dwarf crested iris creeps slightly beneath, or right at, the soil’s surface. When the wind blows leaf litter mulch aside, it’s not unusual to see a mat of rhizomes crisscrossing each other several layers deep. The long, slender rhizomes have nodules and light green growth tips that resemble tree roots.

Its swordlike foliage reaches only six to eight inches in height; when well suited to its location, it will cover a forest floor. The plant also stands up well to root competition and less-than-perfect growing conditions. In late spring, this iris blossoms on short stems just above the foliage in shades of bluish lavender to purple with white crests. When grown in well-drained garden soil with plenty of light, but not full sun, crested iris blooms freely. Many cultivars are available, including a white form.

A TRACTABLE MINT
*Meehania cordata* (Zones 4–8, 8–4) unfortunately carries the common names of Meehan’s mint or creeping mint. Just the mention of the word “mint” causes most gardeners to pass over this great native plant. Even in rich, moist soil it will not be the plant that eats your garden. It will form a wonderful woodland carpet, so give it room to spread.

*Meehania* roots from nodes on its trailing stems; each node sends out a new plant. Its heart-shaped leaves are hairy on their upper surface and deeply veined—almost scalloped—along their edges. In May and June, Meehan’s mint blooms at the end of lax stems that arch above the foliage. The floppy, hooded blooms occur on one side of the stem and vary in color from lavender-blue to light lilac. In some regions, slugs can be a problem.

My garden sports a drift of Meehan’s mint at the base of a walnut tree, where it competes with royal fern (*Osmunda regalis*), yellow lady’s slipper orchid (*Cypripedium calceolus*), and turtlehead (*Chelone spp.*).
MULTISEASON INTEREST
For year-round interest, try partridge berry (Mitchella repens, Zones 4–9, 9–1), a North American native plant that shines throughout every season. This evergreen trailer seems unaffected by pests or diseases and remains as fresh in June as in February. Partridge berry forms lustrous green mats so flat they appear to be painted onto the soil. Like Meehan’s mint, this slow-growing perennial spreads from nodes along its creeping stems.

Its dark green, rounded leaves are opposite on the stem and are generally less than an inch long. Even if it never bloomed, I would use partridge berry near a path where I could enjoy the lovely foliage. It does bloom, however, and always in pairs. Two tiny, fragrant trumpets of whitish-pink soon become scarlet berries, each having two white eyes. *M. repens* forma *leucocarpa* bears white berries. Sometimes the berries last through winter and are still present when fresh blooms arrive in late April. At least eight species of birds relish its fruit.

In nature, partridge berry prefers moist, acidic humus, but it will do well under less optimum conditions. I’ve observed that it prefers raised locations so that fallen leaves do not smother it in autumn. My soil is neutral to slightly acidic, and I have enjoyed attractive mats of this fine ground cover for years.

TRY NATIVE SPURGE
Allegheny spurge (*Pachysandra procumbens*, Zones 5–9, 9–3) is my favorite among the spurge species and cultivars available from garden centers and by mail order. There are five species in the genus, but only two seem to show up in nurseries. Of those two, the Asian species *P. terminalis* and its cultivars are the most readily available, but they can be invasive if not well contained. Hold out for our native Allegheny spurge and you won’t be disappointed.

*Pachysandra procumbens* has evergreen foliage to approximately USDA Zone 6, or to Zone 5 with protection. In colder zones, it is deciduous. Foliage is at the end of lax stems that reach about one foot in height. Its deep green leaves with maidenhair fern (*Adiantum* spp.) for company.

Easy to grow and always tidy, partridge berry lends year-round color to woodland floors.

SOURCES


SMALL BUT MIGHTY
More than 30 species of Solomon’s seal grow throughout the world and three species are native to the eastern United States. Of all the available species and cultivars, dwarf Japanese Solomon’s seal (*Polygonatum humile*, Zones 5–8, 8–4) is my favorite. *P. humile* grows only six to eight inches in height in a genus that has species reaching three to 12 feet or more. Most species are quite graceful in form, arching gently in the top one-third of their...
height. *P. humile*, however, stays stiffly upright. Its heavy leaves look like little green eggs (hold the ham). Blooms are white bells located on one side of each short stem, appearing in late spring.

Solomon’s seal spreads primarily by rhizomes that lie just beneath the surface. White, fleshy, and covered with scars from the previous year’s stems, the rhizomes frequently fork to send up additional stems that form a colony of slender, upright soldiers that appear to march in formation between taller perennials.

In the western United States and in alpine environments, plant native false Solomon’s seal (*Smilacina racemosa*, Zones 4–9, 9–1). This woodland beauty grows well in sun or moist shade.

**TALLER GROUND COVERS**

A large drift of foamflower (*Tiarella cordifolia*, Zones 3–9, 7–1) in bloom is to the eyes what a Mozart symphony is to the ears. The slightest breeze stirs the blooms into undulating waves of white foam that blow across a sea of bright green foliage. Its flowers bloom in racemes carried well above the foliage—stems can reach 14 inches in height. The numerous flowers in each raceme are white, occasionally aging to a pinkish flush.

Despite their lovely flowers, most foamflowers are now bred primarily for their foliage, and a seemingly unlimited number of cultivars are available. The species has been generous with forms that differ from the norm, and hybridizers often play up the dark markings in the center of the leaf or the highly variable leaf shapes. Bronze-leaved varieties also have been developed. *T. cordifolia* is native to the southeastern United States but will do well in any woodland environment, and *Tiarella* varieties are available to USDA Zone 9. Foamflower foliage most often is bright green and has a glossy, almost wet appearance. The leaves also are coarsely and sparsely hairy. The rate of spread by rooting trailers varies from hybrid to hybrid. Some are relatively slow, whereas others can be downright assertive. Foamflower grows best in humus-rich soil that has leaf mulch for it to root beneath.

Another taller ground cover, *Uvularia perfoliata* (Zones 4–10, 10–4) is one of the five species of bellworts or merrybells, all native to the southeastern United States. *U. perfoliata* reaches 14 to 18 inches in height, and its stems remind me of pale asparagus tips when they emerge in early spring. Merrybells’ foliage looks as though its stems pierce each leaf at its base. The blooms are clusters of long, pale yellow, tubular bells. It spreads by creeping rhizomes.

Although this little merrybells blooms in late April in my garden, its foliage remains until the first hard frost. Its early blooms make it a good companion to other spring-bloomers. This plant’s upright, somewhat open form fills in between larger perennials such as hellebores, making it an attractive, multiuse ground cover.

*Gene Bush is the owner of Munchkin Nursery & Gardens in Depauw, Indiana.*
## More Shade-Loving Ground Covers

<table>
<thead>
<tr>
<th>Name</th>
<th>Hgt/Width (in.)</th>
<th>Other Features/Culture</th>
<th>Origin</th>
<th>USDA, AHS Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barrenwort (Epimedium spp.)</td>
<td>3–24/12–24</td>
<td>flowers in a variety of colors, including yellow, beige, red, and purple from spring to early summer</td>
<td>Mediterranean to temperate Asia</td>
<td>5–9, 9–4</td>
</tr>
<tr>
<td>Bear’s-foot hellebore (Helleborus foetidus)</td>
<td>to 32/18</td>
<td>bell-shaped green flowers; self-sows</td>
<td>western and central Europe</td>
<td>6–9, 9–6</td>
</tr>
<tr>
<td>Bunchberry (Cornus canadensis)</td>
<td>to 6/indefinite</td>
<td>green flowers with white, sometimes pink-flushed, bracts, followed by bright red fruit; prefers cool summers and acidic soil</td>
<td>Asia, North America, and Greenland</td>
<td>2–7, 7–1</td>
</tr>
<tr>
<td>Creeping forget-me-not (Omphalodes verna)</td>
<td>to 8/12 or more</td>
<td>white-eyed, bright blue flowers</td>
<td>southeast Alps to Romania</td>
<td>6–9, 9–6</td>
</tr>
<tr>
<td>Creeping phlox (Phlox stolonifera)</td>
<td>4–6/12 or more</td>
<td>upright stems produce pale to deep purple flowers</td>
<td>central United States</td>
<td>4–8, 8–1</td>
</tr>
<tr>
<td>Green and gold (Chrysogonum virginianum)</td>
<td>10/to 24</td>
<td>branched stems bear star-shaped yellow flowerheads; evergreen in mild winters; tolerates dry shade</td>
<td>eastern United States</td>
<td>5–9, 9–2</td>
</tr>
<tr>
<td>Hardy wood geranium (Geranium maculatum)</td>
<td>24–30/to 18</td>
<td>lilac-pink to bright pink flowers; prefers moist soil</td>
<td>eastern North America</td>
<td>4–8, 8–1</td>
</tr>
<tr>
<td>Hostas (Hosta spp.)</td>
<td>6–30/12–48</td>
<td>clump-forming, with bold, thick foliage and white to lavender flowers; prone to deer and slug damage</td>
<td>Asia and eastern Russia</td>
<td>3–9, 9–2</td>
</tr>
<tr>
<td>Leadwort (Ceratostigma plumbaginoides)</td>
<td>18/12 in or more</td>
<td>bears spikelike clusters of brilliant blue flowers; red-tinted leaves in autumn</td>
<td>western China</td>
<td>5–9, 9–4</td>
</tr>
<tr>
<td>Lenten rose (Helleborus × hybridus, syn. H. orientalis)</td>
<td>18/18</td>
<td>saucer-shaped, white or greenish cream flowers, turning pinker with age</td>
<td>Greece, Turkey, Caucasus</td>
<td>4–8, 8–3</td>
</tr>
<tr>
<td>Peacock lilies (Kaempferia spp.)</td>
<td>6/8–18</td>
<td>subtropical with white, pink, or lilac three-petaled flowers, often fragrant</td>
<td>tropical Asia</td>
<td>10–15, 12–10</td>
</tr>
<tr>
<td>Strawberry begonia (Saxifraga stolonifera)</td>
<td>12/12</td>
<td>white flowers with yellow or red spots</td>
<td>eastern Asia</td>
<td>7–9, 9–5</td>
</tr>
<tr>
<td>Yellowroot (Xanthorrhiza simplicissima)</td>
<td>24/60 or more</td>
<td>bright green leaves bronze at first, often yellow and red-purple in autumn; tiny, brownish purple flowers</td>
<td>eastern United States</td>
<td>3–9, 9–1</td>
</tr>
</tbody>
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*Images: Epimedium × rubrum, Helleborus foetidus*
EVERY FALL, most gardeners engage in the annual ritual of raking, mowing, pruning, and generally hauling off yards of garden trimmings and grass clippings—all in the name of fall cleanup. But this last-ditch effort to tidy up the garden wastes a precious amount of resources in the process. In fact, overzealous cleaning actually can be more damaging to the ecological landscape and less fruitful to the outcome of next year’s garden than not doing anything at all.

When it comes to tidying up the garden in fall, a little restraint can go a long way toward keeping the natural ecosystem in balance.
Making a few changes in your autumn routine benefits the soil and, ultimately, the health of your plants. Keeping fallen leaves and trimmings in the garden adds essential organic matter to the soil. This, in turn, provides food for worms and a host of other beneficial soil-dwelling creatures that break down the material, improving soil structure and delivering valuable nutrients to plants. In addition, leaving a few things undone—allowing spent flowers to remain or leaving a patch of tall grasses to linger in a corner of your yard, for instance—creates a hospitable place for wildlife to spend the winter.

