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The Magazine of the American Horticultural Society

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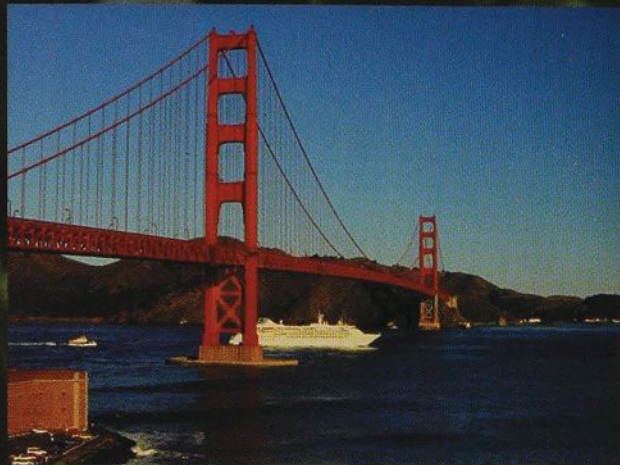


Spice Up Summer
with Species Lilies

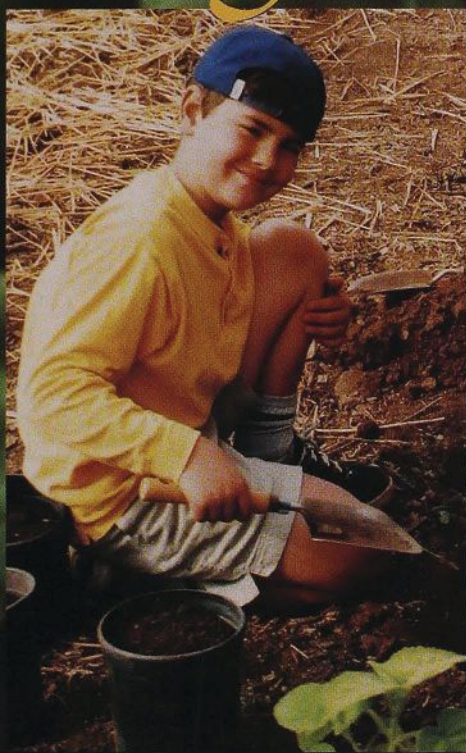
American Horticultural Society's 2002 Children and Youth Garden Symposium

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- ❖ A choice of three tours each day will take you to the San Francisco Bay area's most exciting and innovative garden-based programs.
- ❖ Keynotes will address the two areas of focus and how their importance can be brought to light through gardens and gardening and explain the vital relationship between the two.
- ❖ Afternoon breakout sessions give a national and regional perspective on programs that teach nutrition and environmental education through gardens.
- ❖ A full-day pre-conference at Life Lab Science Program's beautiful facilities in Santa Cruz. Come explore this unique new learning center located on the 25-acre farm at the University of California, Santa Cruz. Participants will experience garden-based science activities from the award winning Life Lab curriculum, savor a farm-fresh lunch from our Garden Kitchen, and tour the Center for Agroecology and Sustainable Food Systems.
- ❖ Thursday night's optional dinner features Delaine Eastin's keynote address, where she will share her vision of the successful "Garden in Every School" initiative, and the presentation to this year's Jane L. Taylor award for youth garden excellence—the National Gardening Association. Entertainment will be provided by the Banana Slug String Band.
- ❖ Expanded exhibit area and informal/formal networking opportunities at the hotel in the afternoons.

The cost of registration is \$69 per day. The Life Lab pre-conference is \$99. The optional dinner Thursday night is \$45. Attendees of the symposium may register at the Holiday Inn Golden Gateway and receive AHS's discounted rate of \$119 by calling 415-447-3008. Full details and online registration will be available in May on the AHS Web site at www.ahs.org, or call 1-800-777-7931 for a brochure.

This symposium was made possible with the help of its generous supporters which include the Stanley Smith Horticultural Trust, Marshall.Tyler.Rausch, Carole Hofley and Waupaca Materials.

Co-sponsors of this year's event include the California State Department of Education, Food, Land & People, Life Lab Science Program, California State Department of Education, the University of California - 4-H Center for Youth Development and the University of California Botanical Gardens.

REGISTER TODAY!

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AMERICAN HORTICULTURAL SOCIETY

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The American Horticultural Society (AHS) educates and inspires people of all ages to become successful and environmentally responsible gardeners by advancing the art and science of horticulture.

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GREAT AMERICAN GARDENERS

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INTERN PROGRAM

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

RECIPROCAL ADMISSIONS PROGRAM

The AHS Reciprocal Admissions Program offers members free and discounted admission to flower shows and botanical gardens throughout North America. A list of participating shows and gardens can be found in this year's *AHS Member Guide* and also in the Membership area of our Web site.

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WEB SITE: WWW.AHS.ORG

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

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For information about the Society's annual Youth Garden Symposia (YGS), call (800) 777-7931, or visit the Events section of our Web site.

The American GARDENER

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An Inside Look

HERE IN THE East we have suffered through one of the driest periods on record, but relief seems to finally be on the way. After months of little or no rain, I am beginning to see puddles on the runways of some airports and on the cleared spaces along the highways. It's a sign that the thirsty ground is finally not soaking up every bit of precipitation that falls.

Despite this relief, it seems certain that water availability will be the number one issue of the 2002 garden season. In the East and in the Pacific Northwest, we take it for granted—and even complain when it rains too much—but during droughts we get a feel for what our fellow gardeners in the Southwest and the Great Plains face on a regular basis.

Because of the drought, I've noticed a lot of newspapers and television shows promoting smart watering practices. That's helpful, but smart watering practices should be used year round rather than just in times of water shortages. Watering wisely is an important component of the SMARTGARDEN™ program that AHS has been promoting for the last two years.

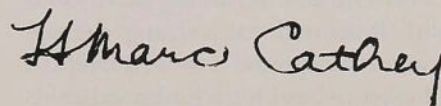
A SMARTGARDEN™ article on water conservation published in the July/August 2000 issue of *The American Gardener* suggested watering plants regularly and deeply, using drip or trickle systems rather than sprinklers, and mulching the soil surface to reduce evaporation. Where possible, group plants with similar moisture requirements so watering systems can be tailored to different sections of the garden.

In addition to being a critical resource, water brings an invaluable aesthetic to the garden in the shape of pools, ponds, waterfalls, and other water features. All of my mother's relatives in North Carolina had ponds that contained fish and water lilies—not to mention snakes, mosquitoes, and water hyacinths—in the back or side yards of their homes. In an emergency, these were used to water seedling tobacco plants prior to transplanting to the farm, as well as the vegetable and fruit garden. Since the land my mother's family occupied was just above the water table, drainage ditches and flat-bottom boats were an essential part of the gardening scheme, too.

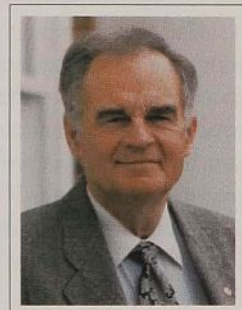
Today we have much improved water gardening equipment and know-how available to us, including pool liners, lightweight piping, recirculating pumps, and new methods to control algae. If you don't already have a water feature in your garden, Associate Editor Carole Ottesen's article in this issue on how to install a pond will inspire you. Using a flexible liner, a basic small pond can be created over the course of a weekend.

Meanwhile, the forces of nature will challenge all of our growing skills this coming summer. Keep gardening, because better days are coming.

Ever in green,



—H. Marc Cathey, AHS President Emeritus





Members' Forum

WEEPING WITH DELIGHT

I just chanced upon my first issue of *The American Gardener* (January/February 2002) at a local bookstore. What a marvelous magazine!

I especially enjoyed Carole Ottesen's article on weeping trees. We began landscaping a brand new home four years ago, and our garden has largely been designed around a number of small weeping trees as well as other dwarf trees. The weeping trees give our garden interesting and dramatic focal points from every vantage point and complement just about everything else we plant!

The photo on page 47 of the weeping blue atlas cedar was alone worth the price of the magazine. I have a little one—probably three or four years old—that I can hardly wait to see grow into such a beautiful specimen! Thanks again for your delightful magazine. I'll watch for it in the bookstore from now on.

Ken Martin
Thornton, Colorado

EDITOR'S RESPONSE: *We're glad you enjoy the magazine. You can be sure of getting every issue by becoming a member of AHS. Plus, you'll get all the other benefits of membership such as our annual Seed Exchange, toll-free gardening hotline, and free admission to many flower shows and botanical gardens. Call (800) 777-7931 to join.*

WHAT MAKES A TREE WEEP?

I was startled to read in Carole Ottesen's otherwise wonderful article on weeping trees (January/February) a quote from Guy Sternberg explaining why trees weep, in which he said (regarding gravity and light) "if the response is strong, the tree grows starkly upright; if weak, it weeps."

In 1990, when I was a garden writer for *The New York Times*, I did a story on weeping trees. Here is an excerpt from that piece that contains what seems to be a different explanation by Peter Del Tredici of

the Arnold Arboretum in Boston:

"What makes a plant pendulous or drooping in the first place? Peter Del Tredici was so smitten by what he has called the 'mystery of Sargent's weeping hemlock,' that he spent several years studying the species and eventually wrote a book about it titled *A Giant Among the Dwarfs*.

'We don't know quite why it happens, but the weeping form is a mutation,' said Del Tredici. What we do know, he said, is that most plants have a single growing point that remains dominant so that the whole trunk grows vertical and straight.

In weeping trees, this control mechanism is somehow disrupted, he said. 'Instead of developing an upright trunk from a vertical growing shoot, weeping trees develop by superimposing one layer of horizontal growth on top of the previous one. This horizontal growth pattern is called plagiotropism.'"

Linda Yang
New York, New York

SEED EXCHANGE CAUTION

I just perused the 2002 Seed Exchange list [that was included with the January/February issue mailed to AHS members] and once again am impressed by what a great program this is. However, I want to note that at least two of the plants offered—

Isatis tinctoria (dyer's woad) and *Hypericum perforatum* (St. John's wort)—are currently on Montana's Noxious Weed Species List. Please remove these plants from your list. We can't always identify which plants will become noxious weeds in our communities, but we can prevent spreading known noxious weeds.

Madeline Mazurski
Missoula, Montana

EDITOR'S RESPONSE: *When selecting the seeds offered through our annual Seed Exchange, our horticultural staff is careful to avoid including invasive species. However, many plants are invasive in some regions but well behaved in other areas. In this case, we did include a warning in the descriptions of both seeds that they were potentially invasive in certain areas of the West.*

Clarification

In editing the section on the Arisaema Web group in Marge Talt's article "Gardening Online" (January/February), we inadvertently made it sound as if joining the Arisaema Enthusiasts Group required a payment of dues. The only requirement is submitting a list of any *Arisaema* you are growing (or would like to grow). To join, send an e-mail to Ray Stillwell at GRSJr@worldnet.att.net.

Corrections for March/April Issue

☛ Sarah Lawrence College, mentioned in an article on Heather Lutz on page 9, is located in Bronxville, New York.

☛ The plant identified as desert marigold on page 48 is actually angelita daisy (*Tetranneuris scaposa*, also listed as *Hymenoxys scaposa*).

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.

Notice of AHS Business Meeting

On Thursday, June 6, the American Horticultural Society's Annual Business Meeting will be held from 8:30 to 9:00 a.m. at the Renaissance Madison Hotel in Seattle, Washington, in conjunction with the Society's Great American Gardeners Annual Conference. AHS members are welcome to attend.

AHS 80th Anniversary: 1922–2002

≈ AHS Retrospective ≈

AHS IN TRANSITION: (1948–1960)

IN 1948, as America moved into a post-war economic and social boom, the Society's membership stood at less than 2,000, and its leadership faced important decisions about the direction of the organization. The next decade would see a transition from a mainly volunteer-run association to one run by a professional staff, and an expansion of the Society's publications and programs. "During that period some changes were made to try to bolster the Society's status and membership," says retired plant explorer John Creech, who was AHS president from 1953 to 1956 and later served as a director of the U.S. National Arboretum.

"These included publishing an interim newsletter to supplement the quarterly magazine, moving toward color photographs in the magazine, and hiring paid staff."

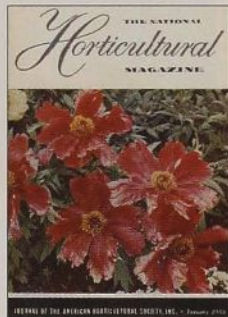
Until the 1950s, the Society had existed mainly through the efforts of a corps of dedicated volunteers, most notably the workhorse editor of the Society's acclaimed *National Horticultural Magazine*, Benjamin Y. Morrison. But Morrison was preparing to retire from his full-time position as director of the U.S. National Arboretum in Washington, D.C., so it became clear that a successor needed to be found. In 1950, James R. Harlow, a Morrison protégé at the National Arboretum, was hired to assist him with the magazine.

Morrison retired from the Arboretum and moved to Mississippi in 1951, but with Harlow's help continued to edit the magazine until 1964, completing a 37-year tenure as a "volunteer" editor of what he had almost single-handedly turned into the most authoritative horticultural publication in America. In Oc-

tober 1954, the last of Morrison's hand-cut woodcuts of plants graced the cover of the magazine. In 1955 a new cover design debuted, featuring photographs or drawings of plants against a colored background.

BROADENING OUTREACH

The Society was particularly low on funds at that time, and for a while in the early 1950s, AHS headquarters was listed as 1600 Bladensburg Road in Washington, D.C., which, Creech says, was "a rented apartment above a flower shop across from the entrance to the National Arboretum." For the first time, a membership recruitment campaign was instituted in 1951.



broaden its outreach to members.

To supplement the quarterly magazine, a newsletter titled the "AHS Gardener's Forum" was launched in January 1957. John R. Deatherage was first editor of the newsletter, which came out eight times a year. Articles in the newsletter were shorter and less formal than those in the magazine, focusing on current horticultural news and keeping members abreast of Society activities and events.

In 1958, the Society sponsored publication of *The Azalea Book*, written by Frederic P. Lee and published by D. Van Nostrand Company of Princeton, New Jersey. The book, an expansion of an azalea handbook published in the January 1952 issue of the magazine, was among the

AHS Presidents 1948–1960

Henry E. Allanson (1947–1948)
Fred O. Coe (1949–1951)
Freeman A. Weiss (1951–1953)
John L. Creech (1953–1956)
Donovan S. Correll (1956–1957)
Stuart M. Armstrong (1957–1959)
Richard P. White (1959–1961)

best references on the topic available at that time and brought the Society valuable income in the form of royalties. A second edition was issued in 1965.

A year later, the Society instituted what has over the years become a favorite program with members—an annual seed distribution, now called the Annual Seed Exchange. According to Creech, this new program succeeded mainly because of the efforts of active volunteers Francis Patterson-Knight and Grace P. Wilson.

IMPORTANT MERGER

As the 1950s came to a close, the Society's membership had increased to nearly 5,000, and it was negotiating a merger with the American Horticultural Council (AHC), a like-minded organization that had been established in 1946 to serve as an umbrella group for horticulture (for more on the AHC, see the AHS 80th Anniversary article in the March/April 2002 issue of *The American Gardener*).