In regards to removing garden debris or leaving it be, there are a multitude of reasons why gardeners should forego the traditional course of action in favor of a more relaxed approach. For starters, how about conserving resources—including your time, energy, and the fuel it takes to haul leaves, sticks, and other yard trimmings away? Rather than sending valuable organic matter to the local landfill, why not recycle it? The leftover organic matter can be turned into nutrient-rich compost, used for mulch, put in piles to provide winter habitat for wildlife, or left to decompose naturally.

**LEAVE THEM STANDING**

Removing spent flowers during the growing season will help keep plants blooming longer. However, once fall has arrived and plants near the end of their flowering cycle, the flowers of many plants can be left to mature so they will produce seeds. The attractive seed heads that remain will not only add a dimension of winter interest in the garden, they also serve as an important food source for seed-eating birds like finches, sparrows, grosbeaks, and siskins. And, letting seedpods form on desired self-sowing annuals—nasturtiums, poppies, nicotianas, and cosmos, for example—provides a welcome source for next year’s blooms. Just be sure to remove the seedpods of any plants that you don’t want to reseed.

Use a light hand with the pruners and leave at least a few dead stalks of disease-free perennials and vines in the garden to serve as protection for the plant’s crown and roots. By leaving some garden trimmings in planting beds, you’ll be creating a natural habitat of protective cover for a host of birds as well as a variety of overwintering wildlife, such as adult ladybeetles, pollinating bees, praying mantids, and other insects.

Insects, too, need protection from winter cold, and in warmer climates they also
need protection from winter elements, like moisture, as well as their enemies. At summer’s end, insects take refuge in garden debris and in dry stems. “Insects, whether they be beneficial or pest, need overwinter protection,” says Jack Schultz, a professor of entomology at Penn State University in State College, Pennsylvania. “Without it they’re sitting ducks for everything from having their blood freeze to being eaten by their enemies.”

On the flip side, removing all this garden debris in fall can actually upset the balance of nature. Insects are a necessary component to plant pollination, beneficial insects help keep bad bugs under control, and insects and other invertebrates serve as an essential food source for many birds and other animals. It’s a natural synergy that makes for a healthy ecosystem and lively garden.

**LET IT LAY**

One of the most labor-saving, cost-effective, and environmentally-friendly things you can do—or in this case, not do—is to leave your grass clippings on the lawn. Since grass clippings are mostly water, they decompose rapidly so there is no thatch buildup.

Grasscycling also adds organic matter, stimulates the activity of earthworms, which act as nature’s soil aerators, and returns a natural source of nitrogen back to the soil. This can add up to two pounds of elemental nitrogen per 1,000 square feet each season. If you have a mulching mower and mow your grass frequently, the clippings should be the perfect size to leave on the lawn.

A heavy fall of leaves on the lawn should be raked up to avoid smothering the grass or encouraging fungal diseases. But those that fall into garden beds can be left in place. As long as the layer of leaves isn’t too thick, it will form an insulating mat around trees and shrubs that conserves soil moisture, modulates soil temperatures, reduces erosion, encourages beneficial soil organisms, and naturally breaks down to improve soil structure. Some leaves may need to be removed from perennial beds where winter moisture can promote crown rot.

If you can’t bear to leave your leaves naturally strewn in beds, then gently rake them out and add them to the compost bin. Consider leaving a few small piles tucked away for hibernating insects as well as lizards, frogs, and toads that seek winter cover.

Unless your garden is huge, consider raking your leaves rather than using a blower or vacuum. Raking does not produce the noise or air pollution of machinery, and it is a healthy form of exercise.
If you have a leaf shredder, put your leaves through it so they will decompose faster. Those shredded leaves can be added back to beds or put in the compost pile. Even if you don’t have a shredder, you can chop up leaf piles by running over them several times with a mulching mower.

Don’t know what to do with your branches and other yard trimmings? Use them as a base layer to start a compost pile and cover them with grass clippings or leaves. You can also create loosely stacked brush piles in out-of-the-way spots in your yard. Use a mix of thinner and thicker branches and twigs to create different-sized spaces that will accommodate a variety of backyard creatures from reptiles and amphibians to birds, bees, and other winged wildlife. Top it off with a layer of evergreen branches for added protection in colder climates.

Fall cleanup needn’t be a complicated chore. Just remember that less is more in the grand scheme of things—our environment, our resources, and our day-to-day lives as well as the ecosystem of our garden. After all, wouldn’t you rather spend a little less time working in your garden and more time enjoying it?

Kris Wetherbee and her husband, Rick, a photographer, are regular contributors to The American Gardener. Their most recent book is Attracting Birds, Butterflies & Other Wonders to Your Backyard (Lark Books, 2005).
Adding Bulbs to Fill in Borders

Integrating bulbs with herbaceous perennials and shrubs can extend a garden’s flowering season and create new color combinations.

As fall approaches, the siren call of bulb catalogs accumulated over the summer comes to a crescendo. If you have a new garden with oodles of space to fill, then you have the luxury of crafting a plan to blend bulbs with herbaceous perennials and shrubs to create a harmonious, seasonally changing symphony of colors, textures, and shapes.

But even if your garden, like mine, is already well established, you can always find a little more space to tuck some bulbs within, among, around, or under other plants to create a complementary effect and that amazing spring payoff. Gardens are not static, after all; they are constantly evolving as plants outgrow their space or die and have to be replaced. Gardeners’ tastes and interests change over time, too, in response to new trends, changing conditions, and an ever expanding plant palette.

Finding Space

So how do you add bulbs to an already existing garden? The best answer is: carefully. But it isn’t impossible, and it’s actually fun to test out new color combinations and even create changing color displays from year to year.

Opposite: Planting tulips that bloom at the same time as flowering shrubs like this rhododendron produces a multilayered show. Above: Spring bulbs can be strategically woven among herbaceous perennials and shrubs to create a long lasting and texturally satisfying display.
PLANTING TIPS

The best time to plant spring-flowering bulbs is after the first hard frost. Before then, the soil normally remains warm from the summer heat, and early autumn rains may cause newly planted, non-established bulbs to rot.

The basic rule of thumb for planting depth is three times the height of the bulb. So if the bulb is two inches tall, then the bottom of the hole should be about six inches deep. Tulips and lilies, which prefer really cool soil, benefit from being planted even deeper—I often suggest placing them eight to 10 inches deep.

The roots of spring-flowering bulbs emerge in the autumn, so, after planting, add a topdressing of compost or a slow-release fertilizer that is low in nitrogen and high in potash (10–10–20). —B.H.

There are several approaches to combining bulbs with herbaceous perennials, shrubs, and trees.

Choosing combinations that will bloom at the same time creates the biggest impact, like the finale of a fireworks display. Combining plants so that they bloom sequentially with a slight overlap, however, keeps a garden pleasing to the eye for the longest time. With careful selection, you can create a display where something is in bloom the entire season.

Planting for maximum effect is important, but it’s even more critical to match bulbs and plants with similar cultural needs. After all, if your bulbs don’t flourish, then you won’t get much of a show. So assess your site for exposure to sun or shade, and check the soil to determine how wet or dry it stays as well as its acidity or alkalinity. And, of course, be sure your bulbs are hardy and heat tolerant in your region. If you live in a warm-weather region, you may have to pre-chill your bulbs.

HERBACEOUS PERENNIALS

Combining bulbs with herbaceous perennials and low-growing shrubs is a great way to mask the maturing foliage of the spring bulbs after they have flowered. The colors of the early-blooming perennials are what attract your attention—and that means you’ll be less tempted to cut down the bulb foliage too early. Remember, after bulb flowers have faded, the foliage needs six to eight weeks of sunlight to help replenish the energy for the following year’s bloom.

Some of the best herbaceous perennials to help camouflage the maturing foliage of spring bulbs include daylilies (Hemerocallis spp.), peonies, hellebores, catmint (Nepeta xfaasinii), and hostas.
For example, in our Gloucester, Virginia, garden, my husband Brent and I have a two-square-foot area that has white daffodils emerging through the dark burgundy foliage of a peony in mid-spring. Later, when that peony matures, masking the daffodil foliage, its dark green leaves and rose-pink flowers look beautiful with blue Dutch irises coming right up through them, blooming at the same time. Actually, this combination was quite serendipitous. We planted the daffodils and Dutch irises one year, and the next season we planted a peony on top of the bulbs, forgetting they were there.

Most spring-flowering bulbs prefer to be dry and cool in the summer, when they are dormant. The perennials planted in the same bed as the bulbs make useful neighbors to the bulbs by helping to soak up the moisture from the summer thunderstorms as well as shading the bulbs during the hottest summer months. That is just one more reason for mixing bulbs, perennials, and annuals in the same border.

As perennials grow, their branches and foliage often spread out, covering part of the bed's surface, even though their actual root bases cover much less territory. Often you can carefully lift the foliage of a perennial to make space to dig a hole for some bulbs. In most cases, the bulbs will have no problem coming up through or around the perennial—or may even bloom while it is still dormant.

Where there is very limited garden space, you can still have a long-lasting bulb display if you think “vertical” and take advantage of staggered bloom times. You can plant tulips or lilies eight to 10 inches deep, then above them place daffodils, hyacinths, or alliums at about six inches. Smaller early-blooming bulbs—such as crocuses, anemones, and dwarf irises—can even be planted in the top three inches.

**AROUND TREES AND SHRUBS**

Flowering trees are one of the most effective companions for bulbs. For example, planting bulbs in front of a weeping cherry or a flowering plum helps the garden to be seen from great distances and is well worth the effort. Choosing bulbs with flowers that echo the color of the tree's flowers is one attractive design idea. For a different visual effect, try bulbs
whose flowers offer an appealing contrast to those of the tree.

The area around the base of a tree is the perfect place to plant small bulbs such as crocuses, grape hyacinths (*Muscari* spp.), squills (*Scilla* spp.), or miniature daffodils. The tree offers the bulbs some added protection from severe weather during the winter and early spring, and the bulbs can be planted shallowly so they won’t damage tree roots. It’s a great symbiotic relationship and attractive to boot. Some other effective small flowering trees for this purpose are crabapples, pears, dogwoods, redbuds, magnolias, and serviceberries (*Amelanchier* spp.)—or shadbushes, as we call them here in coastal Virginia.

Very early-blooming small spring bulbs such as crocuses, dwarf irises, and snowdrops (*Galanthus* spp.) are also very complimentary to deciduous shrubs. Plant them around the base of red- and yellow-twig dogwoods (*Cornus sericea* cultivars), winter hazels (*Corylopsis* spp.), and deutzias.

Evergreen shrubs such as rhododendrons, skimmias, and heathers provide a dark backdrop against which to display pale-flowered early spring bulbs. White daffodils and tulips are so lovely, but if planted in the wrong place, they may not be noticed. When white flowers are planted in front of dark-leaved shrubs, they really stand out and shine. Later in the spring, the blooming shrubs shift attention away from the spent foliage of the bulbs. If you plant later-blooming bulbs to coincide with the bloom of the shrubs, it makes an eye-popping sight!

A nearby shrub that picks up the bulb’s color is even better. In our garden, we have the tulip ‘Juan’ growing up through a ground cover of *Vinca minor*. A nearby variegated euonymus echoes the tulip’s yellow heart, making for an incredibly beautiful display.

Another successful combination in our garden is the tulip ‘China Pink’ planted with fothergilla. Other deciduous shrubs suitable for this situation include azaleas, forsythias, viburnums, and witch hazels (*Hamamelis* spp.).