The merger, seen as a way of pooling resources and talents from both organizations was approved in November 1959 and became effective January 6, 1960, with the hybrid organization going forward under the name of the American Horticultural Society. The Society's stated objective was "to promote and encourage national interest in scientific research and education in horticulture and all of its branches."

Next issue: The turbulent 1960s



News

AHS Programs and Events

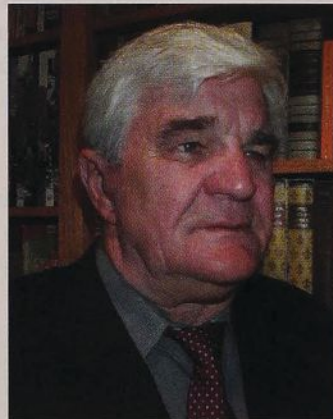
Green Industry Leaders Bring New Vision to AHS

TWO INTERNATIONALLY renowned horticultural experts are teaming up to lead the American Horticultural Society's new vision for American gardening. **Katy Moss Warner**, former director of horticulture and environmental initiatives at the Walt Disney World Resort in Florida, took over as the Society's new CEO and president in April. As she begins her tenure at AHS, Katy will be working closely with **Kurt Bluemel**, who is the incoming board chair. The owner of Kurt Bluemel Nursery, a landscape design-build company and nursery in Baldwin, Maryland, Kurt takes over from horticulture industry consultant **Jim Corfield** of Geneva, Illinois, who will stay on the board as immediate past chair. "We are so very fortunate at this time to have in Katy and Kurt two people who combine horticultural skills, business experience, and leadership qualities," says Jim. "Their passionate commitment to the Society and to gardening is truly inspiring."

A member of AHS since 1980, Katy served on the AHS Board of Directors for 10 years in a variety of capacities, including as chair from 1998 to 2000. "I bring to this position a strong belief in the important role new media and technology can play in horticulture," says Katy, "and I feel the Society's River Farm headquarters can serve as a model for gardening in America." Forging close relationships with other horticultural and non-horticultural organizations is also high on Katy's priority list. "Creating partnerships with like-minded groups will help AHS expose more Americans to

the importance of gardening," she says.

Kurt, who was trained in horticulture and landscape design in Germany and Switzerland, is known as one of the earliest proponents of the current trend for using ornamental grasses in garden design. His landscape design company works with



New leadership at AHS: Katy Moss Warner and Kurt Bluemel.

"We need to make plants and gardens fun, colorful, and lively so that we can stay focused on the important role they play in our lives."

—Katy Moss Warner, AHS President/CEO

Fortune 500 companies, zoos, theme parks, and businesses throughout North America and overseas. He is a past president of the Perennial Plant Association and lectures to gardening groups and organizations around the world. "I am very excited about the prospect of working with Katy," says Kurt. "You could not find any more charismatic or experienced leader to step in at this point in AHS's history."

Katy has received numerous awards for her work, especially for her focus on environmentally responsible horticulture. Most recently, in April, she was awarded the Garden Club of America's Margaret Douglas Medal for notable service in the cause of conservation education. She is

also a recipient of the George Robert White Medal from the Massachusetts Horticultural Society and the Award of Excellence from the National Council of State Garden Clubs.

A strong proponent of the importance of touching children's lives through plants and gardens, Katy is currently helping to develop a curriculum-based schoolyard garden at the Garrison Union Free School, a public elementary school in Garrison, New York. During her tenure at Disney she worked closely with four different children's gardens in the Orlando area. She has been a member of the AHS Youth Garden Advisory Panel for four years and in that capacity has been very supportive of the Society's Children and Youth Garden symposia and the establishment of AHS's Jane L. Taylor Award for excellence in children's gardening.

One of the most important lessons Katy learned at Disney is that gardens need to be engaging and inventive. "As modern Americans, we face a multitude of daily distractions. We need to make plants and gardens fun, colorful, and lively so that we can stay focused on the important role they play in our lives," says Katy. "At the same time, we should do everything we can to honor our environmental responsibility as stewards of this beautiful land of ours."

New Direction for AHS

IN FEBRUARY, the American Horticultural Society's Board of Directors set a new direction by enthusiastically adopting a new vision for the Society: "Making America a nation of gardeners, a land of gardens." Over the past year, a visioning committee led by **Susie Usrey**, vice president of Consulting Services for Monrovia nursery in Azusa, California, has been working on this new direction. "AHS has served American gardeners well for the last 80 years," says Susie, "but the world is a changed place and this visioning process will help us adapt to better meet the needs of today's world and today's gardeners."

AHS President **Katy Moss Warner** has been actively working with the visioning committee since its inception. "In kicking off this process, we start with big goals: Connect every person in America with plants and gardens and create a land of gardeners," says Katy.

The visioning committee is continuing to meet to develop programs associated

with this new direction and would welcome your feedback during this process. You can share your thoughts with us by calling (800) 777-7931 or e-mailing to feedback@ahs.org.

New Officers and Board

AMONG THE Board officers, **Arabella Dane** of Boston, Massachusetts, will be moving to first vice chair. Arabella is a Garden Club of America horticulture and flower arranging judge as well as a master flower show judge and landscape consultant for the National Council of State Garden Clubs. Other officers are **Valerie Thomas** of Alexandria, Virginia, second vice chair; **Albin MacDonough (Mac)** Plant of Baltimore, Maryland, secretary; and **Christine Perdue** of Middleburg, Virginia, treasurer.

Incoming members of the Society's Board of Directors for 2002 include **Dr. Allan Armitage**, professor of horticulture at the University of Georgia in Athens and well known horticultural author and lec-

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Grant for AHS Youth Gardening Symposium



The American Horticultural Society has received a grant from the Stanley Smith Horticultural Trust in support of the 10th Annual AHS Children and Youth Garden Symposium to be held August 1 to 3 in San Francisco (see page 2 for registration information). The trust supports education and research in ornamental horticulture at not-for-profit, tax-exempt institutions, primarily in North and South America.

The receipt of this grant will allow AHS to once again offer the symposium registration fees at a lower rate, which is an important consideration at this time when budgets for education and teacher training are tight.

The focus of this year's symposium is nutrition and environmental education, two areas that are of particular interest in garden-based school programs today.

AHS Co-Sponsors Cleveland Youth Garden Event

AHS is proud to be a co-sponsor of the Cleveland Botanical Garden's "Ripe from Downtown" Symposium to be held July 18 to 20 at the garden in Cleveland. This symposium will present the best ideas, model programs, and resources for horticultural and community organizations to create educationally and financially successful garden-based entrepreneur programs for youth—especially urban teens.

Among the nationally recognized programs featured will be Los Angeles' Food from the Hood™, Cleveland Botanical Garden's Ripe from Downtown, Boston's The Food Project's Urban Enterprise Program, and Seattle's Youth Garden Works.

For information about the symposium call (216) 721-1600 or visit the Cleveland Botanical Garden's Web site at www.cbgbgarden.org.

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turer; **Dr. William E. Barrick**, executive director of horticulture at Bellingrath Gardens in Theodore, Alabama; **Katherine Stark Bull** of Washington, D.C., from the Stark Nurseries family; **M. James Leider**, president and CEO of Leider Horticultural Companies in Buffalo Grove, Illinois; **Felder Rushing** of Jackson, Mississippi, a horticulturist, garden columnist, and award-winning author; and **Robert D. Volk** of San Marino, California, who is past president of the Men's Garden Club of Los Angeles and a member of the Southern California Horticulture Society.

CONTACT BOARD MEMBERS

The AHS Board of Directors welcomes feedback from members. If you have questions or thoughts about the Society that you'd like to share with one or all of the members of the AHS Board of Directors, you can contact them by sending an e-mail to boardofdirectors@ahs.org, or contact Board Chair **Kurt Bluemel** directly by sending an e-mail to kbluemel@ahs.org.

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River Farm Weekend Hours

NOW THAT summer is here again, River Farm is open to the public on Saturdays from 9 a.m. to 1 p.m. once again. A number of educational programs will be held on select Saturdays, starting June 1 with a special two-hour class on building with bamboo that will be hosted by **Ed Raduazo**, an AHS volunteer.

Raduazo is an expert craftsman who converts bamboo stems into a variety of attractive and functional gardening structures, such as trellises, arbors, plant cages, and other supports.

The cost of the bamboo program is \$20 (\$16 for AHS members). This program is expected to be very popular, so early reservations are recommended. Call (703) 768-5700, extension 124, to reserve a spot. Other weekend programs at River Farm will be announced soon.

If you are planning to visit the Washington, D.C., area this summer and are interested in attending a program, please give us a call.

2002 AHS Book Award Winners

Timber Press of Portland, Oregon, nearly swept the 2002 AHS Book Awards, winning four out of the five awards selected this year by the Society's Book Award committee. Publisher W.W. Norton of New York City averted a clean sweep by winning for *The Greater Perfection*, by Francis H. Cabot.

The award winners profiled here were selected from among all American gardening books published in 2001. Thomas Cooper of Watertown, Massachusetts, editor of *The Gardener* magazine, chaired this year's committee, which also included Linda Askey of Birmingham, Alabama, former senior writer for *Southern Living* magazine; Dick Dunmire of Los Altos, California, a former editor of the *Sunset Western Garden Book*; Susan Eubank, librarian at the Grand Canyon National Park library in Arizona; Rommy Lopat of Richmond, Illinois, a garden writer and former editor of *The Weedpatch Gazette*; and Marco Polo Stufano, who retired last year after 34 years as director of horticulture at Wave Hill in New York City.

This year's book awards will be presented to the publishers at the Society's Great American Gardeners Annual Conference, to be held in Seattle, June 6 to 8.

Books that have received the AHS annual award can be distinguished by a gold seal embossed with the Society's name. Look for these books in your local bookstore.

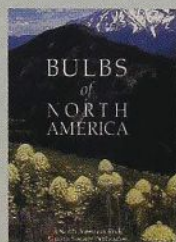
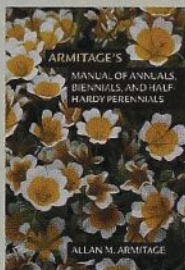
Armitage's Manual of Annuals, Biennials, and Half-hardy Perennials by Allan M. Armitage. Timber Press, Portland, Oregon, 2001. Publisher's price, hardcover: \$39.95.

THIS ENCYCLOPEDIC guide to annuals, biennials, and tender perennials was hailed as the most comprehensive book on the topic published in recent years. "I've been waiting for this book for years," said Linda Askey. "I found the opinionated writing delightful and the coverage of what is available in this category in the marketplace excellent."

Susan Eubank described it as "a necessary and useful book that will be an indispensable reference for many gardeners."

Bulbs of North America, edited by Jane McGary. Timber Press, Portland, Oregon, 2001. Publisher's price, hardcover: \$34.95.

A COOPERATIVE effort between Timber Press and the North American Rock Garden Society, this book received acclaim for its authoritative and comprehensive coverage of a relatively unexplored area of horticulture. "There's no comparable book on this topic that I know of," said Tom Cooper, "so this will



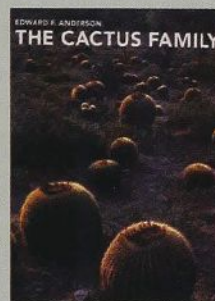
become an essential addition to any collection of books about growing bulbs."

Marco Polo Stufano said, "This book describes a great many different bulbs in a broad and knowledgeable fashion."

The Cactus Family by Edward F. Anderson. Timber Press, Portland, Oregon, 2001. Publisher's price: \$99.95.

AS WITH THE bulb book, this monographic treatment of the cactus family was highly commended for its authoritative coverage of an important group of plants indigenous to the Americas.

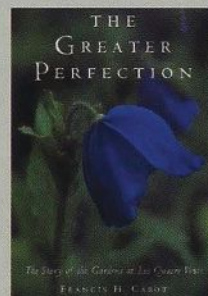
"This is a very thorough treatment of the subject—there's little more you could learn about cacti after reading this book," said Dick Dunmire. "A book like this enriches our knowledge and may encourage people's interest in growing unusual plants," said Stufano.



The Greater Perfection by Francis H. Cabot. W.W. Norton & Company, New York, New York, 2001. Publisher's price, hardcover: \$75.

FRANK CABOT'S evocative description of the creation of his acclaimed garden Les Quatre Vents received across the board praise. "The book is written by a consummate plantsman who has created a significant garden," said Stufano. "It is intelligently written, beautiful to look at, and inspiring."

"My expectation was of a well-written book," said Askey, "but upon its arrival the only way I can describe my reaction to it is: Jaw dropping."



Insects and Gardens: In Pursuit of Garden Ecology by Eric Grissell. Timber Press, Portland, Oregon, 2001. Publisher's price, hardcover: \$29.95.

"ON FIRST glance understanding insects seems to be a very unlikely subject for a garden book, but I found it a pretty impressive little volume," said Cooper. "It addresses an area that no one has really ventured into before."

Rommy Lopat liked the book's ecological approach to gardening and the author's self-deprecating humor. "It's a highly readable book that ought to be read in every classroom," she said. ♪



SMARTGARDEN™ —Improving Soil Drainage



The water-holding capacity of soil affects plant selection in a garden

When it comes to the movement of air and water through soil, drainage and water holding capacity are two sides of the same coin. Plants that require abundant water—think of a bog garden—thrive where the water holding capacity of a soil is very high. Alternatively, xeriphytic plants, with their low moisture requirement, would most likely rot under boggy conditions; these plants need a soil with sharp drainage. The drainage requirement of most garden plants falls somewhere in the middle.

WATER MOTION

When it rains or when we supplement rainfall with irrigation, water fills the pore spaces between soil particles and aggregates. Gravity pulls water downward through the soil. The size of the pores determines how quickly water moves, and conversely, how long it is retained.

The texture of your soil—whether it is primarily sand, silt, or clay—and the content of organic matter largely determine the rate of this movement. Coarse textured (sandy) soils tend to drain quickly, retaining little water. Fine textured (clay) soils retain both water and nutrients longer than a sandy soil, but may become waterlogged. A loamy soil contains particles of various sizes and usually a good bit of humus. Water drains through loam at a rate that allows plants to receive sufficient air and water to meet their needs.

You can approximate your soil's texture by taking a two-cup soil sample to a depth of six inches and placing it in a quart jar. Add water until it is nearly full and cover it securely. Shake the mixture well, then let it sit for about 24 hours. The soil will settle into the following layers: sand, because it is heaviest, on the bottom; silt, with its mid-size particles, in the middle; and clay on top. Organic matter will float on the water's surface. This profile allows you to visually determine the relative components of your soil that are responsible for its texture.

Another factor that influences water drainage or retention of your soil is compaction. Heavy foot traffic or construction can compress soil, resulting in a critical loss of pore space that diminishes both drainage and water-holding capacity. Even when your topsoil is in good condition, drainage problems can occur if the subsoil is compacted or there is a hardpan that impedes water movement.

TESTING FOR DRAINAGE

Determining how well your soil drains helps you select plants with water requirements appropriate to your site, or identify the need to improve the drainage.