**UNDERPLANTING GROUND COVERS**

An area of established ground cover is a perfect spot for adding strong, sturdy bulbs to extend seasonal interest. Ground covers suited to this process include evergreens such as periwinkle (*Vinca minor*), pachysandra, lysimachia, sedums, lamium—and even prostrate conifers like creeping juniper—and deciduous ones such as leadwort (*Ceratostigma plumbaginoides*) and certain St. Johnsworts (*Hypericum* spp.).

The dark backdrop provided by evergreens shows off the bulb flower’s face and coloration to its best advantage. The foliage over the bulbs during the winter can also serve as a living mulch, providing insulation to help bulbs survive in areas where their winter hardness is questionable.

With most of these plants, small bulbs can be planted directly through the ground cover by digging small slots with a sharp, narrow bladed trowel. For larger bulbs, you will need to carefully make slots with a narrow spade or larger bulb planting tool, taking care to avoid cutting major roots.

**SELECTING BULBS**

When you get to the exciting point of choosing what bulbs to integrate into your garden, there are several things to keep in mind.

For instance, if you want something perennial that will come back reliably year after year, think about daffodils, snowflakes (*Leucojum* spp.), grape hy-
acins (Muscari spp.), colchicums (Colchicum spp.), and perennial tulips. Non-perennial tulips make relatively inexpensive annuals.

Another consideration is your climate. If you live south of USDA Zone 8 or where there is not a discernible winter, you may need to order pre-chilled bulbs or specific types whose ancestors hail from warmer climates. Jonquilla- and Tazettas-type daffodils are an example of this type of bulb, but there are many more. Check with your bulb supplier, local Extension agent, or gardening friend if you’re not sure which bulbs will thrive in your garden.

And, of course, there are critter issues. If deer, voles, or rabbits are a problem in your area, then certain bulbs, such as tulips, require some form of protection. If this is the case, planting daffodils, snowflakes, and colchicums would be a better strategy.

Take the first step—and enjoy
Adding new bulbs to an existing garden can be a bit daunting. However, once you take the first step and see some successes, you’ll find yourself digging bulbs and dividing perennials and passing them on to your friends. To me, one of the best things in life is sharing happy gardening experiences with friends!

Becky Heath and her husband, Brent, are co-owners of Brent and Becky’s Bulbs, a nursery in Gloucester, Virginia, that specializes in bulbous plants for all seasons.
OR EVERYTHING there is a season. There is a time to expand the garden and a time to simplify it. There is a time to experiment with new perennials and a time to rely on the long-lived and well-behaved. There is a time to expand borders and a time to fill at least some of the beds with labor-saving ground cover. There is a time to move forward with new projects and a time to fine-tune what is already there. For every gardener the time will come, finally, to hang up the hoe. Until then, there is time to let one's garden, along with oneself, adjust gracefully to the seasons of life.

Life brings change—often unexpected, not always welcome, but continual. We may change jobs, start volunteering, have grandchildren, buy a vacation home and, suddenly, find that our free hours are few. Sometimes, it is the garden that gets bumped—at least temporarily—from an overbusy schedule.

In any case, as we get older, garden chores become more onerous. The bags of mulch seem heavier with each passing year. Nature begins to drop discreet hints that youth is, after all, finite: a sore back, a little stiffness in the joints, fallible knees, and fatigue. What was—only a few short years ago—a seemingly endless flow of energy trickles down to shorter and shorter bursts spanned by the need for longer and longer periods of rest.

Somewhere along the way energy begins to lag behind intentions. Before you get around to it, it is suddenly August and those perennials you bought in May have grown through the holes in their pots and anchored themselves to the ground. The branch you pruned all winter in your mind is still as ill-placed as it was and growing ever larger. The too-tall perennials at the edge of the bed that were meant for the back of the border somehow didn’t get moved—again—this year. The peonies that gradually came under the shade

At one time or another, all gardeners look for ways to reduce maintenance. Here’s some expert advice for doing this in your garden.

BY CAROLE OTTESEN

Top: Wide paths allow easy access to densely planted beds of perennials and shrubs. Above: Creating raised beds is a boon for gardeners who want to save their backs from bending.
of an extending canopy are still yearning for lost sunlight.

**GARDENING SMARTER**

The way to offset diminishing energy and time is to garden smarter. Mike Zajic, former horticulturist at Brookside Gardens in Wheaton, Maryland, believes that “one gets smarter as one gets older in ways to save effort.” Zajic’s former Washington, D.C., garden was a spacious quarter-acre-plus showplace that included annual beds, flowering trees, a mossy-floored garden room, a stream, and a pond with a covered outdoor room where he and his wife, Elizabeth, entertained in sylvan splendor. Typically Zajic planted 1,000 white tulips every autumn for a spectacular spring show of color. Friends wandered through the garden, open-mouthed at the impeccably maintained status of thousands of plants.

And then one day, Zajic decided he’d had enough of his labor-intensive garden.

“I got tired of Harry Homeowner stuff. I had done all of the work of establishing the garden, it was just the maintenance that was getting to me,” says Zajic. “You start to get a little creaky. That wasn’t the main reason, but it was pinching at me.”

After moving to an apartment for a few years and taking a nearly complete break from gardening, Zajic is now developing a new garden at a beach house. “I’ve definitely scaled back,” he says. “In picking a new garden, I’m creating one that is less ambitious. It’s a simpler layout and there will be a lot less to take care of.”

Instead of replicating the large bed of annuals at his former house, he has all but ruled them out except to fill some holes and “a few tubs on the deck.” Instead of the 1,000 tulips he planted and dug up every year, he says, “I’m using bulbs that come back every year.” He concludes, “in vigorous youth many of us create fantastic gardens, but they’re too labor intensive.”

Unlike Zajic, who started over with a clean slate, most people have to deal with the same garden in which they have spent decades adding more and more labor-intensive features.

“All too often, the aging gardener, or the all-too-busy gardener, is confronted with a landscape that needs more time and attention than he or she now has the time or strength to summon,” says Ruby Weinberg, author of *The Garden Reborn*, a book that tackles the problem of dealing...
WAYS TO REDUCE GARDEN CHORES

Some of these tips are adapted from ideas in Ruby Weinberg’s book The Garden Reborn (see “Resources” on page 35).

- Eliminate formally pruned hedges and topiaries and replace them with shrubs that have attractive natural shapes. This is especially true of overgrown foundation plantings or shrubs that line pathways, like the ones shown above.

- Remove trees that are diseased or require constant pruning, watering, or other maintenance. Replace them with selections that require less care.

- Rid the garden of overly rambunctious plants, or, at the very least, relegate these to peripheral areas where they don’t compete with less aggressive subjects. Some of the worst offenders include English ivy (Hedera helix), bishop’s weed (Aegopodium podagraria), and hardy ageratum (Eupatorium coelestinum).

- Replace high-maintenance perennials with those that are well-behaved and long-lived, such as bear’s breeches (Acanthus spp.), hardy geraniums, coneflowers (Echinacea spp.), ornamental grasses, and Sedum ‘Autumn Joy’.

with a demanding garden in the face of limited time and energy. “This is a special dilemma for those of us who have long been dedicated gardeners.”

Dedicated gardeners have high standards and a clear idea of how things should look. They suffer when the reality falls short of the vision. For them, Weinberg and The Garden Reborn offer some “modifications to simplify and ease garden maintenance.” (See this page and opposite for a list of work-saving tips.)

DOWNISING

The time to modify is “NOW,” counsels Weinberg. Problems get out of hand swiftly—especially in large gardens. Few of those who garden passionately seem to have the good sense to do so on a small scale. National Public Radio’s garden guru Ketzel Levine, aka “the doyenne of dirt,” is an exception.

“No modifications have been needed as yet,” says Levine, who prudently bought a house with “a tiny garden” in Portland, Oregon. So far, she’s been able to keep up with a demanding schedule and her garden because, she says, “I’m working on a small and manageable scale.” Nevertheless, she adds, she is “relieved that shrubs are getting huge and taking up vast amounts of real estate.”

TALENTED REPLACEMENTS

“Replacing some perennials with shrubs,” says Rick Darke, AHS award-winning author of The American Woodland Garden and other books, is a good way to ease up on the many chores that accompany perennials—dividing, dead-heading, cutting back. Slow-growing shrubs that don’t require frequent pruning reduce general maintenance and satisfy plant lust.

To avoid trading one set of chores for another, it’s a good idea to do a little research. Add only slow-growing, tough, insect-resistant shrubs and those that deer generally avoid, such as mahonias, leucothoes, plum yews (Cephalotaxus spp.), and clumping bamboos. This will obviate the chores of spraying, netting, or otherwise protecting them from deer.

SWEET DISORDER

It sounds ridiculously simple, but another way to reduce maintenance is to lower expectations. Sometimes, it is ne-
cessity that forces even the most dedicated of gardeners to lower standards and tolerate more disorder.

“Unfortunately, I don’t get to my garden until June,” says Alabama nursery-owner Jan Midgley, author of *Southeastern Wildflowers*. Her nursery keeps her busy through the spring months. “And by June, all I manage to do is snatch the most vicious seed-bearing weeds. Luckily,” she adds, “we are fond of a wild look and our front meadow looks great to our aging eyes. It does have weeds but the native grasses are gradually pushing them out.”

As with housecleaning, there are maintenance shortcuts that work, in a pinch, in the garden. Generally, this involves doing only the barest minimum of what makes it look like the job is done.

Every garden designer will tell you that people “read the edges” of a garden, such as the walks or the edge where a perennial bed meets the lawn. Thus, if you weed the first foot or two of a bed and the path beside it, presto, it will look neat. And only you will know the extent of the weeds hobnobbing with the plants rightfully in that bed.

On the continuum between immaculate and slovenly most of us can find a comfortable place somewhere in the middle. But there are some gardens that will not allow for modification. They have taken their owners beyond the point of no return. They demand perfection.

Les Quatre Vents, Frank Cabot’s masterpiece in Quebec, is one of these. Cabot is the author of *The Greater Perfection*, the tale of Les Quatre Vents that won a 2002 AHS book award. When Cabot was asked if he had any plans to simplify this 20-plus-acre garden, he replied, “Wish I had, but just the reverse, alas.” Yet Cabot is sanguine about his future.

“You know the story of the elderly lady who was felled by a stroke in her perennial bed?” asks Cabot. “When they rescued her, they found her quietly weeding away to the extent she could reach. My philosophy is to keep weeding as long as possible.”

“Here’s hoping the time for us to stop weeding and hang up the hoe is still a long way off. Until then, most of us will find that simplifying our landscape will give us more time to actually sit in and enjoy the garden.”

*More Chore-Saving Tips*

- Expand shady areas under trees and plant shade-loving shrubs and perennial ground covers such as skimmias, hellebores, barrenworts (*Epimedium* spp.), creeping phlox (*Phlox stolonifera*), hostas, and various ferns (see also the article on ground covers, page 18).

- Plant spreading shrubs to mix with or replace large beds of sun-loving perennials. Look for low-maintenance shrubs such as Knockout roses, which are disease tolerant and don’t require deadheading for continuous bloom.

- Apply a two- to three-inch layer of weed-free organic mulch on all garden beds in early spring to discourage the yearly appearance of weed seedlings.

- Consider hiring an assistant to relieve you of some of your most time-consuming or labor-intensive garden tasks.