To assess your soil's drainage, perform the following

test: Wait at least a few days after a rain, until your soil has dried a bit, then dig a hole four inches deep, large enough to accommodate a 46-ounce can (a large juice can) with both top and bottom removed. Set the can in the hole and firm soil around the outside of the can. Fill the can to the top with water and observe how long it takes for the water to drain.

Ideally, the water level will drop about two inches after an hour. This indicates that your soil drains well, but also will retain the moisture necessary for the healthy growth of a wide range of garden plants.

If the water level drops less than an inch after an hour, your soil does not display sufficient drainage to accommodate most plants. Either you will have to limit your choice of plants to those that like constant moisture or "wet feet," or you will have to take measures to improve the drainage.

If the water level drops more than four inches in an hour, your soil drains too fast, and unless you plan to grow only plants that tolerate very dry soils, you will need to add organic matter to help retain more soil moisture.

Remember that different areas of your landscape may display marked differences in drainage. You may want to perform this test in several locations.

DEALING WITH POOR DRAINAGE

If your soil drains too slowly, you have several options. You can limit your selection to plants that like wet soils (see "Blooming Bogs," *The American Gardener*, March/April 2001), or build raised beds and fill them with good, loamy soil before planting. To improve drainage of a compacted soil, add organic matter. If the subsoil is compacted, you may need to break up the hardpan or add subsurface drainage tiles that will carry excess water away from planting areas.

For vegetable gardens with poor drainage, a hill-and-furrow planting method can be practiced: Broad rows can be built up several inches above the soil surface with furrows running between the rows to divert excess water. Conversely, if your soil drains too fast, use the furrows for planting. Rain or irrigation water will be channeled into the furrows where plants are growing.

For gardens where the soil drains too fast, the addition of organic matter will improve the water holding capacity, and mulching will reduce evaporation loss. But supplemental irrigation may be necessary unless you choose plants that thrive in dry soils (see "Cold Hardy Cacti," *The American Gardener*, March/April 2000, for some interesting suggestions).

Rita Pelczar, Associate Editor



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Gardener's Notebook

Horticultural News and Research

CONTROVERSY OVER PROPOSED "WHITE" LIST

OVER THE last several months, word that a federal government-sponsored committee had proposed regulations that would ban the importation, sale, and even possession of plants not listed on a "white" or "clean" list has been raising concern among gardeners, nursery owners, plant societies, and plant industry officials.

One fear, in particular, is that the regulations might be adopted before enough people had a chance to comment on them. But Alan V. Tasker, manager of the National Noxious Weed Program for the U. S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) says there is still plenty of time for public comment before the proposed new regulations become law. "There is not, at this point, a formal proposal," he says. "It will go through at least two cycles of public hearings. We have a stakeholders' registry on the APHIS Web site, www.aphis.usda.gov/ppq." Tasker urges interested parties to register as a stakeholder.

Controlling invasive species is a costly national problem. "It is now estimated by Cornell University at \$137 billion annually," says Bonnie Harper-Lore ecologist for the Federal Highway Commission of the Department of Transportation. "The ecological cost is also enormous," she adds, "but not so easily quantified."

In response to this problem, the USDA assembled a National Plant Board of 43 state plant regulatory officials to explore the issue. But critics suggest that none of the appointed board members represent nurseries, plant societies, or gardeners.

Joyce Fingerut, president of the North American Rock Garden Society, says one of the board's proposals is for a modified white list. "Previously, plants and seeds had always been checked against a black list, on which all forbidden plants are listed," she explains, as opposed to vegetables and fruits, which had always been

checked against a white list that listed allowed plants. "The idea is to bring the two different types of quarantine in line," she says.

According to Tasker, an Australian program served as a model for the weed regulations currently under consideration. There, the government grandfathered plants already in the country and conducts risk assessment only on new plants coming in. "If we do something, it will probably be along those lines," he adds. "There is no way we can shut down American trade and prevent people doing what they want to do in their home gardens."

The specter of a white list has caused some soul-searching in the green industry.

In January this year, APHIS published the Draft Action Plan for the Noxious Weed Program and made it available on the Internet. Immediately, cyberspace was abuzz with comments and reactions to the proposed "white" list. Based on the confusing language of the draft plan, which cited a recommendation by the National Plant Board for a "modified clean list," many people concluded that it was suggesting that all plants—those currently grown or those yet to be introduced—could not be legally grown or sold until they were certified as non-invasive. The big question in people's minds was, who would make the decisions on what was considered invasive? "It is very scary to think that someone who can't tell a petunia from a park bench can determine what is and is not to be destroyed and where," wrote AHS member Marge Talt on the AHS Gardening Community Listserv.

Some are more sanguine at the prospect of a white list. Neil Diboll, president of Prairie Nursery in Westfield, Wisconsin, says, "It doesn't hurt to sit back for a while and evaluate the wisdom of allowing unrestricted entry of

non-native plants into our landscapes."

Others prefer self-regulation. Dan Heims of Terra Nova Nurseries in Canby, Oregon, says he has more than once "made the conscious decision to stop selling a plant." He suggests APHIS should identify the noxious or invasive plants but allow nurseries to voluntarily comply.

One thing is certain: The specter of a white list has caused some soul-searching in the green industry. The American Nursery and Landscape Association (ANLA) is "currently focusing on implementing voluntary industry-wide invasive species codes of conduct," says Craig Regelbrugge, ANLA senior director of government relations. "The codes will encourage those introducing plants new to North America to take prudent measures to assess their invasiveness potential prior to marketing and sale. ANLA also plans to work with industry and outside experts to develop the specific management and decision tools needed to implement the codes."

ECO-FRIENDLY GOATS ELIMINATE WEEDS

THE NEWEST weapon in the Integrated Pest Management (IPM) arsenal has four legs, horns, and a ravenous appetite for weeds. Goats are being dispatched into sensitive areas such as along river banks or wildlife sanctuaries, where using herbicides



Goats are not fussy eaters and will dine on almost any vegetation.

to control invasive exotic weeds such as scotch broom, knapweed, bamboo, and *Rosa multiflora* is particularly problematic.

Goats are an eco-friendly alternative to herbicides. Called "weed-eating machines" by their keepers, they can be tethered or fenced into sensitive areas where they will browse on every leafy spurge or Canada thistle in sight, but, unlike sheep, which tend to overgraze, goats won't eat grass unless there's nothing else left for them. "They eat multiflora rose!" says Betsy Lyman, director of Science and Stewardship at the Nature Conservancy, of the goats they brought in to browse on woody weeds in Nottingham Country Park in Chester County, Pennsylvania. "They are actually more fond of woody plants than herbaceous," says Karen Budd, formerly with the Nature Conservancy. "For us they are a lot of *Smilax rotundifolia*."

The cities of Denver, Colorado, and Cheyenne, Wyoming, are among those leasing goats to fight weeds. In parts of California, where the threat of fires during periods of drought is present, goats eliminate the tinder that dried weeds

provide. Goats have also been put to work on the slopes of Vail, Colorado. And at the Jackson Hole Land Trust, where goats have been spent four summer seasons eating weeds on a 40-acre parcel, the stewardship coordinator says, "you never get eradication, but you get control. Using goats has to be a treatment you apply over a long period."

You don't need a barn or a degree in animal husbandry to have goats eat your weeds. All you have to do is call one of the companies that leases them. Ewe4IC Ecological Services in Alpine, Wyoming, will deliver 400 ravenous cashmere goats to your weed lot. Covington Farms, near Sacramento, California, will send South African Boer goat crosses.

Two Web sites with information on goats as weedeaters are www.goatweed eaters.com and www.goatworld.com.

GARDEN LITERATURE PRESS: 10TH YEAR

HAVE YOU ever read about a plant you'd like to try and then, just when it was time to purchase it, you found you'd

forgotten what the cultivar was and where it was you'd read about it? Librarian and home gardener Sally Williams had the same problem trying to locate articles she had seen in gardening magazines. "I knew I had seen an article," she remembers, "and when I went to look it up and couldn't find an index, I couldn't believe it."



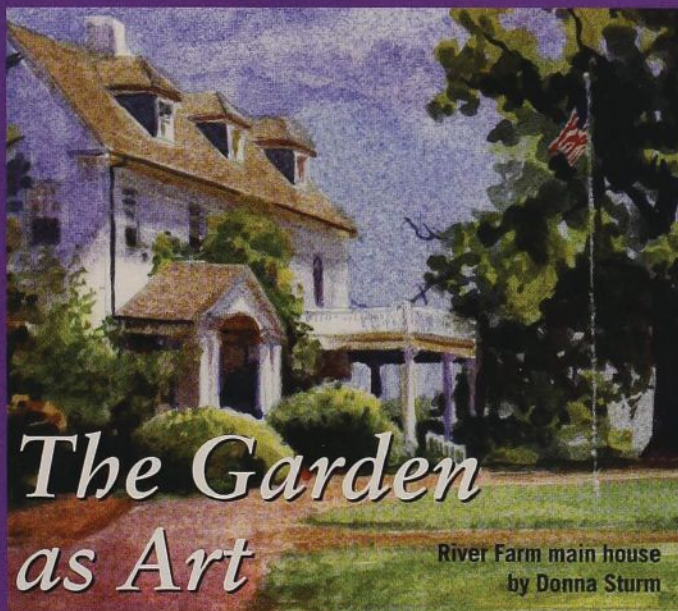
Sally Williams

Ten years ago, she decided to do something about it. "The day I realized there was a need for an index of gardening articles and I had the skills to do it, I felt as joyful as if it had rained compost," she says. She compiled and published the first *Garden Literature: An Index to Periodical Articles and Book Reviews* to enthusiastic reviews and has been published annually ever since.

An annotated listing by author and subject of articles, *Garden Literature* includes articles published in leading gar-



Anticipation is already building for the American Horticultural Society's 80th Anniversary Gala



September 28, 2002 6:00 p.m. – 10:30 p.m.

George Washington's River Farm

Headquarters of the American Horticultural Society
Alexandria, Virginia



Join Honorary Chairman, Earl "Rusty" Powell, Director of the National Gallery of Art, Washington, D.C., the AHS Board of Directors, and the Friends of River Farm for hors d'oeuvres in the gardens and dinner under tents with a spectacular view of the Potomac River. Spend an exciting evening bidding on fabulous silent and live auction items and kicking up your heels with friends in our ballroom!

Funds raised in this event will be used to preserve and maintain the historical beauty of River Farm and to increase our ability to develop River Farm as a national showplace of environmentally responsible horticulture and gardening.

Tickets: \$200 per person

To register or to make a donation, call 1-800-777-7931, ext. 110.

dening magazines both in the United States and the United Kingdom. It also includes a listing by author and title of books reviewed in those magazines. The periodicals indexed include *Allan Lacy's Homeground*, *The American Gardener*, *Brooklyn Botanic Garden Handbooks in the 21st-century Gardening Series*, *Brooklyn Botanic Garden Plants & Gardens News*, *Fine Gardening*, *Flower & Garden*, *Garden Design*, *Horticulture*, *Organic Gardening*, and *Pacific Horticulture* from the United States and *The Garden* (Royal Horticulture Society) and *Gardens Illustrated* from the United Kingdom.

Volume 10, 2001, a softcover book with approximately 200 pages, will be published in May 2002. The price is \$29.95 plus \$3.95 shipping in the United States; \$4.95 shipping to Canada. For more information, contact Garden Literature Press, 398 Columbus Avenue, No. 181, Boston, MA 02116, or call (617) 424-1784.

RENAISSANCE GRASS

SWITCH GRASS (*Panicum virgatum*), a



prairie native being considered for livestock feed, and fuel alcohol production, serves with distinction as an ornamental—a ground cover, a specimen plant, or as a transition plant in perennial borders. When used as a ground cover, it

presents the aspect of a field of wheat. Many cultivars have been developed, ranging from the scarlet 'Shenandoah' to the erect 'Heavy Metal' to the giant 'Cloud Nine.' All are carefree, tough perennials that need no supplemental water or fertilizers

Switch grass creates a stylish city meadow as it prevents erosion on this slope. once established. Extremely sturdy, and drought resistant, switch grass roots deeply—

sometimes to twice its height or more. It was the grueling labor of breaking up deep-rooted prairie grasses such as switch grass that gave prairie farmers the nickname "sod busters."

Now those deep roots have made switch grass effective for another use: curbing soil runoff. Working at the USDA Agricultural Research Service National Sedimentation Laboratory in Oxford, Mississippi, hydraulic engineer Darrel M. Temple and agronomist Seth M. Dabney tested hedges of switch grass, finding them extremely effective at controlling water-driven soil erosion. 🍂



2002 American Horticultural Society TRAVEL STUDY PROGRAM

Along the Hudson:

Gardens and Fall Color *September 14-21, 2002*



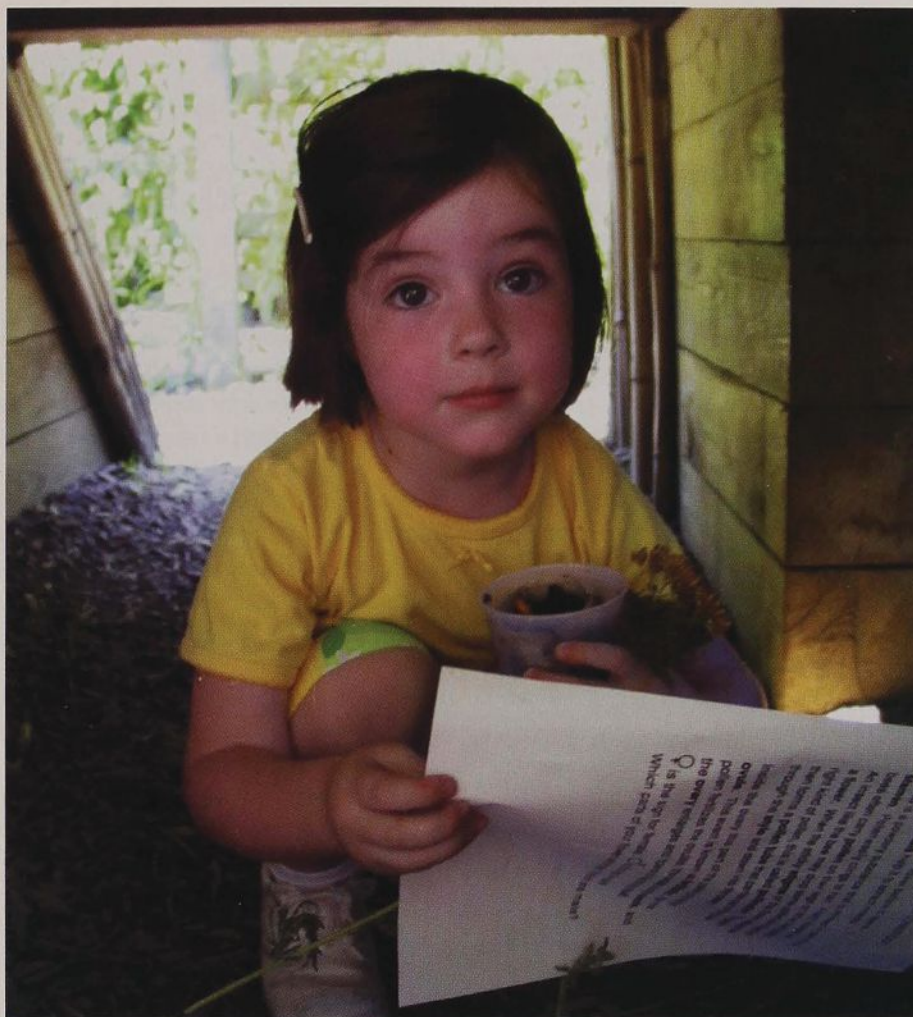
There cannot be a more wonderful way to travel than up the Hudson River to Albany, New York. On this excursion you will visit some of horticulture's hidden treasures right here in the gardens of America. And what an exceptional selection of gardens they are—from Frank Cabot's gardens at Stonecrop to Eliot C. Clarke's gardens in Lithgow, each day's tours will provide design inspiration amid beautiful autumn settings.

The hosts for this tour will be Dr. Norm Lownds, and his wife, Ann. Dr. Lownds is the Associate Professor in the Department of Horticulture at Michigan State University. He is also the Curator of the MSU 4-H Children's Garden. The Lownds' sense of adventure and fun are sure to make this a most memorable experience.

For complete details of the exciting 2002 schedule, visit the AHS Web site at www.ahs.org, or call the Leonard Haertter Travel Company at (800) 942-6666.

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

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



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

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



If you'd like to make a donation to the American Horticultural Society, please contact Ashby Pamplin at (800) 777-7931 ext. 128, or visit our Web site at www.ahs.org.

Gardeners Information Service

BLACK SPOT SPRAY

Is there a non-toxic spray you can make at home to treat black spot on roses?

—I.H., TAKOMA, WASHINGTON

Black spot is caused by the fungus *Deplocarpon rosae*. It usually appears in cool, moist weather as small, black spots on the upper surfaces of the leaves, which swiftly turn yellow and drop. If left untreated, black spot can completely defoliate a rose bush. Here is one recipe for a non-toxic homemade fungicidal spray:

- To 1 gallon of water, add:
 - 3 tablespoons baking soda
 - 1 teaspoon of horticultural oil
 - 1 teaspoon of liquid dishwashing soap

Vigorously mix the ingredients before pouring the solution into a spray bottle. Before applying, remove and dispose of infected leaves, including those that have dropped to the ground. Spray the remaining foliage thoroughly, especially the undersides. Re-apply the spray once a week as needed during the summer months.

WINTER CARE FOR CREEPING GLOXINIA

How do I overwinter the annual *Asarina erubescens* in Zone 7 Atlanta, Georgia,?

—A.M., ATLANTA, GEORGIA

Creeping gloxinia (*Asarina erubescens*) is a tender, woody vine from Mexico with gray-green foliage and bright pink trumpet-shaped flowers that have a yellow throat. Planted in full sun and well-drained soil, it blooms from June to September on a vine that can reach 10 feet tall. In your area, it is best treated as an annual, but it is possible to keep it indoors during the winter.

To do this, transplant it in early fall to a container of free-draining soilless mix and bring it inside to a south-facing window. Allow the soil to dry out between water-

AHS Gardening Community Listserv

AHS's Gardening Community Listserv allows you to connect 24-7 with gardeners around the country. Share your successes and get advice and solutions for your garden problems with real-dirt gardeners who have been there. It's easy to join. Go to the AHS



Web site (www.ahs.org), click on the "Community" subhead on the left, then click on "Listserv" on the Community page. Scroll two-thirds of the way down that page to find a link to send e-mail to the listserv address (AHG_GARDENING-SUBSCRIBE-REQUEST@home.ease.lyft.com) and follow the directions in the return e-mail. The ongoing discussions will come to you as e-mail. Here's a snippet from a recent exchange:

Help! I found that my little Serbian spruce—the one I've been nurturing for the past three years to its current 3 1/2-foot height—had its leader chewed into a 3-inch white toothpick by deer! Rats!! I recall reading that if an evergreen lost its leader, it is possible to "train" a nearby lateral as a new leader. Has any one ever done this?

—C.F., WEST CENTRAL, ILLINOIS

Yes, we bonsai fanatics routinely do this. You can use a plastic twist-tie or twine to secure the top branch to the splinter the deer left behind, or use a stake very close to the tree and tie the branch to that. In bonsai, we would wind wire around the branch to become a new leader and merely bend it up, but using the twine will work fine. You may want to use a knife to even off any ripped bark. Spray the tree or the area around it with deer repellent or a pepper spray to discourage a repeat performance.

—J.L., TALLAHASSEE, FLORIDA

ings. An alternative is to start new plants by taking cuttings any time after mid-June.

Twining snapdragon, (*Asarina procumbens*), a lax spreader with cream and yellow flowers from May through July, is a hardier relative that can survive a Zone 6 winter if planted in soil with excellent drainage and provided winter protection.

ABOUT CALAMINT

I would like to grow calamint (*Calamintha coccinea*) in my USDA Zone 7 garden in Washington, D.C. Will it live?

—J.K., WASHINGTON, D.C.

Calamintha coccinea, says Bob McCartney of Woodlanders Nursery in Aiken, South

Carolina, "is a plant of the sand ridges of north central Georgia to southern Mississippi, down into Florida. It is xerophytic, occurring on deep, sterile sand in dry sites and full sun." *C. coccinea* grows about two-and-a-half to three feet tall and bears red tubular flowers.

While it grows naturally in USDA Zones 8 and 9, "it can survive in Zone 7," says McCartney. However, excellent drainage is critical. If you have clay soil, you would need to amend it with organic matter.

William May, Gardeners Information Service Volunteer, and Marianne Polito, Gardeners Information Service Manager

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

Offshoots

Virtual Privacy

by Aurelia C. Scott

WHILE watering cleomes in her garden one summer, my friend Susan heard her name mentioned on the neighbor's side of a six-foot-high fence that divides their backyards.

"Did you see that Susan has painted her garden shed *purple*?"

"Uh-huh. Never can tell about your neighbors."

"Well, you can tell that she's not from around here, that's for sure."

Susan spent the next half hour in a back-killing crouch, not wanting the white-haired sisters on the other side of the fence to know that she had heard them. "I couldn't even go inside in case they heard the door bang!" she told me. "And the shed isn't purple—it's *lavender*."

A crouch would not have worked for me: The old chain-link fence that divides my backyard from my neighbors' yards is only three feet high, and sparrows and finches like to perch in the holes. We plan to replace it soon with picket or lattice fencing to complement the style of our 1886 Victorian house. Whichever style we choose, the fence will be no more than four feet high.

It's the neighbors, you see.

We live on Munjoy Hill in Portland, Maine, a working-class part of town where residential dwellings are mainly three-story apartment buildings and two-story-plus-attic single-family homes like ours. Backyards are tiny, and, for the most part, they abut each other.

In our case, five backyards are separated by low, rather worn fences, and in one unfenced section by a narrow bed of asters and purple dahlias. It is our own little greenbelt, which would change irrevocably should any of us ever erect a vision-blocking barrier. Instead of stockade fencing, we share a view of my perennials and herbs, Larry's perfect lawn, George's annuals,

Suzanne's wading pool, and Mary's brown metal moose statue. We make the occasional loan of trowels and offer advice on watering. We also share an intimate knowledge of what each of us wears to weed when we think no one is looking.

In a way, no one is. For we also share privacy. A looking-but-not-seeing-each-other mentality that is essential to surviving in crowded places. Knowing when to engage and when to turn away, and when to speak up and when to hold one's council, are skills shared by the inhabitants of our greenbelt. For those of you whose yards are secluded, this is how it works:



It is 10 a.m. I am pruning a buddleia when George comes out to water the marigolds along his driveway. From the corner of my eye I see that he is wearing slippers and, well, they might be blue swimming trunks decorated with yellow smiley faces, they might be short pajamas, or—I realize mid-snip—they might be boxer shorts. I move my kneeling pad several feet further into our yard and bury myself in a three-foot-high coreopsis that always needs deadheading. I snip quietly and scoot even further away toward some salvias as George holds a garden hose over

each marigold plant. Fifteen minutes pass until I hear the thwack of his screen door.

An hour later, as I am trying to tame the thorny branches of a climbing rose, George reappears wearing khaki shorts, polo shirt, and white sneakers.

"Aurelia!" He waves enthusiastically.

"Good morning, George! Such a gorgeous day."

"It certainly is. I'm glad I finally got outside to enjoy it."

I nod my complicity.

Life on Munjoy Hill is a stark contrast to my childhood home in a village in the Berkshires, where my parents still live. There, most homes have an acre of hedge-guarded yard. Sometimes when returning to my urban plot after visiting my parents, I find myself wishing for the dense stand of trees that separates my parents' back lawn from their neighbor's. Yet, my parents' backyard conversations are hushed, for they have long known what my friend Susan has learned—that voices carry even when neighbors remain unseen. Walking along Main Street, I am reminded that all the gardens here are private affairs. Only owners or invited guests are able to admire one gardener's carpet of naturalized crocuses or inhale the fragrance of another's rose.

So, for the time being, I am content with a low fence and a clear view. I like to be able to hand a fresh-picked tomato over the asters to Larry. To stand on our back deck exchanging tips with Mary about how to keep mildew off the phlox. There comes a day mid-summer when I realize that although Suzanne's children have been screaming in their wading pool all afternoon, I haven't heard a thing. Just as I know that George has never seen me in my ancient white nightgown picking raspberries—and I have never seen him wear his boxer shorts to water the marigolds.

Aurelia C. Scott is a free-lance writer living in Portland, Maine.



ARCHITECTURAL ANNUALS

Plants with proud bearings, majestic profiles, and shapely silhouettes accommodate a variety of landscaping needs—and all in a very short time.

BY RITA PELCZAR



“**I**NSTANT gratification” and “gardening” are words not often used in the same sentence. Gardening, by its very nature, is a process that involves time—often years—to achieve desired effects. Perennials and ground covers need to spread to fill their allotted spaces, and trees and shrubs must gain size to develop their characteristic form and to reconfigure the horizon.

Annuals accelerate the process. Though their effects are not exactly instantaneous, they grow at warp speed compared to most woody plants, allowing gardeners to effect lively changes in the landscape in a very short time. Certain annuals—those big, fast-growing types with bold silhouettes or towering habits—can provide dynamic results in mere weeks. They allow you to fast-forward a design, testing plant sizes and forms for your garden spaces before you go to the expense and effort of a more permanent planting.

Because they are annuals—for our purposes we include both true annuals and tender perennials grown as annuals—the

Color and growth habit are important architectural plant features. Lion's ear (*Leonotis leonurus*), left, produces upright stems bearing whorled tiers of vivid orange flowers. It grows three to six feet tall, with a spread of three feet, providing a stunning accent for a mixed border.

Opposite: Annual sunflowers (*Helianthus annuus*) range in height from one-and-a-half-foot dwarfs to 15-foot giants. The multi-stemmed types, such as 'Autumn Beauty'—shown here with the bright yellow flowers of 'Cutting Gold'—produce abundant summer blooms that double as great cut flowers.



It's hard to beat Texas plume (*Ipomopsis rubra*)—paired above with gloriosa daisies (*Rudbeckia hirta*)—for a tall, striking vertical effect in a border. Its tubular scarlet flowers appear on three- to six-foot stems beginning in midsummer and lasting into fall. A native to southern states from Texas to Florida and South Carolina, it is a biennial or short-lived perennial where winters are mild.

effect is fleeting; a repeat performance will require replanting next year. But the ephemeral nature of annuals has the built-in advantage of great flexibility.

In an architectural sense, large annuals can fulfill many roles. Some create drama as an accent in a mixed bed or alone as a specimen. Others grow quickly to form a dense hedge that screens a view or encloses a space.

Characteristics that should be considered in selecting the best annual for a specific placement and purpose include overall size (both height and spread); form (rounded, angular, erect); color (flowers and foliage) and mass (open or dense).

And, of course, the cultural preferences of a particular plant must fit the site.

You say you're considering putting in a hedge along the back fence but can't quite envision the look from your deck? Try a densely planted, double row of spider flower (*Cleome hassleriana*). You will have a three-to-four-foot hedge in a few weeks, not to mention flowers that will bloom from summer until frost. If the hedge look seems to work, you can plant something more permanent later. Another colorful option for an annual hedge is love-lies-bleeding (*Amaranthus caudatus*), a bushy plant that reaches three to five feet tall and produces drooping, red

tassellike flowers from summer through fall. Or you could try the Mexican sunflower (*Tithonia rotundifolia*) with its dark green leaves that set off the fiery orange flowers to perfection. This dependable performer even grows well in poor soil. Another option is summer cypress (*Bassia scoparia* forma *trichophylla*, formerly *Kochia trichophylla*) which rapidly grows to five feet tall and tolerates shearing. Though its flowers are insignificant, it produces feathery, bright green foliage that turns red in the fall.

If you need a drought-tolerant shrub

continued on page 24

MORE ARCHITECTURAL ANNUALS

Botanical/Common Name	Height/Spread (ft.)	Flower or Foliage Effect	USDA/AHS Zones
<i>Abelmoschus moschatus</i> (musk mallow)	1–5/1½	large yellow, pink, or red flowers	11, 12–1
<i>Amaranthus tricolor</i> (Joseph's coat)	4½/1½	green, crimson, maroon foliage	0, 12–1
<i>Centaurea cineraria</i> 'Colchester White' (dusty miller)	2½/1	finely divided, white foliage	7–9, 9–7
<i>Datura metel</i> (angel's trumpet)	3–5/1½–4	large white, yellow, or purple flowers open at night	10–11, 12–7
<i>Graptophyllum pictum</i> (caricature plant)	3–6/2–3	variegated leaves, crimson-purple flowers	min. 55°F, 12–1
<i>Lavatera trimestris</i> 'Loveliness' (annual rose mallow)	3–4/1½	large rose-pink flowers all summer	0, 12–1
<i>Papaver somniferum</i> (breadseed poppy)	3–4/1	large pink, red, white, or blackish flowers	0, 7–1
<i>Pennisetum setaceum</i> 'Burgundy Giant' (annual fountain grass)	5/2	burgundy leaves and flowers	9–11, 12–1
<i>Salvia elegans</i> (pineapple sage)	4–6/3–4	scarlet flowers, scented foliage	8–10, 12–1
<i>Silybum marianum</i> (Mary's thistle)	to 5/2–3	white-veined, glossy green leaves	6–9, 9–6
<i>Trachelium caeruleum</i> (blue throatwort)	3–4/1	violet-blue or white flowers	9–11, 12–9



Left: There's nothing timid about the deep bronze leaves and the bright red flowers of the castor bean (*Ricinus communis* 'Carmencita'). Though drought tolerant, plants achieve maximum size—10 feet tall and three to four feet wide—if grown in rich, well-drained soil and watered regularly.