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*A contributing writer for The American Gardener, Carole Ottesen is simplifying her Potomac, Maryland, garden so she can spend more time at her new summer home in Nova Scotia.*
Outlandish Outgrowths

the curious world of plant galls

These defects on many garden plants are caused by various insects and pathogens.

BY KATHRYN LUND JOHNSON
GALLS—those odd growths that appear on many plants—have intrigued people throughout the ages. They probably have been around since the first plants appeared—there is evidence of galls in fossils dating back more than 300 million years. But where do they come from and what exactly are they?

Broadly defined, galls are abnormal plant tissue growths that form in response to chemical or mechanical stimuli by fungi, bacteria, viruses, nematodes, mites, or insects. Collectively, these organisms that cause galls are called cecidozoa, but we’ll refer to them here as “gallers.”

“Galls are abnormal for a plant in the sense that cancer is abnormal in humans. Both are common in populations of their hosts, but are not part of the hosts’ intended development,” explains Graham N. Stone, of the Institute of Evolutionary Biology at the University of Edinburgh, Scotland. “The gall is necessary for the survival of the gallers but, for the plant, it represents hijacked development.”

Exactly how this hijacking is accomplished is not thoroughly understood, but it is generally accepted that the galler somehow stimulates the growth of plant tissue in the affected area. It may be the injection of fluid into the plant tissue, a reaction to excretions from the galler, or simply a response to the galler’s presence.

INSECT GALLS

An estimated 13,000 species of insects induce plant galls worldwide; approximately 1,500 of these are found in the United States. Gall-making insects include flies, wasps, beetles, aphids and phylloxerans, butterflies and moths, and thrips. An insect gall may form on any part of a plant—fruit, bud, root, leaf, stem, twig, or flower head—depending on the insect creating it. Although some insect gallers inflict fatal damage, most do not permanently harm their hosts. Typically, the survival of the gallers is dependent on the survival of the host plant.

The shapes and textures of galls are reliable diagnostic indicators of the galler. Insect galls are described as either open or goldenrod ball gall.

THE USES OF GALLS—PAST AND PRESENT

Believe it or not, galls have played an important part in human history—and in its recording. The Romans made iron gall ink from crushed oak and pistachio galls. As it was almost impossible to erase, the ink was used in manuscripts, including Leonardo da Vinci’s notebooks. Artists such as Rembrandt and Van Gogh used iron gall ink in their drawings. Here are some other ways galls have affected civilization:

Industrial Uses

Since the 5th century, galls have been valued as important sources of tannic acid, as some are comprised of 60 percent of the substance. Tannic acid was used as an ingredient in both wool and hair dyes during the age of the Greek Empire, and continues to be used by the leather industry for tanning and dyeing skins.

Most of the tannic acid produced until the mid-1900s was harvested from Aleppogalls, also referred to as Smyrna galls or “galls of commerce,” that are created by tiny gall wasps on the leaves of an oak tree, Quercus infectoria, native to Asia Minor. Gallic acid, isolated from tannic acid, is currently used in photographic development processes and antioxidants.

Gall Cuisine

Some galls are edible. The airborne fungus Ustilago zeae, known as corn smut in the United States, causes the formation of galls on ears of corn. Considered a delicacy in Mexico—where it is more appealingly referred to as Mexican truffle, maize mushroom, and huitlacoche—smut is a desired crop. Many Mexican farmers inoculate their corn with the causal fungus and harvest the growths.

Azalea leaf galls, also caused by a fungal infection, are commonly referred to as “pinkster apples,” and are reported to be light, delicious, and thirst-quenching. In Greece, galls known as the “galls of sage” that grow on apple sage (Salvia pomifera) are made into a conserve. Aphid galls on sumac leaves are a cultivated crop in China. The “gall nuts” are dried and used in traditional Chinese medicines.

The Great Wine Blight

The gall-forming behavior of the phylloxeran, an insect closely related to aphids, was responsible for wreaking havoc on European wine industries in the 1800s, an event referred to as “The Great Wine Blight.” Inadvertently introduced from the United States in the late 1850s, the organism, which can remain on the roots of the grape vine for many years, caused a near collapse of the French economy.

“Vines started to wither and die,” says Brian Rehill, a biologist at the U.S. Naval Academy. “By the time people figured out what was causing the problem—a miniscule gall-forming insect—nearly half of France’s vineyards were wiped out.” Ultimately, resistant rootstock from the United States was grafted onto the French vines and a worse crisis was averted.

—K.L.J.
closed. Open galls are produced by organisms with piercing, sucking mouthparts, such as psyllids, coccids, aphids, and mites, which feed on leaf surfaces, stimulating the leaf tissue to fold and grow inward. Closed galls are created by larvae with chewing mouthparts, including butterflies, moths, flies, sawflies, wasps, and beetles.

Insect galls may be single-chambered, containing a solitary larva, or multi-chambered, with one inhabitant occupying each of a number of chambers.

Why do insects create galls? Graham Stone, along with Karsten Schonrogge of the Centre for Ecology and Hydrology in Dorset, England, offer possible hypotheses: 1) As galls are rich in protein and carbohydrates, they may provide enhanced nutrition for the galler; 2) gall tissues may protect the galler from unfavorable environmental conditions, especially dessication; 3) galls may provide protection from attack by predators.

Living in a gall, however, does not ensure complete safety for its creator. Organisms called parasitoids sometimes lay their eggs within galls, and their developing larvae feed on the galler or the gall tissue. Other parasitoids enter the galls and dine on the larvae. Opportunistic organisms called inquilines enter insect galls and use the gall tissue as shelter and/or a source of food; some prey on the galler, others coexist peacefully with them. Birds also cause galler mortality. In winter, black-capped chickadees and downy woodpeckers can be observed pecking at goldenrod galls, extracting the protein-rich larvae.

Gardeners are often alarmed by the disfiguring “tumors” on host plants. Once an insect gall is visible however, the “damage” is done. And most injuries to host plants are not life-threatening, causing only slight to moderate decreases in growth, vigor, and fruit development.

Because healthy plants are less seriously affected than those that are stressed, attention to proper pruning, fertilizing, and watering will minimize the galls’ detrimental affects. The best way to control insect galls is to prune or hand-pick the galled areas. If a problem persists, the application of dormant oil prior to the galls’ appearances in the spring can be helpful, particularly in the case of aphid galls.

MITE GALLS

Eriophyoid mites are responsible for most mite galls. These organisms, about one one-hundredth of an inch long, have elongated bodies and two pairs of legs. Some eriophyoid mites produce erinium galls, dense patches of plant hairs, usually found on the undersurfaces of the leaves of beech, poplar, maple, and alder trees.

An indication of a mite galler on a pecan tree is the appearance of a leaf roll gall, in which the leaf margin is rolled downward or upward. Spindle and bladder galls, found on maple trees, are multi-chambered, each housing up to a hundred mites. Blisters swellings on the leaves of butternut and walnut trees. While mite damage may seem unattractive to some gardeners, host plants are able to tolerate large populations of the organisms without an adverse affect. If desired, affected areas may be pruned.

DEALING WITH GALLS

The following suggestions regarding the gardener-gall relationship have been taken, in modified form, from the Web site of the Texas Cooperative Extension (http://williamson-tx.tamu.edu/IPM/GallMakingInsectsandMites.pdf):

- To avoid galls, choose plants that are not susceptible to gall-makers.
- Use proper horticultural practices to promote overall plant health.
- Don’t use insecticides on beneficial wasps, which prey on potential gallers.
- Be patient. New susceptible plants may have galls for a time before galler parasites find and attack the galler.
- While chemical control is sometimes available, its use is generally unwarranted and ineffective. Do your research before acting.
- Learn to recognize the various galls and the organisms responsible for them. Enjoy the amazing natural world around you!

A female oak rough bulletgall wasp prepares to lay eggs in a dormant bud.

Dorset, England, offer possible hypotheses: 1) As galls are rich in protein and carbohydrates, they may provide enhanced nutrition for the galler; 2) gall tissues may protect the galler from unfavorable environmental conditions, especially dessication; 3) galls may provide protection from attack by predators.

Living in a gall, however, does not ensure complete safety for its creator. Organisms called parasitoids sometimes lay their eggs within galls, and their developing larvae feed on the galler or the gall tissue. Other parasitoids enter the galls and dine on the larvae. Opportunistic organisms called inquilines enter insect galls and use the gall tissue as shelter and/or a source of food; some prey on the galler, others coexist peacefully with them. Birds also cause galler mortality. In winter, black-capped chickadees and downy woodpeckers can be observed pecking at goldenrod galls, extracting the protein-rich larvae.

Gardeners are often alarmed by the disfiguring “tumors” on host plants.

The unsightly spindle galls on this maple leaf are caused by mites. These usually appear on the upper leaf surfaces of sugar maples, but may also be found on silver and red maples.
BACTERIAL GALLS

Most rose gardeners are familiar with crown gall. Agrobacterium tumefaciens, the bacterium which causes crown gall, can infect most plant species, with the exception of grasses. Another bacterium, A. rubi, is responsible for cane and stem galls on stone fruit, grapes, apples, pears, blueberries, and brambles, including raspberries and blackberries.

Both bacteria live in the soil and are able to tolerate broad temperature fluctuations and other adverse conditions. They enter plants through wounds, appearing first as tiny growths on canes, roots, trunks, or crowns. Stimulating the plant to produce compounds that provide food for them, the bacteria exact their toll by interfering with the flow of nutrients and water, leading first to stunting, then death. Prevention is the only means of control of bacterial galls.

Not all bacterial galls are undesirable. Those found on the roots of clover, alfalfa, and other legumes may be those of Rhizobium species, nitrogen-fixing bacteria that make nitrogen available for plant uptake. These galls can be distinguished from similar-looking but detrimental root-knot nematode galls by examination of the nodules. If they appear loosely attached to the roots and have a milky liquid inside, they are most likely “good” bacterial galls.

NEMATODE GALLS

Microscopic wormlike organisms called nematodes, which live in soil and plant tissue, sometimes create galls on the roots of many crop plants, including onions, beans, tomatoes, peanuts, and cotton. Their presence impairs the plants’ ability to take up water and critical nutrients, causing stunted growth, loss of vigor, and yellowing.

Several strategies are recommended by the Mississippi State University Extension Service (www.msucare.com) to reduce the number of damaging nematodes in soil to a tolerable level, including using nematode-resistant varieties; leaving the area fallow to deprive nematodes of food; cultivating frequently to expose nematodes to the sun; crop rotation; solarizing with clear plastic on moist, tilled soil; and removing and burning root-knot nematode-infested plants—including the roots—immediately after the final harvest. Currently, research is being done with nematode-eating soil fungi. Contact your local cooperative Extension office for more information on nematode control.

FUNGAL GALLS

Some fungal galls result in serious damage, others are considered gourmet fare (see “Gall Uses—Past and Present,” page 39). Those caused by the fungus Phomopsis appear as clusters of compressed nodules on certain trees and shrubs, including hickory, maple, oak, privet, forsythia, and viburnum. Phomopsis fungal galls can be fatal to the host if the fungus girdles the affected stems. Maintaining healthy, vigorous plants and removing suspicious-looking branches help stave off infection.

The fungus Gymnosporangium, the cause of cedar rusts, requires two distinct hosts to complete its life cycle. Gymnosporangium juniperi-virginianae, which causes cedar apple rust, alternates between eastern juniper and, usually, apple or crabapple trees. G. globosum, the cause of cedar hawthorn rust, alternates between junipers and apples, crabapple trees, hawthorns, and other members of the rose family. G. clavipes requires junipers to be in the proximity of hawthorns or certain other rosaceous hosts.