The two species of flowering tobacco (*Nicotiana* spp.), below, offer options to annual gardeners. The unscented apple-green flowers of *N. langsdorffii* appear on three- to five-foot stems from late spring to early fall and remain open all day long. The large white blooms of *N. sylvestris*, however, are highly fragrant and often close on bright, sunny days. It grows to six feet tall.



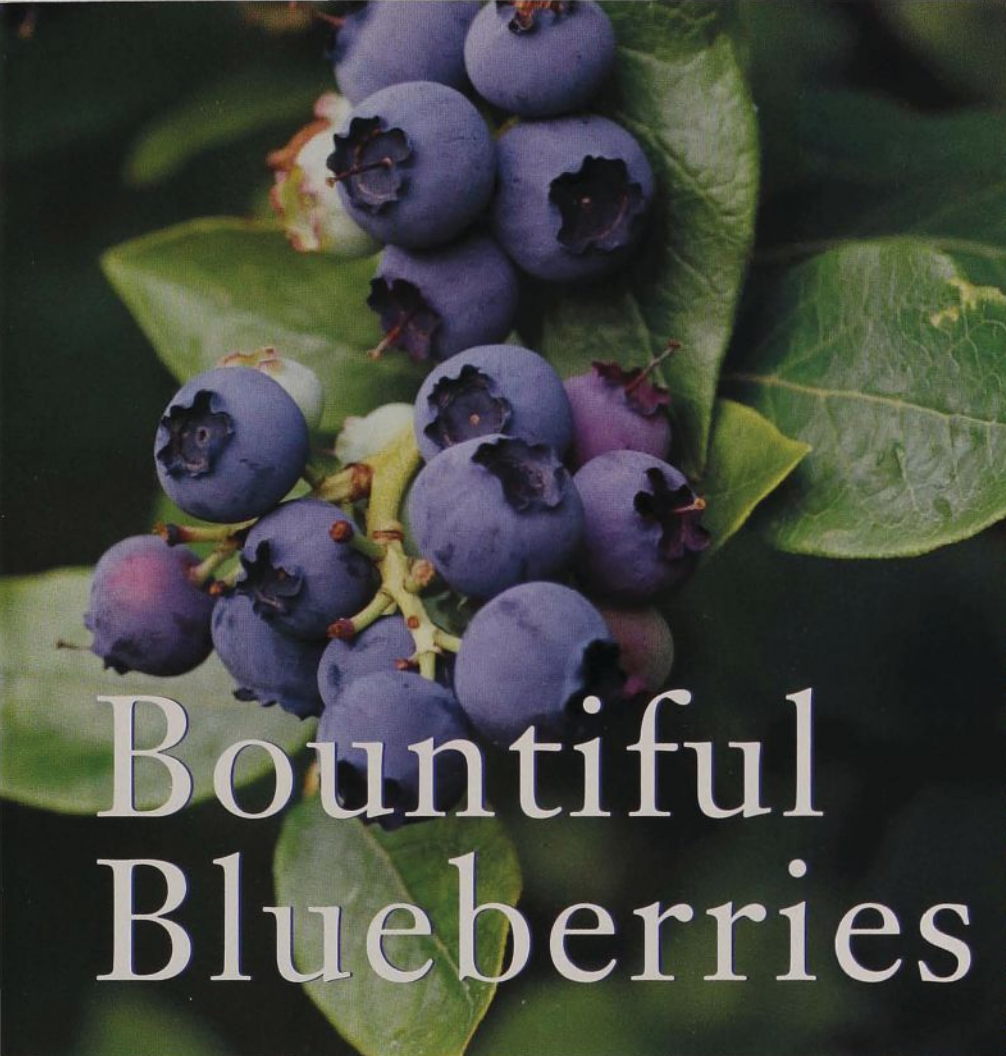


Spider flowers (*Cleome hassleriana*) have the accommodating habit of blooming when they are quite young—when plants are only a foot tall—and continuing their floral show until late in the fall when plants top out at four or five feet. As individual flowers fade, they leave long, wispy seed pods behind as new blooms continue to open at the top of each stem. Available in shades of pink, purple, and white, spider flowers are useful in a mixed border or as a summer hedge and are magnets for butterflies and hummingbirds.

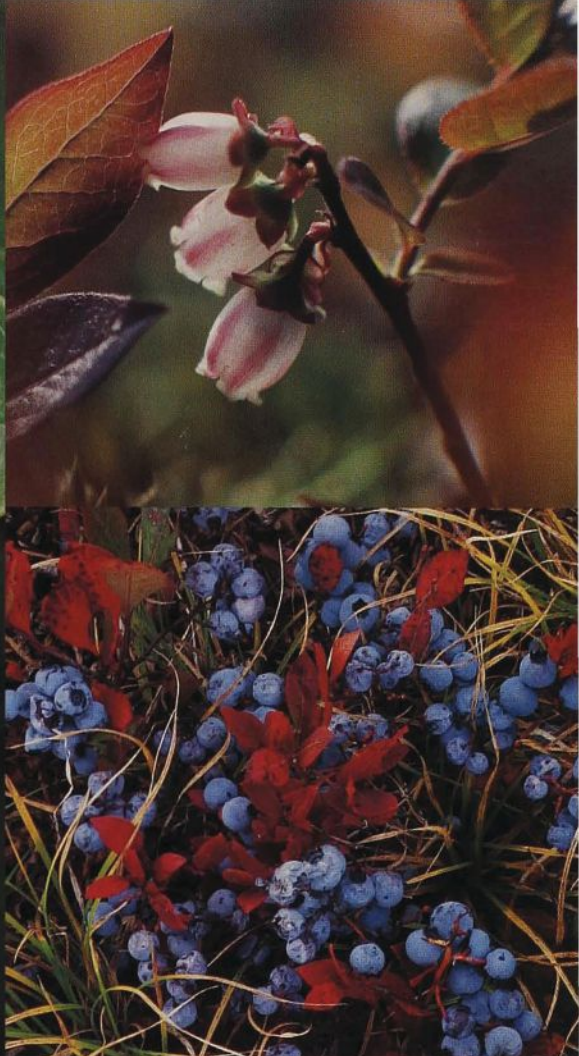
for a sunny spot but would rather not wait years for it to achieve its glory, try a Mexican bush sage (*Salvia leucantha*). Though its fuzzy purple flowers don't appear until late summer, they last deep into fall, and the narrow, gray-green foliage offers sufficient interest until the flowers arrive. For a colorful foliage accent, try the shiny-leaved coppertone mallow (*Hibiscus acetosella* 'Red Shield') with its deeply lobed maroon leaves, or the tropical-looking castor bean (*Ricinus communis* 'Carmencita'). Just be aware that the beautiful glossy, beanlike seeds of the latter are highly toxic.

One of the beauties of casting architecturally interesting annuals in various gardening roles is the ease with which you can change your mind. If next year you decide that you really want an open, angular specimen rather than a dense hedge, or a burgundy foliage accent rather than masses of orange flowers, it is easy to accommodate the change with a new annual selection. Check out the chart on page 23 for some other statuesque annuals worth considering.

Rita Pelczar is an associate editor of *The American Gardener*.



Bountiful Blueberries



These native American shrubs are best known for their tasty berries, but they also make wonderful ornamental plants with three-season appeal.

BY PATRICIA TAYLOR

THE DAY AFTER we closed on our house 25 years ago, my husband dug out a six-by-six-foot vegetable patch in the wasteland that was our backyard and I went out and bought three blueberry bushes for that spot. In those days, before gardening mania had overcome us, we thought of plants in terms of food rather than ornament.

Because we were not careful in checking light patterns, however, the vegetable patch had to be moved to a sunnier location. The blueberries, however, flourished in a sunny, well-drained area on our small property's border. They even produced fruit that first summer and we found it exciting to go out in the morning and pick a small handful to plop on top of our breakfast cereal.

With each subsequent year, we picked more and more, to the extent that I had enough for jams and blueberry muffins. The harvest season was spread out, too, because I had followed the advice of gardening books and planted two different varieties—early and midseason ones—to achieve better pollination.

After a few years of bliss, however, the birds got wind of all that tempting bounty. We bought vinyl black netting and draped it over the bushes once the berries started ripening. That worked for a week or two and then the birds learned—perhaps they had been watching us?—that they could sneak in under the net and feast away. Not all of them learned how to sneak out and soon we were trying to figure out how to untangle birds to let them loose.

That last activity did it. So 10 years ago I gave up on growing blueberries as food plants and with that action I began to look at the bushes differently. These are beautiful plants, I realized. They burst forth with lovely, creamy white bell-shaped flowers in spring, have spectacular red fall foliage, and then feature bare red branches that glow vividly against a backdrop of snow in winter.

And in addition to the birds that flock to their fruits, blueberries are magnets for lots of other beneficial wildlife. According to William Cullina, author of *Native Trees, Shrubs and Vines*, their flowers are copious nectar producers and their leaves are eaten by the larvae of a wide range of butterflies, including sulfurs, zigzag fritillaries, and cranberry bog coppers.

Blueberries provide garden interest in three seasons. Clockwise from upper left: summer fruits of highbush cultivar 'Northland'; delicate spring flowers of lowbush blueberry; and combination of fall foliage and fruits on lowbush blueberry.

And to top it off, blueberries are tidy and low maintenance. As opposed to the peaches and apples we had tried to grow, blueberries are never messy when they drop to the ground—they just dry up and neatly disappear. And the bushes don't run around all over the place, as strawberry plants do. Our only chores in maintaining healthy, productive blueberry bushes over the years have been watering during drought and—to ensure that the soil retains the acidity that blueberries crave—placing a winter cover of branches cut from discarded Christmas trees around the base of each plant.

BLUEBERRY BONANZA

AS IT TURNS OUT, my love affair with blueberries is not unique. According to Dave Brazelton, president of the large wholesale blueberry firm Fall Creek Farm & Nursery in Lowell, Oregon, there has been a significant increase in sales of blueberry plants for home garden use over the past decade. "Today," Brazelton says, "about 45 percent of our sales are to the nursery trade. This means that these plants eventually end up in home gardens or commercial landscape plantings."

No one plant dominates these sales and a primary reason for this is that blueberries are very location specific. Indeed, the term blueberry bush actually applies to several different native plants and hybrids, all members of the genus *Vaccinium*. The three most important species are known as lowbush, rabbiteye, and highbush.

Native to open hillsides in eastern Canada and the New England states, lowbush blueberries (*V. angustifolium*) are the most cold tolerant, thriving in USDA Plant Hardiness Zones 3 to 6 and USDA Plant Heat Zones 8 to 1. As their name indicates, these plants are relatively diminutive, reaching six inches to two feet in height and reaching two feet in diameter. They bear white flowers tinged with red in spring and dark, blue-green leaves that turn to scarlet and crimson in the fall. Lowbush blueberries are tolerant of sandy or rocky soils, and because they spread by stolons—horizontal stems that run along or just beneath the ground—they make great ground covers in such areas.



The blue-green foliage of blueberries such as 'Sunshine Blue' complements purple-toned plants such as *Berberis thunbergii* 'Royal Cloak'.

While the berries are also diminutive—only a quarter inch to half inch in diameter—aficionados swear that they are the sweetest to be found and are a perfect size for use in muffins and pancakes. They are still an important commercial crop in Maine, Quebec, and the maritime provinces of Canada, where they are harvested in the wild.

Given their relatively limited geographical range and their natural beauty and productivity, little breeding work has been conducted among these plants. Two selections that have useful ornamental qualities are 'Brunswick' and 'Burgundy'. Originally from Nova Scotia, 'Brunswick' forms a dense groundcover six to eight inches high, and 'Burgundy' is a foot tall and features distinctive gray-green foliage and a deep burgundy fall color.

RABBITEYES FOR WARM CLIMATES

RABBITEYES (*V. ashei*) grow at the opposite end of our climate spectrum. Native to the Southeast (USDA Zones 5–9, AHS Zones 9–2) they are more heat tolerant than other blueberries and are suitable for growing in some West Coast gardens. In the wild, rabbiteyes are open, spreading shrubs that grow as tall as 20 feet, but in more domesticated circumstances they usually top out at 10 to 12 feet. They feature pink spring flowers and attractive blue green foliage that turns orange to red in autumn.

The rap on rabbiteyes is that the berries are not that tasty, although southerners argue that this is a northern prejudice. In the late 1800s, the supposed lack of fruit flavor did not deter M. A. Sapp of Florida

from trying to create a commercial crop by transplanting wild rabbiteye bushes to cultivated settings. Because no other blueberries were available in local markets, the endeavor survived for several decades until finally losing out in the 1930s to the competition provided by the tastier fruit yielded by highbush berries (*V. corymbosum*).

In the last quarter of the 20th century, many southern universities engaged in breeding work to create profitable agricultural plants, including blueberries. While the emphasis has been on fruit production, several of the resulting cultivars are also highly ornamental. 'Premier' and 'Climax', for example, are both noted for their spectacular fall foliage.

Rabbiteyes have also become contributors to hybrids that require fewer hours of cold temperatures to set fruit and thus are better suited to regions with warmer climates. Because they require cross-pollination for best fruit set, plant at least two different cultivars.

THE VERSATILE Highbush

OCCUPYING THE middle ground, ge-



For southern gardeners, rabbiteye blueberry bushes offer both tasty berries and attractive fall foliage.

ographically speaking, are the highbush blueberries (*V. corymbosum*, USDA Zone 4–8, AHS Zone 8–1). A century ago, the great American horticulturist Liberty Hyde Bailey, extolled their beauty as follows: "The plant is beautiful when in flower; the fruit is attractive and of the best quality, and the bright scarlet and crimson effects in late autumn, rivaling the sumach in brilliancy, are unsur-

passed. As an ornamental plant, the species deserves a place in every garden."

If Bailey's praise largely fell on deaf ears at the time, Elizabeth White probably bears much of the blame. As described in an article by Rick Darke in the May/June 2000 issue of *The American Gardener*, White grew up in the New Jersey Pinelands, where her family ran a large cranberry (*V. macrocarpon*) operation

THE BASICS OF GROWING BLUEBERRIES

As members of the heath family (Ericaceae), blueberries are closely related to azaleas, rhododendrons, and heathers. Like these plants, blueberries crave an acidic soil that is rich in organic matter and stays consistently moist but not soggy. They will grow best in soil that has a pH between 4.5 and 5.5, so get your soil tested to be sure it is suitable for blueberries. If your soil has a slightly higher pH, you can amend it with elemental sulfur or iron sulfate, but it may take a couple of growing seasons to reach the desired level. Avoid products that contain aluminum sulfate because blueberries won't tolerate high levels of soil aluminum. Soils that are high in clay or sand will need to be amended with organic matter such as compost, commercial leaf mold, or peat.

Research in the last few years indicates blueberries have a symbiotic relationship with beneficial soil fungi known as mycorrhizae, which inhabit blueberries' root systems and help them derive nutrients from poor soils. If your soil is rich in organic matter and you don't use chemical fertilizers or pesticides, the appropriate mycorrhizae are probably already in place.

Blueberries will do best in a site in full sun that is protected from harsh winter winds. By selecting two or more cultivars with slightly different bloom times, you can extend your season of harvest.