These pathogens generally do not cause severe damage to the junipers, but fruit yields on the alternate host can be adversely affected. Infection can be avoided by ensuring that members of the juniper and the rose families are not grown within one to two miles of each other—impractical for home gardeners, but important in orchards, nurseries, and landscape businesses. Fungicides are available to combat rusts, but they must be applied proactively. Once the fungus has been detected on a host plant, galls may be removed manually. Resistant plants are available in most areas of the country and their use is encouraged.

For more information about galls in your garden and how you can contribute to gall research, check the online version of this issue by visiting the AHS Web site (www.ahs.org).

Kathryn Lund Johnson is a free-lance writer and photographer living in Middletown, Michigan.
The Importance of Plants

This is the eleventh article of an ongoing series on garden design.

Over the last few issues, we have explored the importance of space, function, metaphor, and imagination in creating a garden. Discussions have covered the use of form, texture, fragrance, and other elements to catalyze engaging designs. Actual plants have—up to this point—been considered secondary or tangential. Now they must take center stage.

Whether in the limited palette of classical Italian gardens or the technicolor artifice of English borders, plants are essential to horticulturally-oriented designs. The botanical world offers us the most sensual, dynamic, and unique of all materials ranging from the seductive scent of Jasminum polyanthum to the stigman iridescence of Iris 'Superstition'. Plants are ever-changing, evolving, and living entities. They grow, reproduce, and die—unlike the average slab of bluestone or length of metal railing.

So, how does one go about selecting plants for a garden? I have found several effective approaches through my experiences both as a designer and a gardener.

BACK TO THE PLAN
The importance of developing and working from a strong program statement has been a recurring theme in this series of articles (see the November/December 2004 issue of The American Gardener). The program statement outlines the roles plants must play and the design intent plants must realize. Whenever I design, I always begin by selecting possible plants based on the guidelines established in the program. That eliminates impulse-buying, to which we are all susceptible. Starting with a broad list of candidates rather than specific plants allows me creative leeway and flexibility.

For example, let’s say a design I’m working on in the Philadelphia area (USDA Hardiness Zone 6, AHS Heat Zone 6) calls for a ground cover with winter interest. I would start identifying low-growing plants with winter flowers, evergreen foliage, colorful stems, attractive bark, or persistent fruit.

Initial lists might include sweetflag (Acorus gramineus), bugleweed (Ajuga spp.), pigsqueak (Bergenia spp.), hellebores, periwinkle (Vinca minor), English ivy, prostrate junipers, partridge berry (Mitchella repens), low-growing azaleas, spreading yews (Taxus spp.), and plum yews (Cephalotaxus spp.), among many others. The challenge becomes deciding between these choices.

The site’s characteristics and your design’s color scheme help whittle the list down. If, say, the area is in shade, forget the junipers. The color scheme should have yellows and whites, so delete the yews, plum yews, bugleweed, pigsqueak, and partridge berry. Azaleas bloom too late for winter effect.

Fortunately Acorus gramineus ‘Variegatus’ offers cream-striped leaves; Hedera helix ‘Goldheart’ has evergreen, yellow-variegated leaves; Helleborus foetidus has evergreen foliage and yellow-green flowers in February; and evergreen Vinca minor ‘Aureovariegata’ flashes yellow markings.

Still spoiled for choice, I mobilize a second round of selection criteria based on vigor and ease of maintenance.

GARDENING WITH THUGS
My garden has very little room for fussy divas (other than me and my dog, Betti). Plants prone to spreading vigorously,
clumping solidly, and generally thriving in diverse situations are perfect. I would rather mediate between overly enthusiastic players than coddle temperamental sulkers. A yank and a heave should have the plants maintaining their designated boundaries. The removed offenders may then populate new sections of the garden or be “passed along” to other gardens.

Returning to the winter interest candidates, I find three amicable thugs: *Acorus gramineus*, *Helleborus foetidus*, and *Vinca minor*. (I will come to the case of English ivy shortly.) The sweetflag clumps quickly and looks good all winter. It seems to tolerate normal soil as well as complete saturation. The bear’s-foot hellebore is an indestructible horticultural wonder with dark green, fine-textured foliage. It thrives in dry shade and seeds itself, forming a dense ground cover. Periwinkle is also a tough plant. The three together will offer a tapestry with all-season interest, the perfect backdrop for seasonal bursts of color offered by shrubs, bulbs, and other herbaceous perennials.

**A NATURAL SELECTION**

I digress here to add my opinion to the current debate over the use of native versus non-native plants that rages through our gardens, magazines, and listserves. I generally ignore the melodramatic posturing and pseudo-religious zeal exhibited by people at either extreme of the debate, preferring to take a catholic and cosmopolitan approach to plant selection. If a plant is right for the design and for the conditions, I use it regardless of its country of origin. Some of the non-natives are tougher and better behaved than the locals, anyway.

I do refrain from using plants that are clearly invasive in my area. In southern Pennsylvania, these include Norway maple (*Acer platanoides*), winged euonymus (*Euonymus alatus*), and purple loosestrife (*Lythrum virgatum*). Maiden grass (*Miscanthus sinensis*) is also becoming a problem so I avoid it as well. There are plenty of aesthetically appealing substitutes, anyway, so it’s no big loss.

So, what about *Hedera helix* ‘Gold Heart’? Some people consider English ivy to be the foliar font of all evil. However, if a gardener is willing to prune it off of trees and keep it from becoming arborescent and reaching its flowering stage, it will not set seed. The shining, evergreen, yellow-centered foliage, in my opinion, is worth that effort.

**PLANT SMALL, PLANT CHEAP**

A final consideration is the price and availability of plants. My garden budget and aspirations mandate using plants in small, affordable sizes. I shop anywhere I am able to locate healthy plants at a decent price—mostly “big box” stores (gasp!) and local nurseries’ bargain bins. I also beg and borrow plants from friends. These sources offer a basic range of horticultural fare, often nothing rare or fancy, which is fine with me.

Planting small, readily available, and affordable stock requires some patience over the long term, but the benefit if you are on a budget is that you can install large parts of the garden design at one time. This is important when establishing the bones of the design such as groves, screens, hedges, and masses that define the major spaces and experiences. Once the bulk of the basic garden is in place, you can spend money adding rare and choice plants as accents while the major components mature.

**ORDINARY PLANTS, EXTRAORDINARY GARDENS**

Pierre du Pont (1870–1954), Longwood Gardens’ designer and founder, said he was interested in growing and using ordinary plants in extraordinary ways. Rare and expensive plants do not necessarily make a strong or even attractive garden. They may impress the horticultural intelligentsia, but how many of us garden for that reason?

Common plants are often common for a reason—they grow well and survive. The trick is to use them in creative ways outside the cliché foundation and parking lot plantings. Plants such as boxwoods, forsythias, panicled hydrangeas, mock orange, spireas, yews, and weigelas—many of which are now derided as “old-fashioned”—can be the backbone of any garden and provide low-maintenance interest in sequence throughout the year.

Remember, plants do not make bad gardens; people make bad gardens.

In the next issue, we will explore a technique I often use to sequence and choreograph horticultural interest in the garden.

Tres Fromme is a landscape designer at Longwood Gardens in Kennett Square, Pennsylvania.
ONE ON ONE WITH...

Paul Meyer, Director of the Morris Arboretum

by Lynda DeWitt

WHAT BEGAN in the 1880s as a private estate on barren land has grown into Pennsylvania’s official arboretum, a living museum of thousands of woody plants from around the world. The Morris Arboretum of the University of Pennsylvania spreads across 92 acres in Philadelphia, and some of the city’s oldest and largest trees are found there. Visitors will also find an international smorgasbord of garden styles—Victorian, English Romantic, Italian Renaissance, and Japanese.

For 30 years, Paul Meyer has been a driving force behind the transformation of this once neglected landscape into a world-class historic garden and educational institution. The director of the arboretum since 1991, Meyer talks with garden writer Lynda DeWitt about his latest plant expedition, his thoughts on urban greening, and what’s on the horizon at the arboretum.

Lynda DeWitt: What was—and is—the source of your passion for plants?
Paul Meyer: Our fundamental passions are formed in childhood. From my earliest years, I gardened with my parents and grandparents. When I was six, I had my own tomatoes, and to this day I get a special pleasure in growing vegetables. I also spent many hours in the woods, playing in the creeks, building tree houses and forts. Later, I became active in scouting, where I built on my knowledge of trees and the natural environment. Eventually, I taught younger scouts what I had learned and discovered the joys of teaching and sharing a love of the natural world.

Your first plant-collecting expedition was in 1979 to Korea, and you’ve been on a dozen trips since then. What was your latest expedition?
My latest expedition was in the autumn of 2004 to the Republic of Georgia. Our goal was to collect new genetic material of some relatively widely known and grown species. Among landscape plants, a priority target was Nordmann fir (Abies nordmanniana). This is one of the best firs for many parts of the United States, including the northeast and midwest. Its foliage is dark green and glossy, and it is one of the most heat tolerant firs. It has been grown in the United States for more than a century, but the genetic representation has been limited. Similarly, we collected Oriental spruce (Picea orientalis), arguably the best spruce for the mid-Atlantic region.

We were delighted to also collect laurel cherry (Prunus laurocerasus). This widely planted evergreen shrub is marginally hardy in USDA Zone 6, where it can be damaged in hard winters. The form we collected was from a population growing on a windswept mountain pass. Our hope is that selections from this population will prove to be more winter hardy than other forms already in cultivation.

The Morris Arboretum has a large collection of non-native trees, which includes this katsura tree (Cercidiphyllum japonicum). At over 65 feet high, it is a Pennsylvania State Champion tree.
You've been involved in efforts to re-green our cities. Why do you feel this is important?
Planting trees is the most cost-effective way to improve a neighborhood—whether urban or suburban. On an otherwise barren street, even one thriving tree can make a big difference.

In the United States, we tend to trash our existing neighborhoods with uncontrolled development. People then escape the resulting mess by moving out to the countryside. This option is unsustainable; we have to learn to make our old communities more livable and more desirable.

I don't want to oversimplify the solution, but certainly parks, gardens, and street trees go a long way toward turning around a community.

What are some plants that you've identified as candidates for the tough urban landscape?
First, the most important principle of urban planting is diversity. No one species, no matter how suitable, should make up more than five percent of the trees in a neighborhood. Diversity helps protect our urban forests from devastating disease and insect plagues, such as the incidence of Dutch elm disease in the 20th century.

One stress-tolerant tree that is under-used in urban plantings is the Amur maackia (Maackia amurensis). It is a legume, so its roots support nitrogen-fixing bacteria. It is also tolerant of poor soils, drought, and even periodic flooding. I have seen this species growing on a rocky lava flow in a flood plain in China. The trees were stunted but still surviving in the seemingly impossible natural conditions.

I am also enthusiastic about using bald cypress (Taxodium distichum) as an urban tree. This tree will grow in standing water and yet is also drought tolerant. Its upright form and fine texture make it especially useful on narrow streets.

What plans do you have for changes at Morris Arboretum in the near future?
We are just now building the Alice and Liddon Pennock Flower Walk, which will consist of a series of mixed flower borders surrounded by an ornamental arbor with climbing plants, such as roses and clematis. The arbor will serve as a beautiful deer fence, allowing us to grow plants deer would otherwise devour.

Also, we are planning a new tree canopy walk that will take visitors high into the trees, where there will be exhibits illustrating what trees do for us and, in turn, what we must do for trees. Our relationship with trees is truly symbiotic, especially in urban and suburban environments.

Free-lance writer Lynda DeWitt lives in Bethesda, Maryland.
For many gardeners, the word “desert” conjures visions of baking heat, hardpan alkaline soil, and prickly cacti. Gardeners who live in the region known as the Great Basin Desert, however, know it as a land of diverse microclimates, altitudes, and plant communities.

There’s some difference of opinion about whether the Great Basin encompasses parts of four or six states. The desert’s core is the state of Nevada, but the region extends to sections of Utah, Idaho, California, Oregon, and, some say, Wyoming, too. Experts do agree that the Great Basin is considered a cool, or even cold, desert because of its northern latitude and higher elevations, which average 3,000 to 6,000 feet and top out at 13,000-foot Mount Wheeler in eastern Nevada.

This large region encompasses a tremendous diversity of plant and animal communities, so check with local native plant experts to learn about the best plants for your habitat garden. Here are general guidelines to help you plan your garden, as well as suggestions for a handful of plants that should do well throughout much of the Great Basin Desert.

**SHRUBS FOR DROUGHT AND COLD**

Unlike other North American deserts, the Great Basin’s dominant plant life is semi-alpine rather than subtropical. In this cold, dry climate, native vegetation tends to be ground-hugging and homogeneous. Your best bet is to anchor your habitat garden with groups of hardy native shrubs, whose deep root systems help them survive summer drought, winter cold, and strong desert winds. Shrubs also offer multi-season interest and are sources of food and shelter for birds and other wildlife.

Four-wing saltbush (*Atriplex canescens*, Zones 2–9, 11–3) is an exceptionally drought-tolerant plant that is quite attractive in winter. Popcornlike, edible fruits mature in fall and hang on almost until spring. Each fruit develops four external seeds that resemble large, papery wings, giving the plant strong textural interest. Saltbush also can be sheared to make a hedge. It is fire retardant, will grow in alkaline and salty soils, and does fine with brackish water.

Another hardy shrub, golden rabbitbrush (*Chrysothamnus nauseosus*, Zones 4–9, 9–4) has attractive narrow-leaved, silvery blue foliage and is a preferred habitat plant for Western bluebirds. It grows three to six feet tall and as wide as eight feet and offers brilliant golden flowers in late summer to early fall when many plants are dormant. For a great color combination, plant it with annual autumn sage (*Salvia greggii*, Zones 7–9, 9–4) or purple Mexican bush sage (*S. leucantha*, Zones 9–11, 12–4). Both will attract hummingbirds.

Many currants and gooseberries are native to the Great Basin, and golden currant...
Four-wing saltbush has adapted well to desert life.

**DESERT PLANT ADAPTATIONS**

Native desert plants have developed physical and behavioral mechanisms that ensure their survival in a harsh environment. Here are some terms that are helpful to know if you are selecting plants for a desert garden.

- **Xerophytes** are plants, such as cacti, that have adapted by altering their physical structure to store and conserve water. They have few or no leaves to reduce transpiration (moisture evaporation).
- **Phreatophytes** are plants that have adapted by growing extremely long roots, which allow them to retrieve moisture from near or at the water table.
- **Desert perennials** are not perennial in the way most of us typically use the word; instead, they grow when water is present and go dormant during drought.
- **Desert annuals** (ephemerals) germinate and grow only after a heavy rain, bloom heavily, and complete their lifecycles quickly. Their heat- and drought-resistant seeds remain dormant in the soil until the next cycle of moisture brings them to life.

**BLOOMING CHOICES**

The large selection of native wildflowers is daunting, but for wildlife you can’t go wrong with locally native penstemons.

Species to consider include scarlet bugler (Penstemon barbatus), Eaton’s penstemon (P. eatonii), or large-flowered penstemon (P. grandiflorus), all of which are hardy to at least USDA Zone 4 and heat tolerant to AHS Zone 9.

To attract hummingbirds, try orange honeysuckle (Lonicera ciliosa, Zones 6–9, 9–1). It needs frequent watering and sun protection, however, so it is best planted near a doorway or patio where you can enjoy the show.

In a rock garden, consider white-flowered spreading phlox (Phlox diffusa, Zones 5–8, 7–1), night-blooming tufted evening primrose (Oenothera caespitosa, Zones 4–9, 9–2), or the prolific yellow daisies of butterweed (Senecio douglasii, Zones 6–10, 10–2).

For an eye-popping ground cover, try desert four-o’clock (Mirabilis multiflora, Zones 7–10, 10–7), which forms a spreading mound of greenery several feet in diameter, covered with magenta flowers.

Many desert plants bloom in spring, leaving your garden in the summer dormant for most of the year until they have established strong root systems. After that, they should survive on rainfall.

Group the most drought-tolerant species together and place those that need more attention closest to the house. For good drainage and to conserve soil moisture, use gravel or other forms of crushed rock as mulch rather than organic mulches. Choosing light-colored rocks will help to reflect heat.

_Joanne Wolfe is a contributing editor for The American Gardener and a key voice in the habitat gardening movement._

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**Resources**

- **DesertUSA.com.** (www.desertusa.com/du_basin.html) has a section on plants and natural resources in the Great Basin Desert region.

**Sources**

- **Las Pilitas Nursery**, Escondido, CA. (760) 749-5930 (San Diego County) or (805) 438-5992 (San Luis Obispo County). www.lasplittis.com. Catalog online.
FLOWERS WITH ENVIRONMENTAL APPEAL
Next time you’re thinking of buying a bouquet for a special someone or maybe yourself, you might want to tune in to a growing trend and buy organic. Because of increased awareness of pesticide use in the cut flower industry, the demand for posies without poisons has escalated markedly in the last few years.

A recent article in USA Today notes that the sale of organic flowers doubled from 2002 to 2003. The article also stated that organic flowers will likely experience a 13 percent revenue increase through 2008, making them a noteworthy market contender.

Gerald Prolman, the founder and CEO of Organic Bouquet Inc., which bills itself as the world’s first online organic florist, believes that “organic production means new growth for the floral industry, especially as consumer awareness of social and environmental issues relating to floral production continues.

However, there are less than 100 organic flower growers in the world, according to USA Today. With fewer resources and smaller facilities, these growers aren’t yet able to produce many of the well-known cut flower favorites such as roses, orchids, and carnations. This could well change, along with the total number of organic flower growers, if the current demand for organic flowers continues.

NATIVE CALIFORNIA PLANT REDISCOVERED
Since no one had seen Mount Diablo buckwheat (Eriogonum truncatum) in almost 70 years, the plant was presumed extinct, though local botanists never gave up hope of finding it again. An annual wildflower endemic to Mount Diablo in the East Bay area of California, the elusive buckwheat species was rediscovered this past spring by Michael Park, a graduate student at the University of California, Berkeley, as he conducted a plant survey in the area.

“Because it’s so celebrated in the botanical community, it had grown in my imagination,” says Park of the buckwheat. “It’s a surprisingly dainty plant once you see it in the field.” The plants grow between three and eight inches in height, bearing small, pinkish flowers that resemble baby’s breath (Gypsophila).

Several factors may explain the reappearance of the native buckwheat. One is that Save Mount Diablo, a local conservationist organization, had recently placed the land where the plant was found under preservation. Interestingly, rabbits may have had an important role to play as well. “It seems as though rabbit browsing may be a main positive factor,” explains Barbara Erter, curator of Western North American Flora at UC Berkeley’s Jepson Herbarium. “The plant probably can’t compete well against the flood of Eurasian annual grasses that dominate California’s landscape and the rabbits thin those plants.”

Efforts are underway to propagate the buckwheat at the UC Botanical Garden, which is part of the Center for Plant Conservation network. Botanists hope to produce a reserve of seeds in case the species declines further, and will continue to monitor the population in the wild.

Top: Michael Park, a graduate student at the University of California–Berkeley, poses in front of the tiny flowers (shown closeup, above) of the rare Mount Diablo buckwheat.
BUY LOW, PLANT HIGH
If you’re planning to do some planting this fall, you may do well to heed the advice of horticulture researchers at Cornell University, particularly if you’ve purchased bare-root perennials. During a two-year study, they discovered that planting depth can have a dramatic impact on the performance and even survival of bare-root perennials.

The standard advice when planting perennials already growing in containers is to place them at the same level they were planted in the container. While this still holds true, with bare-root perennials, it can be impossible to tell where that point was. “Our advice would be to plant so that any young developing buds would be fully exposed to light, and the crown is at or slightly above the soil line,” says William B. Miller of the Horticulture Department at Cornell. For a pictorial guide to planting bare-root perennials on the high side, log on to www.hort.cornell.edu/miller/Planting_Perennials_High.pdf.

For those unfamiliar with the term, “bare-root” indicates that the plant comes without soil and usually in a dormant or semi-dormant state. Many gardeners know that buying bare-root plants from mail order nurseries can be a more economical option as the lack of heavy soil keeps shipping costs down. Some perennials commonly sold bare-root include peonies, daylilies, irises, and hostas.

NEW RESOURCE FOR GARDENERS
Garden Literature Index™ by EBSCO Publishing may be coming to a library near you. Designed for gardening enthusiasts, students, and professionals, this new database allows users to research articles pertaining to plants and gardens from more than 300 core titles, going back more than a decade. This includes The American Gardener from the May/June 1996 issue to present, with selected articles to 1992.

The tool lists serial titles as well as specialty publications. With a special focus on environmentally sustainable horticulture and design practices, topics in the database include botany, ecology, plant conservation, garden history, and land-

GARDEN TRENDS
A recent poll of over 1,000 households throughout the continental United States found that three-quarters of them have some form of lawn or garden. Of these households,

- 39% planned to water with movable sprinklers or soaker hoses.
- 26% expected to rely on rainfall only.
- 38% had no plans for conserving water.
- 24% practice backyard composting.
- 91% noted having insect problems.
- 32% planned to use a combination of organic and chemical products to deal with pests.
- 32% planned to do nothing about pest problems.

(From the 2005 Summer Gardening Trends Research Report issued by the Garden Writers Association Foundation.)
BANDING TOGETHER FOR NATIVE PLANTS

Last May, Denver Botanic Gardens (DBG) reaffirmed its commitment to preserving native plants by becoming an affiliate of the Lady Bird Johnson Wildflower Center in Austin, Texas, the nation’s most prominent promoter of native plants and their habitats. This affiliation links the DBG at Chatfield, a 750-acre nature preserve along the Deer Creek waterway, to the Wildflower Center, named for the former First Lady, in a partnership based on a shared vision.

“Both Denver Botanic Gardens at Chatfield and The Lady Bird Johnson Wildflower Center are dedicated to native plants and educating people about the environmental necessity, economic value, and natural beauty of native plants,” says John Scully, chief executive officer at DBG.

Considered one of the top botanic gardens in the United States, DBG has researched and cared for native plants for more than half a century. The Chatfield location is one of three satellite gardens; its picturesque location and hands-on educational exhibits already make it a popular draw for children and their families, and the garden provides an impressive living laboratory for scientists, too.

With the Lady Bird Wildflower Center’s help, DBG at Chatfield will continue to offer research and educational programs, while promoting native plants throughout the country.