Once established, plants can be fed lightly in spring with a balanced fertilizer designed for acid-loving plants, although I don't fertilize mine. Mulching or top-dressing annually with composted conifer needles or oak leaves will naturally foster soil acidity, reduce moisture loss, and help prevent the shallow roots of blueberries from becoming exposed.

Prune blueberries in later winter or very early spring by removing a percentage of the older, less productive canes. This stimulates the emergence of new shoots from the base of the plant. Experts also recommend pruning out fruiting buds—which usually form on the tips of the branches—on first-year plants to funnel the plant's energy into development of a healthy root system.

With hundreds of cultivars available, the best way to winnow down your selection is to decide what kind of bush you want—tall, open, short, compact, etc. Then call your local Extension agent and ask which cultivars meet your criteria and, of these, which would be best suited for your region and growing conditions.

—P.T.

Sources

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'Brunswick', 'Burgundy', 'Northland', 'Rubel', 'Sunshine Blue', 'Toro'.

Greer Gardens, Eugene, OR. (541) 686-3266.
www.greergardens.com. Catalog free.
'Bluetta', 'Northsky', 'Sunshine Blue'.

Hartmann's Nursery, Lacota, MI. (616) 253-4281. www.hartmannsnursery.com. Catalog online.
'Climax', 'Premier', 'Friendship', 'Northland', 'Rubel', 'Top Hat'.

Henry Field's, Shenandoah, IA. (812) 539-2521. www.henryfields.com. Catalog free.
'Top Hat'.

Indiana Berry & Plant Co., Huntingburg, IN. (800) 295-2226.
www.inberry.com. Catalog free.
'Climax', 'Northcountry', 'Northsky', 'Premier'.

Raintree Nursery, Morton, WA. (360) 496-6400. www.raintree-nursery.com. Catalog free.
'Burgundy', 'Brunswick Maine', 'North Sky', 'Rubel', 'Sunshine Blue', 'Top Hat', 'Toro'.

Resources

The Berry Grower's Companion by Barbara L. Bowling, Timber Press, Portland, Oregon. 2000.

The Gardener's Book of Berries by Allan A. Swenson. Lyons and Burford, New York, New York, 1994.

Native Trees, Shrubs and Vines by William Cullina, Houghton Mifflin, Boston, Massachusetts. 2002.

more than a century ago. Seeking to increase the firm's profitability, she began to investigate the possibility of cultivating blueberries for a July crop, which would leave plenty of time and help to harvest the fall crop of cranberries.

The problem was that no one had yet figured out how to grow the plants commercially and the bushes themselves—native throughout the area—were extremely variable with regard to fruit size. In 1911, White became acquainted with the blueberry propagation work of Frederick V. Coville, a botanist with the U.S. Department of Agriculture. Their collaboration led to the introduction of large-scale highbush blueberry production. Thus, while Bailey was promoting the ornamental qualities of the plant, its agricultural possibilities were coming to the fore. In this case, as in so many others, money and research went with the highest profit return.

Coville shifted his research location to the White family properties. While he provided the scientific expertise on propagating, White sought out the plants. She enlisted the help of local "Pineys" to search for bushes with the most promising berries.

White not only paid \$2 for every bush that bore berries at least five-eighths of an inch in diameter, she also named the plants for the finder. Unfortunately, Rube Leek of Chatsworth found the most promising bush of all. It obviously wouldn't do to call a blueberry selection a Leek, and the name Rube just didn't convey the plant's usefulness. Coville came up with the solution, christening the bush 'Rubel'. It remains in cultivation to this day.

Today, highbush berries are the most widely planted blueberries for both agricultural and ornamental purposes, with over 100 named selections registered. Their sizes and shapes range from three to seven feet tall and from compact to open, and the berries ripen from early to late season. Given ideal growing conditions and the right selection of cultivars, fruit can be continuously harvested over a 100-day period.

When asked to name some cultivars that are particularly ornamental, Brazelton selected 'Toro' and 'Bluetta'. "'Toro' is a beauty and has to be one of the best," he says. "It is a compact, four-foot-tall bush, with large glossy green leaves that

age to a brilliant red in the fall. The flowers turn from hot pink to bright white and yield midseason, sky blue berries the size of nickels to quarters. Some berry clusters in our test block are eight to 12 inches long."

While noting that 'Bluetta' is an old stand by, Brazelton says, "It is still one of the best for gardens. It has a handsome, compact bush shape, reaching three to four feet at maturity. Add to this an intense pink to white flower display, good quality early fruit, and excellent red fall color, and the result is a choice landscaping plant."



The fruits of 'Toro' resemble a bunch of grapes.

Other ornamental blueberry bushes are the results of breeding work, both north and south of the highbush growing area, to boost local blueberry agricultural production by developing plants bearing the larger berries of the highbush plants. The work entails hybridizing highbush selections with lesser-known local *Vaccinium* species.

BLUEBERRIES FOR COLD CLIMATES

IN COLDER AREAS of the country, this breeding has led to the introduction of plants known as half-highs that are a cross between highbush and lowbush blueberries. While bred for exceptional cold hardiness—'Northsky' survives winter temperatures of minus 45 degrees—they are also outstanding ornamental plants throughout USDA Zones 3 to 7.

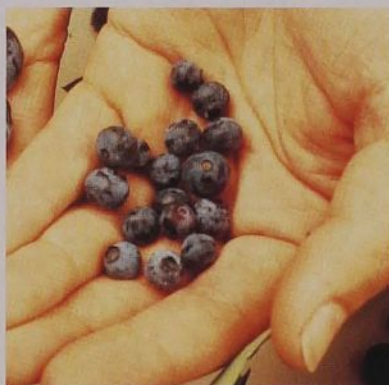
I planted two varieties in my USDA Zone 6 gardens in 1996 and find it hard to

BLUEBERRIES FOR GOOD HEALTH

A 1999 USDA study that ranked 40 foods for their antioxidant content placed blueberries in the number one spot—ahead of carrots, spinach, kale, cantaloupes, and 35 others. The antioxidants in all of these foods work to protect the body against oxidative stress, one of the processes involved in aging and in ailments such as cancer and heart disease.

Now, researchers at Tufts University in Boston, Massachusetts, have found that aging rats recouped some age-associated loss of balance and regained short-term memory when fed a blueberry extract diet. Scientists are investigating whether blueberries will produce the same reversal of brain aging in humans as they do in animals.

The beneficial substance in blueberries is thought to be anthocyanin, the pigment that makes blueberries blue. Anthocyanin, particularly in the form of a compound called resveratrol, is also found in other dark-colored fruits, such as red wine grapes, blackberries, billberries, and elderberries. It is a flavonoid (plant antioxidant) that can neutralize the effects of free radicals—unstable compounds that attack cells and damage DNA. Ways to increase the amount of resveratrol in blueberries and other fruiting plants will be sought in future breeding programs.



Blueberries, especially those of 'Rubel', are packed with healthful properties.

While all blueberries possess some health-promoting qualities, new research shows that some are healthier than others. Last year, Mark K. Ehlenfeldt, of New Jersey's Marucci Center for Blueberry and Cranberry Research, and Ronald L. Prior, of the Arkansas Children's Nutrition Research Center, published the results of studies on the health-promoting qualities of 87 highbush blueberry cultivars.

'Rubel'—Rube Leek's find of almost a century ago—topped the list. 'Friendship' was also up there with the best and the authors speculated that this was probably due to its lowbush genes.

Research by Wilhelmina Kalt, a government food researcher with Agriculture and Agri-Food Canada who measured the antioxidant compounds found in 80 highbush cultivars and 135 wild lowbush blueberries, supported this finding. In a paper published this year she wrote, "Lowbush berries were consistently higher in anthocyanins, total phenolics and antioxidant capacity compared with highbush blueberries."

So rather than eating an apple a day to keep the doctor away, perhaps we should be snacking on blueberries!

—Patricia Taylor and Associate Editor Carole Ottesen

restrain my superlatives in describing them. Both are all season delights. They are covered with blush white spring flowers, bear early summer blue fruit, exhibit florid red fall foliage, and show off their deep scarlet twigs and branches throughout winter. 'Friendship' is the taller of the two, with a vase shape that reaches four feet. 'North Country', often described as one of the best varieties for the edible landscape, is only three feet tall and has a more open, spreading shape. Both are shorter in areas colder than mine.

Now I'm planning to include a highly praised highbush-lowbush hybrid introduced by Michigan State University. Called 'Top Hat', it is less than two feet tall and features masses of white flowers that appear as a

spring dusting of snow on the dense, light green foliage, abundant pea-sized light blue summer berries, and colorful red fall foliage. Hardy in Zones 3 to 8 and heat tolerant in Zones 8 to 4, it is perfect for containers.



'Top Hat' is a small cultivar that can be grown in a container.

Southern breeders have also been busy, and in crossing the rabbiteye with the highbush and *V. darrowii*—another southern blueberry species—they created a cultivar named 'Sunshine Blue' (Zones 5–10, 11–6). This stunning, three-foot-tall plant is evergreen in the Southeast and along much of the West coast. It is another personal favorite of Brazelton, who says it is

perfect for planters, with "gray-green foliage, bright hot pink flowers, semi-dwarf, compact shape, and wonderful medium-sized fruit that lasts over a month."

HEALTH BENEFITS

DESPITE THEIR MANY attributes, blueberries were a relatively low-profile plant until the fall of 1999. That was when the national press picked up on research findings published by James A. Joseph and Barbara Shukitt-Hale of the USDA's Nutrition Center on Aging at Tufts University in Boston, Massachusetts. The two wrote that the daily consumption of one-half to one cup of fresh or frozen berries could slow or even reverse the effects of aging (for more on the health benefits of blueberries, see sidebar above).

So, as you can see, growing and eating blueberries is beneficial in every way. Blueberry bushes feature three-season beauty, ease of care, and tasty fruit that provide health benefits. That's about as good as any plant gets.

A resident of Princeton, New Jersey, Patricia A. Taylor is author of Easy Care Native Plants, published by Henry Holt.



Woodland Natives

A carefully planned blend of native wildflowers can keep a woodland garden in bloom for eight months of the year or more.

BY GENE BUSH

LET'S FACE IT; we all aspire to have plants blooming year round in our gardens. For those of us who garden in cooler regions of North America that's hard to achieve, but it's not impossible. For instance, my woodland garden in southern Indiana usually has a plant in bloom 11 months of the year—January is the only month I have not been able to consistently conquer. And while this extended period of bloom doesn't occur dependably year to year, in my experience, eight months of natives blooming in a shade garden is a reasonable expectation for gardeners in many regions of the United States.

My garden is located within the Ohio

valley, right on the border of USDA Plant Hardiness Zones 5 and 6 and in AHS Plant Heat Zone 7. Most winters get no colder than -10 degrees Fahrenheit, but about every four to five years we get a true Zone 5 winter with temperatures down to -20 , or, on rare occasions, to -30 degrees.

Over the years I have identified and experimented with dozens of shade-loving natives. I started by consulting wildflower guides for my state or for the eastern United States. Local woodlands and botanical gardens have also been inspiring and educational places to find ideas. Whenever I trek through woodland areas, I make notes on what is growing in varying habitats and which plants make good companions.

When selecting candidates for my woodland garden, I look first to our locally native herbaceous perennials because I know they are well adapted to my climate. My concentration is on plants that grow in the area of the eastern and central United States known as the Mississippi River drainage basin, a loosely triangular region bounded by the Great Lakes, the Appalachians, and the Rocky Mountains.

DISPELLING MYTHS

A NUMBER OF myths have grown up around native woodland plants. The one I hear most frequently is about how woodland plants are pretty little weeds that

Opposite: *Trillium luteum*, right, pairs well with another native, American maidenhair fern (*Adiantum pedatum*), left.

bloom early and then disappear. Some of the early blooming woodland plants do, indeed, go dormant around July, but many more remain in foliage until first frost and a few—partridge berry (*Mitchella repens*), for instance—are evergreen.

Even those plants with a truly ephemeral nature can be used to advantage in areas where competition from tree roots is a problem. Early deciduous plants such as trilliums and trout lilies (*Erythronium* spp.) will emerge, bloom, and set seed before the trees and shrubs have fully leafed out, calling for most of the moisture and nutrients. Small ferns that emerge later in the season can cover the void left by the dormant wild flower.

The following plants, described chronologically in the order they bloom or fruit for me, have been reliable performers in my garden over the years.

■ March: TRILLIUMS

In late winter and early spring, Mother Nature begins to awaken, but in this region at least, she often rolls back over and hits the snooze button. Native plants have adapted to our on-again, off-again, early springs, making them good performers under trying conditions.

Sometimes called wake robins, trilliums are one of the finest harbingers of spring and I cannot imagine my early garden without their presence. The earlier blooming species can begin their show in late February in southern parts of their range, but most often the parade begins in mid-March and lasts through mid to late May.

There are well over 40 trillium species, concentrated mainly along the eastern United States, with the remainder in East Asia and the western United States. Some species are readily available, while others are rare collector's gems. There are also color forms and hybrids to be found within most species, adding to their diversity and desirability. Once you have a trillium or two in the garden, it's difficult not to



Trillium grandiflorum



Uvularia grandiflora, right,
(with *Mertensia virginica*)

get addicted, but the rarer species are becoming overcollected in the wild, so ask your vendors about their sources.

Among the species that are favorites with gardeners and more easily obtained is common toadshade (*T. sessile*, USDA Zone 4–8, AHS Zone 8–1). Ranging from four to 10 inches tall, this is one of the smaller gems and the first to bloom for me in late March to early April. The flowers are composed of three chocolate-red petals that extend nearly vertically above a platform created by the three attractively mottled leaves. Some references say the flowers

are fragrant, but I can't detect any scent.

Another favorite is large-flowered or white trillium (*T. grandiflorum*, Zones 3–8, 8–1), a vigorous species that has large, pristine-white flower petals that often turn pink as they mature. Its height can vary from eight to 18 inches, but it typically tops out at around a foot.

Yellow trillium (*T. luteum*, Zones 5–8, 8–4) is among the last to bloom in my garden, lasting well into May. It is taller—at 14 to 18 inches—and stockier in appearance than the other two species. The faintly citrus-scented lemon-yellow flower petals sit in the center of three silver-green mottled leaves.

Trilliums are truly ephemeral, going into dormancy during July through early August, depending upon species and weather. When using trilliums in the garden, match them with companion plants that mature later in the season, such as a foamflower (*Tiarella cordifolia*).

■ April: BELLWORTS

With their soft, sunshine-yellow blooms, bellworts (*Uvularia* spp.), sometimes called merrybells, bring last summer's warmth to a cold, dreary, early spring day. There are five bellworts native to the eastern United States. Four of those species are found from Canada through South Carolina but the fifth has a more southerly range, from South Carolina down into Florida. Of the five species, only two are readily available to gardeners.

The large-flowered bellwort (*U. grandiflora*, Zones 3–8, 9–1) is the species most often found in our local woods. It is also

the largest in height at around 18 to 20 inches. Its foliage has a curious wilted appearance at the top of each stem. The gracefully nodding flowers are about two inches long and individual petals are also slightly twisted. In the wild, *U. grandiflora* tends to be open and somewhat sparse in habit, but if you plant it in a soil rich in compost you will be rewarded with a large, tight growing clump.

Perfoliate bellwort (*U. perfoliata*, Zones 4–8, 8–1) is shorter and its blooms are a bit smaller and a paler yellow than the large-flowered species. Both species have leaves that are perfoliate—“pierced” by the stem—but *U. perfoliata* also has a bluish or grayish cast to the foliage. Whereas *U. grandiflora* is clump forming in habit, *U. perfoliata* is a runner. When transplanting starts of it to my garden, I surround them with a three-foot circle of eight-inch lawn edging. When deprived of its ability to roam, a showy clump will form.

One of the classic color combinations in the garden is yellow and blue, and the soft clear yellow of large-flowered bellwort has a perfect companion in another classic native wildflower, Virginia bluebells (*Mertensia virginica*). Each seems to bring out the best of the other. Bluebells begin blooming in a deep lavender-blue, but, as each bloom matures, turns lavender-pink.

■ May: CRESTED IRIS

I must admit that the first few times I saw crested iris (*Iris cristata*, Zones 4–8, 8–1) growing in the local woods I was completely underwhelmed. The rhizomes were up on top of the soil, the sparse leaves were an anemic yellowish-green, and there was nary a bloom in sight. Some years later, however, while driving a county road I saw the most amazing carpet of brilliant blue glistening in the afternoon sun. On closer inspection, it turned out to be *Iris cristata* forming a ground cover thick as a shag rug for 30 to 40 feet along a woodland edge.

Encouraged, I planted crested iris as a ground cover beneath dwarf deciduous



Iris cristata



Spigelia marilandica



Delphinium exaltatum

hollies on the western side of my shade garden. The late-spring flowers and long-lasting, six-inch, broad-bladed leaves provide interest in spring and summer. And I find the matlike network of rhizomes helps prevent soil erosion.

Native to woodlands in the eastern and central United States, crested iris is highly variable in all aspects, which makes it an

exciting plant for collectors. Its petals range from pale lavender to deepest royal blue. On occasion the falls can be a different shade of color from the standards. The crest can also be different colors. I have several named forms in my garden, but my favorites are still the wild form I saw along the roadside and a snow-white selection called ‘Eco White Angle’.

■ June: INDIAN PINK

Native to the southern Appalachian and Ozark mountains, Indian pink or worm root (*Spigelia marilandica*, Zones 5–9, 9–2) has been so popular through the years it is now on the endangered list here in Indiana. The plant’s undoing begins with the common name of worm root, which stems from its use by Native Americans to rid themselves of internal parasites. When the colonists learned of this herbal use, roots were gathered and sent back to Europe by the boatload and Indian pink was almost collected into oblivion.

Indian pink is a slow growing plant that takes three to four years from germination to first bloom. It also takes many years for a clump to mature. Because of these challenges, it remains a bit difficult to locate in catalogs, but it is well worth seeking.

The two-inch-long, tubular-shaped blooms are scarlet-red on the outside and yellow within. They make me think of red fire crackers with the beginning of a yellow explosion on top. The stems are stiffly upright, reaching 18 to 24 inches. Leaves are ovate and opposite on the stems and sessile. I have never seen them experience any problems with insects or disease, and after five or six years of growing them, I now find occasional seedlings in the garden.

Indian pink is one of our showiest natives when in bloom; adaptable in soil, exposure, and moisture needs; and virtually problem free.

■ July: TALL LARKSPUR

Tall larkspur (*Delphinium exaltatum*, Zones 4–8, 8–5) seems to be another one of our best-kept secrets. Each year I see

MORE NATIVE PERENNIALS FOR WOODLAND GARDENS

Name	Height/ Spread (in.)	Ornamental Features	Native Range	Bloom/Fruiting Range	USDA and AHS Zones
<i>Actaea pachypoda</i>	24/24	Flowers, fruit, foliage	Eastern N. America	May & August	4-9, 9-1
<i>Dicentra eximia</i> , cultivars	14/18	Foliage, flowers	New York to Georgia	April-Nov.	4-8, 8-4
<i>Dodecatheon meadia</i> * cultivars, forms	14/14	Flowers	Eastern N. America	Late April-early May	4-8, 8-2
<i>Erythronium</i> <i>americanum</i> *	6/12	Foliage, flowers	Eastern N. America	Early April	3-9, 9-2
<i>Gillenia trifoliata</i>	36/24	Foliage, flowers	Eastern N. America	June-July	4-9, 9-2
<i>Hepatica acutiloba</i>	4/12	Foliage, flowers	Maine to Alabama	Early March	4-8, 8-1
<i>Mitchella repens</i> **	1/24	Foliage, flowers, fruit	Eastern N. America	June-July	4-9, 9-1
<i>Phlox divaricata</i> , cultivars**	12/18	Foliage, flowers	Eastern N. America	April-May	4-8, 8-1
<i>Silene virginica</i> **	8-14/18	Flowers	Eastern N. America	Late April-June	4-8, 8-1
<i>Tiarella cordifolia</i> , cultivars	6/24	Foliage, flowers	North America	April-May	3-8, 8-4

*Ephemeral **Evergreen

gardeners in this area make their annual trek to the garden centers to purchase the large delphinium hybrids and seed strains such as 'Belladonna', 'Elatum', and 'Pacific'. Few American gardeners have success with these heat and humidity intolerant plants, but the photos from English gardening books and magazines are apparently an irresistible siren-call, while our natives go unnoticed.

Tall larkspur is native from Pennsylvania and Ohio southwards into Missouri and Alabama. Although that is quite a stretch in both cold and heat tolerance, humidity levels, and soils, it manages not only to survive, but to thrive without falling prey to mildew. Tall larkspur can be found growing at woodland edges and in open fields, where it can reach three to five feet in height. Its small flowers, which bloom in spikelike inflorescences, range from a pale lavender-blue to deep blue or even purple. The pleasing felt-green leaves are formed of five deeply divided lobes.

I have my tall larkspur in two locations, both of which have a westerly exposure where they receive afternoon light. Since this delphinium performs in both sun and part shade over such a long bloom period, companion plants can be just as varied. I



pair it with tall garden phlox, fall blooming anemone, and lilies.

By keeping the tall larkspur deadheaded you can obtain at least two and sometime three flushes of bloom. As each main stem completes its bloom cycle, cut it back to just below where the blooms begin. By doing this, I have had plants in bloom in the middle of December.

■ August: DOWNY SKULLCAP

Downy skullcap (*Scutellaria incana*, Zones 4-8, 9-5) is only one of the many skullcap species that can be found in our local woods. At least nine to 10 species are native in my region and some 300 species are

found in North America. Yet most nurseries that offer plants from this genus ignore our natives in favor of Asian or European species. Gardeners are missing out on a broad selection of easily grown, trouble-free, perennials with quite attractive flowers and foliage. By choosing species according to flowering period, it's possible to have a native skullcap in bloom from May through September.

Skullcap flowers come in shades of blue and bloom in dense, spiky inflorescences. The tubular flowers have distinct upper and lower lips, and it is the resemblance of a rounded portion of the upper lip to a Roman soldier's helmet that gave rise to the ominous-sounding common name.

Downy skullcap reaches about two to three feet in height, with a vase-shaped outline. Its stiffly upright stems are square in cross-section, which reveals the genus's connection to the mint family. Its leaves are ovate, toothed, and heavily veined. The numerous soft, lavender-blue flowers bloom from August into September. It can handle full sun in northern gardens, but grows best in dappled or part shade along



Dodecatheon pulchellum

WEST OF THE ROCKIES

A few woodland wildflower species are native both east and west of the Rocky Mountains, but many species well suited to eastern gardens won't thrive west of the Rockies, where in general plants are adapted to neutral to alkaline soils and lower rainfall and humidity levels. If you live in the western United States, it makes sense to begin with western species before experimenting with some of the eastern and midwestern plants that might prove adaptable. For western gardeners, a selection of shade-loving western native wildflowers is included in the chart below.



Dicentra formosa

Name	Height/Spread (in.)	Ornamental Features	Native Range	Bloom Range	USDA and AHS Zones
<i>Dicentra formosa</i> , cultivars	10–16/24–36	Flowers, foliage	Western N. America	April–Nov.	3–8, 10–1
<i>Dodecatheon pulchellum</i> *	10–14/4–6	Flowers	Western N. America	April–May	4–7, 8–2
<i>Erythronium californicum</i> ,	6–12/4–8	Flowers, foliage	N. California	April–May	3–9, 9–1
<i>E. grandiflorum</i>	6–12/4–6	Flowers, foliage	Western N. America	April–May	4–9, 9–1
<i>Tiarella unifoliata</i>	6–12/6–12	Flowers, foliage	S. Alaska to Montana	June–July	3–7, 7–1
<i>Trillium albidum</i>	12–18/6–16	Flowers, foliage	S. Oregon to N. Calif.	March–April	4–7, 7–1
<i>T. rivale</i> *	2–8/6–12	Flowers, foliage	S. Oregon to N. Calif.	April–May	5–8, 8–5
<i>Vancouveria chrysantha</i> **	12–16/18–24	Flowers, foliage	S. Oregon to N. Calif.	May–June	6–8, 8–6
<i>V. hexandra</i> *	8–12/18–24	Flowers, foliage	Washington to S. Calif.	May–June	5–8, 8–5

*Ephemeral

**Evergreen

the edge of a woodland or shade garden. Deadheading the spent flower heads will spruce up the plants and sometimes stimulate reblooming. Other favorite skullcaps include showy or Allegheny skullcap (*S. serrata*, Zones 4–9, 9–5) and hyssop skullcap (*S. integrifolia*, Zones 4–9, 9–5).

■ September: TURTLEHEAD

Turtlehead (*Chelone* spp.) is indigenous to North America, with six species ranging from woodlands, to prairies, and up into the mountains. All six species are perennial, very cold hardy, and more tolerant of growing conditions than their habitats would suggest. They are all upright plants, growing to about two feet or more. The simple, opposite leaves have serrated edges and are often slightly hairy. The shape of individual blooms—they resemble a turtle with its mouth just beginning to open—gave rise to the common name.

Three species, along with a very few cultivars, seem to dominate the catalogs and garden centers. *C. glabra* (Zones 3–8,



Scutellaria incana

9–1) grows to about three feet in height, with a soft pink to white bloom containing a white beard. Bloom period is from August through October.

C. lyonii (Zones 3–8, 9–3), native to Tennessee and North Carolina, blooms from July through September in rose pink to purple with a yellow beard. *C. obliqua* (Zones 3–9, 9–3) does not have the rigid up-right habit the other two species and will have glossiness to their dark pink to purple flowers. A favorite cultivar to look for is *C. lyonii* 'Hot Lips' with red stems, rose pink flowers, and glossy foliage.

I have found turtleheads to be very assertive given a site in consistently moist soil with high humus content. To keep them within bounds, try to place them in an open site with high shade and average soil that's not too moist, and mulch them. Our native lobelias make good companions, as they enjoy the same habitat. My favorite is the great blue lobelia (*L. siphilitica*), which produces lavender-blue flowers during the same long bloom period as turtlehead.

■ October: BERRIES

It's hard to guarantee flowers in October,

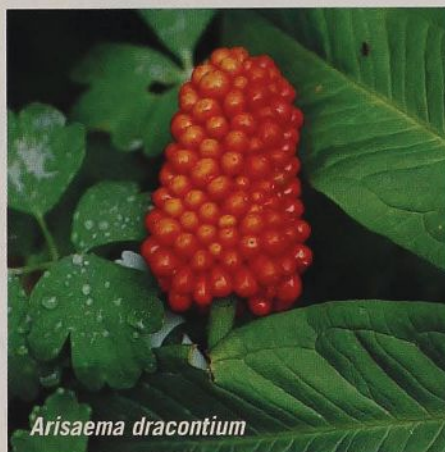


Chelone lyonii

especially in the woodland garden, but some native wildflowers offer berries that can be just as colorful during this period, and I keep a few plants in my garden primarily for this reason.

Green dragon (*Arisaema dracontium*, Zones 4–9, 9–3), related to the more familiar Jack-in-the-pulpit (*A. triphyllum*, Zones 3–9, 9–3) is probably my favorite. When the green dragon blooms in late spring or early summer it is more of an oddity than a showstopper, with its tonguelike spadix emerging eerily from the hooded spathe beneath a single, tropical-looking leaf. Come August or September, however, the large cluster of green berries that develop after successful fertilization will change over to orange-red and finally a deep red, while the foliage will have wilted away.

Endangered in the wild from over collection for its roots—which are prized for their herbal uses—our native ginseng (*Panax quinquefolius*, Zones 5–8, 9–1) is a favorite of mine for its show of fire-engineered berries in August through early October. The berries are particularly attractive set off against the plant's deep, lustrous green leaves, which develop from unbranched stems to just over one foot tall. Each plant has three leaves divided into five leaflets with toothed edges. The greenish flowers are tiny and inconspicuous. In fall, a drift of berry-covered ginseng plants lends a festive feel to the shade garden. Grow ginseng in dappled shade in moist but well-drained soil that is near neutral in pH.



Arisaema dracontium

GETTING STARTED

THE PLANTS DESCRIBED above and listed in the charts on pages 33 and 34 are just a starting point. There are hundreds of other wonderful American natives suited to woodland and shade gardens, and you will find the references listed in the resource list, right, are also wonderful sources of information and inspiration.

I also highly recommend joining a local wildflower club or native plant society, where you will find gardeners and native plant enthusiasts very willing to share their knowledge and—often—their favorite plants. With a little education and perspiration, your shade garden will become a source of year-round pleasure.

A garden writer, photographer, and lecturer, Gene Bush grows and sells rare or uncommon shade-loving herbaceous perennials through Munchkin Nursery in Depauw, Indiana.