Mountains provide a backdrop for an antique tractor ride for visitors to the Denver Botanic Gardens at Chatfield, which works to preserve native plants and their ecosystems.
**PEOPLE and PLACES in the NEWS**

**Two Gardens, One Director**

Naples Botanical Garden in Naples, Florida, and Cleveland Botanical Garden (CBG) in Cleveland, Ohio, have formed a new affiliation to share personnel and ideas. Under the affiliation, Brian Holley, a member of the AHS Board of Directors and the executive director of CBG, now serves as executive director of Naples Botanical Garden in addition to his CBG post. “I see the alliance with Naples as yet another iteration of CBG’s role as an industry leader and role model,” Holley says. “It is my hope that we can leverage the resources of both gardens to develop a great botanical garden in Naples and to continue to grow the great one that we have now in Cleveland.”

“Each affiliate takes on its own personality,” says Damon Waitt, who heads the Wildflower Center’s affiliate program, with a current total of eight affiliates nationwide. “It’s about banding together and pooling resources to spread the message of native plant conservation.”

**PLANT BANNING REACHES NEW LEVEL**

Connecticut is one of only five states in the nation to have implemented a ban on invasive plants. Now, because of legislative stalling on the passage of the old plant-banning bill, the authority to ban invasives will move from the state to individual towns. Beginning October 1, towns will be able to add plants to the preexisting list of invasives.

Bob Heffernan, executive director of Connecticut Green Industries, hopes towns won’t add any plants to the list. “No state has gone as far as Connecticut,” he says. “And every state that has tackled invasive plant policy has kept it on the state level.” Heffernan and colleagues have met with the Nature Conservancy and the National Audubon Society to draft a new statewide bill limiting town power.

Many scientists and researchers favor a statewide bill as well. Donna Ellis, extension educator and co-chair of the Invasive Plant Working Group, which is affiliated with the University of Connecticut and provides significant input on invasives, says, “I don’t think anyone knows how complicated local bans would be to enforce. If people are told they can’t buy plants in one town, they’ll just go to the next town over.”

Written by Assistant Editor Viveka Neveln and Editorial Intern William Clattenburg.

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September / October 2005 51
WE HUMANS take a lot of credit for our gardening successes, but no amount of horticultural innovation can outdo the job done by bees. Bees—along with many other insects—are pollinators, creatures that help to fertilize plants that would otherwise not be able to set fruit and bear seeds. Worldwide, insects pollinate around 80 percent of the flowers growing outdoors, including crop plants.

Bees account for the majority of insect pollination. They are one of the most noticeable pollinators in the garden, producing their familiar buzz. In the United States alone, there are around 4,000 species of native bees that help to pollinate the nation’s crops as well as wildflowers and garden plants.

Despite their significant roles in the ecosystem, bees are threatened by habitat loss and the use of pesticides. Nonnative diseases, competitors, and parasitic organisms—in some cases spread by commercial bee colonies, which many nurseries, farms, and orchards use to enhance crop production—also take their toll on native bees.

TAKING STOCK
The Xerces Society for Invertebrate Conservation, based in Portland, Oregon, recently compiled a Red List of North America’s Most Vulnerable Pollinators. The list includes 56 species and subspecies of bees, 57 butterflies, and two moths. Each of the insects on the list is marked with its current status from “vulnerable” on one end to “possibly extinct” on the other, or simply “data deficient.” The list provides further information on life history, distribution, threats, and conservation needs, as well as book citations and links to other informational Web sites.

A work in progress, the list is a major step towards both learning about and classifying native insects and their needs, yet it is also a reminder that, even in the most up-to-date insect database, there are still a lot of information gaps.

“No one’s really attempted to pull this information together,” says Matthew Shepherd, director of the Pollinator Conservation Program at the Xerces Society. “We wanted to establish some baseline information in what we hope is an easily accessible format, covering a huge group of animals that are not really considered or discussed,” he explains. “We hope people will say ‘Hey, this bee or this butterfly is in decline,’ and that this will stimulate debate in policy circles, help land managers put more emphasis on conservation, and spur more research.”

WHAT GARDENERS CAN DO
Although some native bees are social and live in groups in hives structured around a queen bee, the majority of pollinating bees native to the United States are known as “solitary bees,” meaning they live and gather food on their own. These bees nest and lay their eggs in dead trees or in bare soil. “The trend towards tidier landscapes eliminates nesting sites for bees that live in these habitats,” Shepherd says.

By leaving a little disorder in your garden (for more on how to do this, see the article on fall cleanup on page 24), you will preserve potential nesting sites for bees and other pollinators. Bees favor mud and sometimes build their nests in protected areas under the cover of leaves and twigs. Also, if you plant a variety of native plants that bloom successively, you will expand the pollen and nectar buffet available to bees and other insects.

As for pesticides, the best advice is to use them sparingly or not at all. “If you have a diverse garden, many natural predators will take care of pests on their own,” says Shepherd.

Even the so-called natural pesticides such as pyrethroids or biological controls like Bt (Bacillus thuringiensis, a bacterium that kills caterpillars) can destroy the good guys as well as pests. If you choose to apply them, make sure they are designed specifically for the target pest and applied at the correct time in its life cycle. “Not all pesticides are the same, and there are some that will only be harmful to bees for six or eight hours after application,” Shepherd adds.

For more information on the Xerces Society and the Red List of Endangered Pollinators, visit www.xerces.org.

William Clattenburg is an editorial intern for The American Gardener.
BOOK REVIEWS

Recommendations for Your Gardening Library

Bulbs for Garden Habitats

EVERYONE LOVES BULBS—they are familiar, easy to grow, and so colorful. If you think you know all about bulbs, however, think again. Veteran and neophyte gardeners alike are sure to benefit from the breadth and depth of knowledge and experience contained in Bulbs for Garden Habitats.

Author Judy Glattstein moves far beyond familiar tulips and daffodils to acquaint readers with the full range of geophytes (a catch-all term for bulbs, corms, tubers, tuberous roots, and rhizomes) that thrive across the ecologically diverse North American continent. In addition to familiar Dutch export bulbs, the author introduces us to a full range of native American bulbs, as well as South African and tropical species. Readers will be pleased to learn about the myriad hardy and tender bulbs for wet spots, and that a host of bulbs bloom in autumn, when most plants are shutting down for the season.

Glattstein innovates further by placing bulbs in natural, complimentary associations based on what she calls “garden habitats.” Though the chapter titles alternate between regional (“Bulbs for the Southeast”) and habitat (“Bulbs for the Mediterranean Garden”), the message is clear: Choose the right bulbs for your climate, light, soil, and moisture.

The excellent chapter, “Geophyte Care and Cultivation,” thoroughly covers planting, aftercare, and propagation. Deer-resistant bulbs are amply discussed, as the author gardens on nine acres with a thriving deer herd. Appendices cover invasive bulbs, sources, and “Quick Picks,” a set of short lists arranged by garden situations and ornamental attributes. Line drawings clearly show the distinctions between different geophyte life cycles. Many of the photos are also instructive, but overall the quality is uneven.

Glattstein, a veteran gardener, skillfully instructs and educates in a friendly, accessible style. She weaves stories of her experiences into the narrative as well as those of gardeners around the world who love geophytes. Bulbs for Garden Habitats will inspire anyone who has an appreciation for beauty and a mind for ecology.

—C. Colston Burrell


On Foreign Soil: American Gardeners Abroad

ELEGANT WOMEN strolling in sun-dappled gardens in Italy and France were a recurring theme among Impressionist painters, but the focus has always been on the artists who painted the pictures rather than on the gardens themselves. From the French Riviera to the Tuscan hills and the Weald of Sussex, a privileged group of American expatriate artists and literary figures brought practices and ideals from home to their gardens abroad.

Art historian May Hill’s new book takes us on a whirlwind tour of gardens created by Americans in England, France, and Italy. Among them, Isabella Stewart Gardner, Edith Wharton, and Peggy Guggenheim will be familiar, but other, more elusive, individuals also shared their passion for making gardens.

As the book explains, in the 19th century, Italy attracted wealthy businessmen, artists, and those escaping failed marriages or adjusting to widowhood. As a result, American dollars were often used to aid the restoration of historic gardens. For example, the inheritance of Mrs. Arthur Acton, an American married to an English painter, helped to transform La Pietra in Tuscany into a magnificent Renaissance-style garden, renowned today as a premier Anglo-Italian garden.

Transatlantic marriages, career changes, and family ties still provide impetus for gardening abroad, a topic the book’s final chapter explores. One example is Mississippi-born Carla Carlisle, who married an English squire in the 1980s and gave her husband’s ancestral home a dose of American enterprise. Today, Wyken Hall produces award-winning wine and boasts a splendid formal garden.

Beautifully illustrated with period paintings and photographs, this delightful chronicle is more about the luxury of living abroad than the finer points of garden-making and horticulture. The book’s appeal will be to art historians, literary buffs, armchair travelers, and those interested in historic gardens.

—Judith B. Tankard

Judith B. Tankard is a garden historian and writer based in Massachusetts. Her most recent book, Gardens of the Arts and Crafts Movement: Reality and Imagination, was published by Abrams in 2004.
**Dogwoods**

**THIS IS THE FIRST** book on the genus *Cornus* directed at gardeners. As co-author Paul Cappiello writes, “The taxonomists have scores of textbooks and journals that treat the genus as their realm. To date, this is the only work on *Cornus* devoted entirely to the gardening use of the genus.”

Through experience and thorough research, the authors know their subject well. The voice of the book is Cappiello’s—informative, enthusiastic, and often self-deprecating or cynical—resulting in a humorous as well as enlightening read.

Organized into six chapters, the book begins with a general discussion on the dogwood family. The next five chapters focus on specific groups of dogwoods that should logically be treated in common by serious gardeners: *Cornus canadensis*, *Cornus alba*, *Cornus alternifolia*, *Cornus florida*, and *Cornus mas*. Within these groupings, we are taken from ground cover dogwoods to large trees with spectacular beauty, often shown in gorgeous photographs taken mostly by Cappiello.

The information about cultivars of *Cornus florida* and *Cornus kousa*, in particular, is unparalleled. In fact, this book has changed some of what I thought I had accurately known for decades.

However, the greatest asset in *Dogwoods* is the honesty and thoroughness of certain discussions. The authors tell readers which cultivars are thought to be the same as something by another name. They candidly tell us about the confusion that exists regarding dogwood nomenclature. They tell us which dogwoods belong in our gardens when there is only space for one or two new plants and which ones should only be considered by those with plenty of time, space, and a willingness to deal with ugly, struggling plants.

The genus *Cornus* contains some of the most beautiful garden specimens in the world as well as species that have no place in most gardens. Sharing this information in a beautiful book and telling readers the truth with humor is part of what makes *Dogwoods* a ground-breaking and worthy text.

—Dick Bir

Dick Bir is the author of *Growing and Propagating Showy Native Woody Plants*. He recently retired after exactly 25 years on the horticulture faculty at North Carolina State University.

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**George Little** and David Lewis have knocked down the walls of convention and taken risks that have made them world-renowned artist-gardeners. In their debut book, *A Garden Gallery: The Plants, Art, and Hard- scape of Little and Lewis*, they invite the reader into their garden located on Bainbridge Island, Washington. “Although our colorful, diverse style may not appeal to the faint of heart,” Lewis writes, “our garden and our work are meant to awaken the creativity and adventure within us.” Their inspirational approach to gardening as a whimsical adventure is captured in the bold clarity of the photographs by Barbara Denk.

This book reveals the secrets Little and Lewis skillfully use to pull their visitors into a labyrinth of color and design, often of Mediterranean inspiration. Tantalizing fragrances, sounds of fountains and nature, transcendence of light, and homemade sculptures pique the senses and guide the way through this garden. Whether it’s a hidden fountain so that you hear but do not see the water, or a vibrant blue wall in the backdrop, or even a giant pomegranate sculpture nestled among fuchsias, each element pushes the boundaries of tradition.

—Jessica Rozmus, Horticultural Intern

**If you have** questions about pruning, look no further than *The Pruner’s Bible, A Step-By-Step Guide to Pruning Every Plant In Your Garden* (Rodale Inc., 2005, $21.95) by Steve Bradley. The author lets his clippers do the talking, so to speak, with a to-the-point introduction on the particulars of pruning. The opening pages cover tools, safety, and basic pruning techniques, setting the stage for the heart of the book, which looks at 70 common garden plants and how best to prune them.

Pruning, as Bradley explains, is about much more than making a plant look nice—in many cases it is necessary for a plant’s life and health. Bradley discusses formative pruning, routine pruning, and remedial pruning in the context of all 70 plant species so that gardeners can take care of plants in all stages of their growth. Color photographs are juxtaposed with helpful diagrams.

Most of the plants covered are roses, shrubs, and specimen trees but a “Special Features” section at the end of the book takes an in-depth look at ground covers, conifers, and climbers, too. This section also explains how to prune hedges, and discusses specialized techniques such as pollarding, pleaching, and root pruning.

—William Clattenburg, Editorial Intern
Whether a theme is dictated by your garden’s conditions or your own sensibilities, following one can help to give focus and direction to a garden space. A theme can also help to narrow down which plants you choose to grow. Perhaps they are plants that suit your particular site—an alpine location, dry soil, or shade, for example—or plants that work well for their intended purpose, such as those that belong in kitchen gardens or perform well in containers. Here are some books that not only suggest plants for various themes but explain how to use them to create beautiful and successful gardens.

Because demands on fresh water supplies are ever increasing and weather patterns often bring dry spells, following a “drought tolerance” theme often makes good sense. Whether you garden in a dry region or just have a periodically dry corner of the yard, Dryland Gardening: Plants That Survive and Thrive in Tough Conditions by Jennifer Bennett (Firefly Books LTD, 2005, softcover, $24.95) has plenty to offer. It begins with a discussion of water management strategies as well as design considerations. The remainder of the book covers drought-tolerant plants organized by categories such as ground covers, bulbs, and shrubs—many shown in color photographs. As the author writes, “Using the techniques in this book and growing these plants, you will not only have a garden better able to survive extreme weather but a garden that conserves water and is easier to mind and manage.”

For a different take on a low-maintenance and drought-tolerant form of gardening, there’s Sharp Gardening by Christopher Holliday (Timber Press, 2005, $29.95). Organized into chapters such as “Swords and Lances” and “Spiky Flowers, Spires, and straps,” the book focuses on plants that fit a spiky, spiny, pointy theme. Many of the plants described, such as members of the cactus family, “are low maintenance because they are not rich feeders and do not require mollycoddling in the form of staking or need excessive cutting back,” explains Holliday. They do, however, provide a dramatic architectural impact in gardens large or small, as nearly 200 stunning photographs by Jerry Harpur illustrate.

Many drought-tolerant and even “sharp” plants fall under an alpine theme. In Creating and Planting Alpine Gardens (B.B. Mackey Books, 2005, $22.50) author Rex Murfitt writes, “The charm of small plants artfully arranged in a mountainlike landscape is hard to match. If you are interested in learning to grow alpines well in a small rock garden or containers, this book is for you.” The co-author of Creating and Planting Garden Troughs, which received an AHS Book Award in 2000, Murfitt delves into the art of building rock gardens, from design and site preparation to planting and maintenance. Diagrams and black-and-white photographs accompany the text, and a small collection of color photographs depicts some of the alpine species the author describes.

Those interested in gardens with an edible theme may enjoy The Moosewood Restaurant Kitchen Garden: Creative Gardening for the Adventurous Cook by David Hirsch (revised edition, Ten Speed Press, 2005, $19.95). Known for its innovative restaurant in Ithaca, New York, the Moosewood Collective also has published a popular line of cookbooks. While this particular title does contain recipes, it focuses more on how to grow the herbs, vegetables, and edible flowers used in them. In the plant section, each entry includes cultural requirements from sowing to harvesting as well as tips on their culinary uses. Chapters on design considerations and growing techniques outline other important elements of an edible garden. And since, according to the author, “properly cooked, flavorful, and attractively presented vegetables are the happy ending to this story,” the final section is devoted to cooking techniques, complete with recipes for everything from soup to dessert.

If you enjoy growing a wide variety of plants, be they edible, alpine, spiky, or other, containers can help to enhance a garden theme or can become a theme of their own. Can’t Miss Container Gardening by Felder Rushing and Teri Dunn (Cool Springs Press, 2005, $18.99) provides plenty of ideas for doing both. As the authors advise, “Whether you like formal or informal, flowers or foliage, food or fun, use container plants to complement your home and garden, and your life.” Color photographs supplement chapters on container selection, cultural requirements, and design. The directory of “can’t miss” plants also features helpful photographs of each listing.

—Viveka Neveln, Assistant Editor
Horticultural Events from Around the Country

**REGIONAL HAPPENINGS**

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Looking ahead


**MID-ATLANTIC**
PA, NJ, VA, MD, DE, WV, DC


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Events hosted by botanical gardens and arboreta that participate in AHS’s Reciprocal Admissions Program are identified with the **RAP** symbol. Current AHS members showing a valid membership card are eligible for free or discounted admission to the garden or other benefits. Special events may not be included; contact the host site for details or visit www.ahs.org/events/reciprocal_events.htm.

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**Fall Festival in New York**

AUTUMN’S HARVEST and autumn’s planting will grace the 6th annual Cincinnati Flower & Farm Fest, held in Coney Island, New York, on the weekends of October 1 and 2 and October 8 and 9. The event, which last year famously broke the world record for the largest number of scarecrows ever assembled in one place, features exhibits, displays, treats, and rides for all ages.

For gardeners and decorators fascinated by the colors and fragrances of autumn, three different “markets” will be on offer: the Autumn Décor, Harvest, and Fall Planting Picks. Each market will specialize in seasonal items, with Autumn Décor offering handcrafts and cut and dried flowers, Harvest offering gourds, pumpkins, squash, heirloom apples, mustards, and honeys, and Fall Planting Picks offering perennials, cool-weather annuals, grasses, chrysanthemums, and spring bulbs.

Not all flowers at the show will be for sale, however. The festival’s “larger than life” giant peacock, with several hundred mums in its tail, will make an appearance. And the “First Thanksgiving” floral display, a centerpiece of the show, will recreate the legendary meal shared by pilgrims and Native Americans.

As for the scarecrows that stole the show last year? “We’ll probably bring back a few of the scarecrows too,” says Jeanne Elliott, marketing director for the Cincinnati Horticultural Society, adding that there will be vignettes of several memorable straw people.

For more information or for advance ticket purchase call (518) 872-5194 or (800) 670-6808 or visit www.cincyflowershow.com.

**New Conference for Independent Plant Breeders**

THOSE INTERESTED IN creating hybrid plants will have plenty of reason to head to the first ever Independent Plant Breeder’s Conference from November 18 to 20 in Fort Lauderdale, Florida. The conference, organized by the University of Florida, is open to all and is specially designed for “anyone interested in taking their plant breeding further,” says Mandy Stage, the conference coordinator.

Plant breeders involved with every variety of plant are encouraged to participate, whether they have a passion for orchids, roses, trees, or even turf. “The conference will help bring communication closer so plant patenters will know what the industry is looking for,” Stage says. She believes the conference will “help alleviate delays before patenting” and allow the patenting process to run smoother.

Conference participants may choose from a series of lectures by experts in the plant-breeding field. These will cover every aspect from plant selection to understanding the legalities of the patenting process. In addition, a “breeder showcase” will give attendees the opportunity to discuss their work with professional breeders as well as get a glimpse of what others are developing.

“Independent breeders have the vision of what kind of new plants we need—plants that can thrive in areas of sun and shade complete with features that consumers love,” says Terril Nell, program organizer for the conference and chair of the University of Florida Environmental Horticulture Department. “The conference will link [these breeders] with people doing breeding on an international level, so that they can be recognized and finally get their plants to gardeners.”

Early registration ends October 21. Attendees may register on site at the conference for an additional fee. For more information, call (352) 392-5930 or log on to http://conference.ifas.ufl.edu/IPBC.

—William Clattenburg, Editorial Intern

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**SOUTHEAST**


**NORTH CENTRAL**


**SEPTEMBER / OCTOBER 2005 57**
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**Special invitations** to educational programs such as the AHS Garden Schools and AHS partner events that include the Epcot International Flower & Garden Festival and the Colonial Williamsburg Foundation Garden Symposium.

**AHS Online** Our Web site (www.ahs.org) contains a wealth of information, including articles from *The American Gardener*, members-only pages with special information and updates, and links to other prominent gardening sites.

**George Washington's River Farm** The AHS's National Headquarters is located on a scenic 25-acre site overlooking the Potomac River. Formed one of our First President's farms, the property now features an artful blend of naturalistic and formal gardens that offer year-round delight to visitors of all ages.

**National Children and Youth Garden Symposium** Since 1993, this annual program has led the way in promoting the value of children's gardens and garden-based education.

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**Online Gardening Courses** Enroll in state-of-the-art online garden classes through AHS's partnership with the Horticultural Gardening Institute of Michigan State University.

**Heat Tolerance Map** In 1997, AHS introduced the AHS Plant Heat Zone Map, which has revolutionized the way American gardeners select region-appropriate plants.

**Book Program** AHS and DK Publishing, Inc., have teamed up to create a definitive horticultural reference library for the 21st century.

**SMARTGARDEN™** Launched in 2000, this AHS program uses existing tools, such as the USDA Plant Hardiness and AHS Plant Heat Zone codes, and considers new criteria to develop guidelines that best reinforce our stewardship of the earth.

**Horticultural Intern Program** Horticulture students from around the country get hands-on experience in garden maintenance and design and an opportunity to work with leading gardening experts.

**National Awards Program** The Great American Gardeners Awards recognizes individuals and organizations who have made significant contributions to horticulture. The Flower Show Awards spotlight earth-friendly garden displays at flower shows. Noteworthy garden books are the focus for our Book Awards program.

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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 codes tend to be conservative; plants may grow outside the ranges indicated. A USDA zone rating of 0–0 means that the plant is a true annual and completes its life cycle in a year or less.

To purchase a two-by-three-foot glossy AHS Plant Heat Zone Map for $9.95, call (800) 777-7931 or visit www.ahs.org. Hardiness and Heat zone codes are generated by AHS and documented in the Showtime© database, owned by Arabella Dane.
In autumn, the gardens at River Farm start to wind down as the days grow cooler and shorter. While most of the plants in the perennial borders have already put on their last show, a few are just warming up. One of these is the narrow-leaved or swamp sunflower (*Helianthus angustifolius*, USDA Zones 6–9, AHS Zones 9–4). Native to the eastern and south-central United States, this late-bloomer grows up to seven feet tall and attracts a variety of wildlife. It bears a profusion of golden flowers that look particularly striking when viewed against a clear blue October sky.
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