Resources

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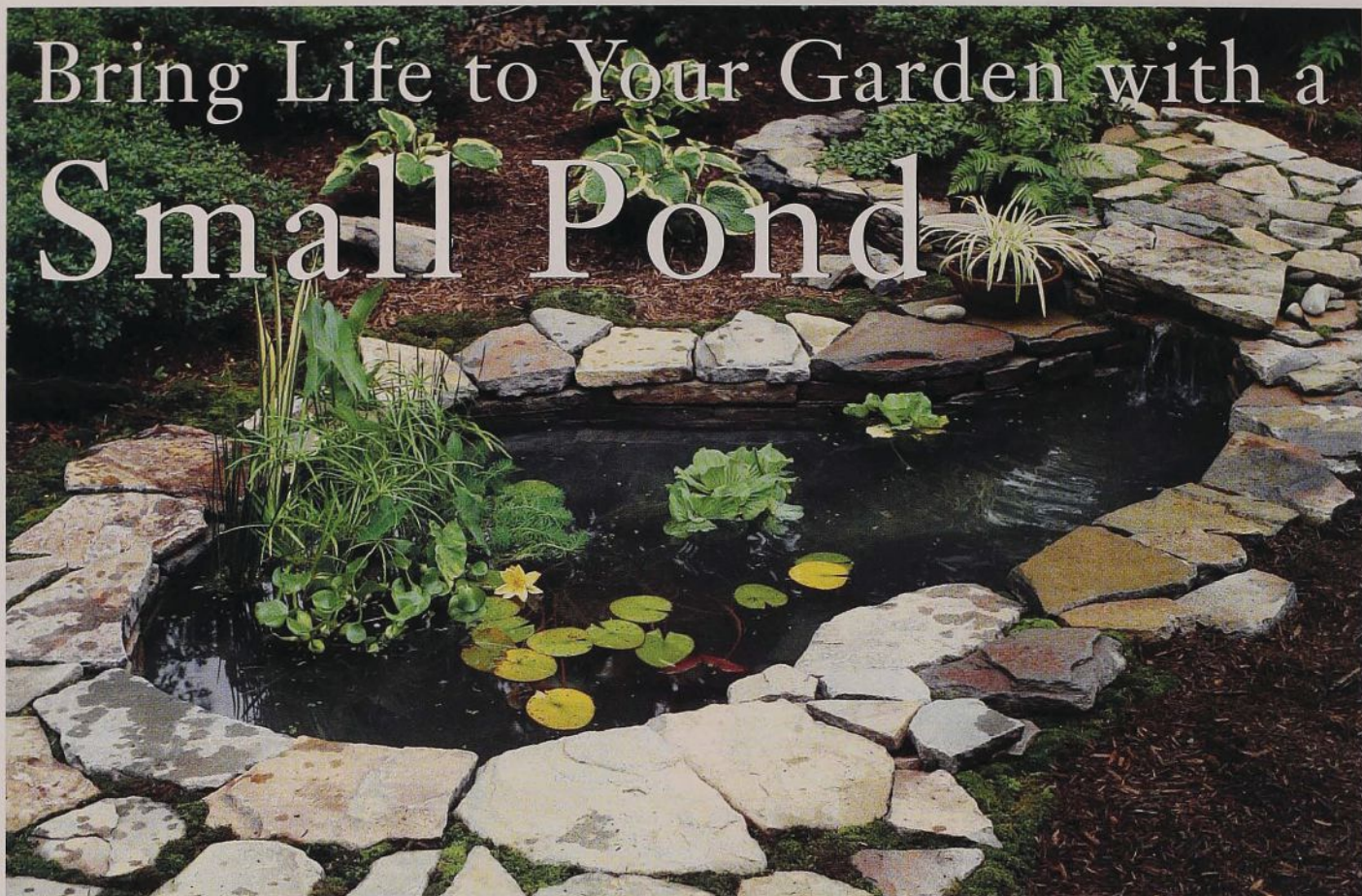
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Roslyn Nursery, Dix Hills, NY. (631) 643-9347. www.roslynnursery.com. Catalog \$3. *Arisaema dracontium*; *Chelone lyonii* 'Hot Lips'; *Iris cristata*; *Lobelia siphilitica*; *Mertensia virginica*; *Mitchella repens*; *Spigelia marilandica*; *Trillium grandiflorum*; *Uvularia grandiflora*, *U. perfoliata*.

We-Du Nurseries, Marion, NC. (828) 738-8300. www.we-du.com. Catalog \$3. *Arisaema dracontium*; *Chelone glabra*, *C. lyonii* 'Hot Lips'; *Iris cristata*; *Lobelia siphilitica*; *Mertensia virginica*; *Mitchella repens*; *Scutellaria incana*; *Spigelia marilandica*; *Uvularia grandiflora*, *U. perfoliata*.



Bring Life to Your Garden with a Small Pond

A pool of water adds an entirely new dimension to your outdoor space.

BY CAROLE OTTESEN

PHOTOGRAPHS BY DEREK FELL

LIKE A FIRE in the hearth on a winter's night, a garden pond draws us closer to inspect, to take comfort, to stay a while. We are not the only ones attracted. No sooner is there a pool in the garden than wild creatures take up residence in this new ecosystem.

Exactly how frogs know—within hours—about the existence of a new pond is one of nature's mysteries. They appear as if by spontaneous generation. Within weeks, they are joined by birds, butterflies, and dragonflies that dart, circle, and hover above the water, vying for air space.

As well as being a focus and a source of new life in the garden, a pond offers the prospect of a whole new palette of plants. There are tropical lilies—night bloomers with intoxicating scents, reliable hardy lilies that come back bigger every year, prehistoric-looking horsetails, dramatic, sculptural *Thalia*, and dozens of others.

Putting in a pond takes some time and grunt work, but once installed, no other garden element delivers as much beauty, entertainment, and satisfaction for as little effort in maintenance as a garden pond.

DO YOUR HOMEWORK

BEFORE EMBARKING on a pool odyssey, check with your homeowners' association and municipality to see if there are local restrictions on pond construction. Some areas require a six-foot fence for any pond deeper than 18 inches. Many municipalities require recirculating pumps and filtration systems. Others may require building permits.

Before you even think about digging a hole, you must find the best location for a pond in your garden. Adding a filter or an electrical pump for a fountain means you'll have to site your pond where elec-

tricity is accessible. And, of course, you'll need a source of water.

The best site is a sunny spot in the open. Many aquatic plants need six to 10 hours of sunlight per day. A shadier site will limit your selection of plants. Don't place the pond under a large deciduous tree, because fallen leaves will cover the pond in autumn, clogging pumps and filters and, when decayed, harm fish and plants.

Keep at least one edge of the pond accessible, so that you can easily care for the plants, feed the fish, and enjoy the water. And be sure the size of the pond works with the size of other elements in the garden. A spacious patio will dwarf a tiny pool, and vice versa.

EXCAVATING THE POOL

IN ADDITION TO the effect of a pool's size in your landscape, its size affects the life within. The larger and deeper a pool

is, the more water it contains—and the less effect seasonal and diurnal temperature fluctuations will have upon its microclimate. In any case, 50 square feet (10 by 5 feet) is considered the minimum surface area required to maintain health in an in-ground pond.

Garden ponds are usually 18 to 24 inches deep and sometimes include a deeper hole to overwinter fish. Excavate about two inches deeper than you wish the pool to be to accommodate a layer of sand and cushioning. Sculpt built-in shelves of the sides of the pond for emergent plants that grow in less than 12 inches of water.

LINING THE POOL

TO KEEP WATER from percolating into the ground, you'll need to line the excavation with a waterproof material. The instructions on the following page are for the installation of a flexible plastic or rubber liner. The advantage of a flexible liner is that you can make the

pool any size or shape you wish.

You can also use pre-formed fiberglass pools molded in a variety of shapes, many with built-in shelves for emergent plants. Another option is to install a concrete pool, which is very durable but expensive.

WATER

ONCE THE POOL is dug and the liner is in place, do not walk on it or you risk tearing it. Slowly fill the pond with water and use rocks or bricks to hide the edges of the liner. Wait for 24 to 48 hours for the chlorine to evaporate. If chloramine or chlorine dioxide is present in your water, you will need to use treatment chemicals, which are available in water garden supply stores.

The water in a healthy pond looks like a clear, dark crystal. The way to achieve this is to create a balance of life within the pond by adding just the right number and kind of plants, scavengers, and fish. Plants that cover all but 25 to 40 percent of the water surface, a few small fish, and

a snail or two should keep the water clear.

Failing this, you can install a filter or add bacteria that consume nitrogen in the water to help control algae.

PLANTING THE POND

PLANTS ARE crucial to the pond's health. They should cover 60 to 75 percent of the water's surface. Those with floating leaves such as water lilies do the best job of shading and cooling the pond and preventing the growth of algae.

Algae, which thrive in bright sunlight, can cloud the water. It takes about six weeks after the pond and plants are installed before the algae diminish and the water becomes clear. If this doesn't happen after eight weeks, consider using bacterial algae controls or install a filter.

Water plants fall roughly into four categories, depending upon where they grow (see bottom of page). Using a mixture of all types will help create an attractive and healthy pond.

Plants for Water Gardens

Emergent plants

Plants that grow both above and below the water's surface—with roots submerged and foliage above—are called emergent or marginal plants. Some, such as Japanese iris (*I. ensata*), can grow in only two to six inches of water. Others, like water lilies, have floating leaves and require at least a foot of water. Shown, left to right: Blue flag (*Iris versicolor*), arrow arum (*Peltandra virginica*), and lotus (*Nelumbo* sp.).

Floating plants

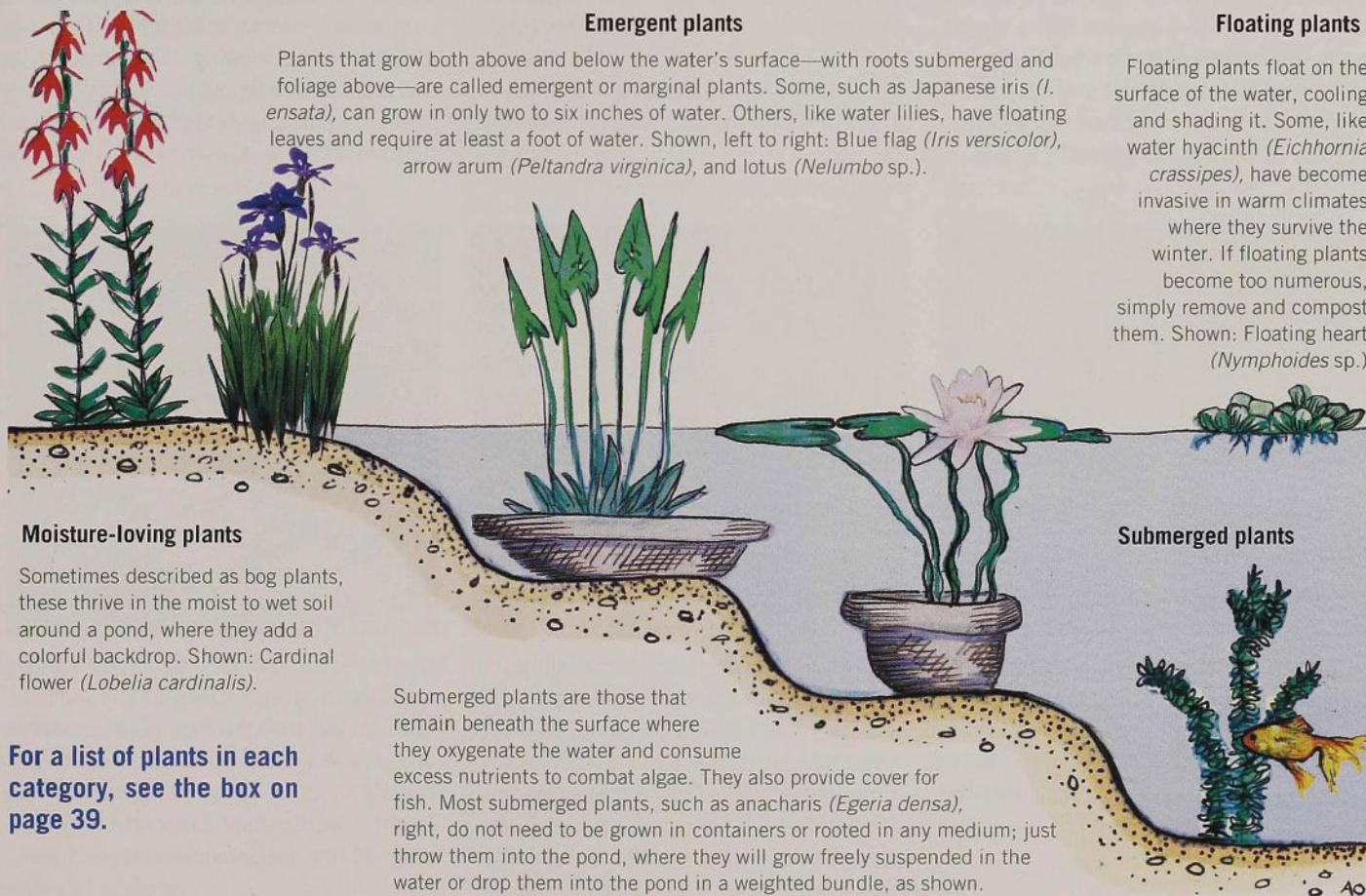
Floating plants float on the surface of the water, cooling and shading it. Some, like water hyacinth (*Eichhornia crassipes*), have become invasive in warm climates where they survive the winter. If floating plants become too numerous, simply remove and compost them. Shown: Floating heart (*Nymphoides* sp.).

Moisture-loving plants

Sometimes described as bog plants, these thrive in the moist to wet soil around a pond, where they add a colorful backdrop. Shown: Cardinal flower (*Lobelia cardinalis*).

Submerged plants

Submerged plants are those that remain beneath the surface where they oxygenate the water and consume excess nutrients to combat algae. They also provide cover for fish. Most submerged plants, such as anacharis (*Egeria densa*), right, do not need to be grown in containers or rooted in any medium; just throw them into the pond, where they will grow freely suspended in the water or drop them into the pond in a weighted bundle, as shown.



For a list of plants in each category, see the box on page 39.

BUILDING A POND WITH A FLEXIBLE LINER

Installing a small pond—especially one without an electrical pump or filtering system—is not a technically difficult project, but it does require some muscle power. Still, a pond like the one shown here can be installed over a weekend, especially if you have an assistant. The use of a flexible liner is a boon for the novice pondcrafter; since precision digging isn't nearly as critical, it is much more forgiving and less labor-intensive than installing either a pre-formed fiberglass pond liner or a concrete pool.

What you'll need: ■ Shovel ■ Flexible liner ■ Tape measure ■ Carpenter's level ■ Long 2×4 or 2×6 board
■ Cinder blocks or other weights to hold down edges of liner ■ Utility knife for cutting liner
■ Work gloves ■ Flat stones for edging the pool ■ Wheel barrow for hauling soil and stones



1. Mark the boundaries of the pool. Stakes and string can be used for straight edges, but if the pool will be irregularly shaped, use a garden hose, shown here. Then start digging the area inside the string or hose to the desired depth plus two inches, being sure to slope the edge to prevent water runoff.



2. Here, the excavation includes sculpted shelves for growing emergent plants, but you can also grow them in containers elevated on bricks to the proper depth. To check the edges of the hole for level, lay a 2×4 or 2×6 across the top and place a carpenter's level on top of the board.



3. Before laying the flexible liner into the hole, remove rocks and other debris that can puncture the liner. Lay down two inches of sand or pieces of carpeting. Then lay the liner on top, allowing it to extend one to two feet outside the edge. Hold down the liner with blocks. Fill the bottom with water to mold the liner to the hole.



4. Once the liner has been adjusted for fit and is filled with water, start laying stones or flagstones on the outer edges of the hole to hide the liner and form an attractive frame around the pool. Trim any excess liner and fill in around the edges with soil or mulch.



5. Wait a couple of days after filling the pool with water before introducing aquatic plants. This allows the water to warm and chlorine to dissipate. Slowly lower containers of aquatics to their appropriate depths. A couple of weeks later, you can introduce fish and other aquatic life.



6. After it's installed, a pond that's been well planned and thoughtfully planted and stocked with the right number of fish and scavengers should not need much maintenance. During the summer, you might need to offset evaporation by topping off the pool every few days.

Resources

The Complete Guide to Water Gardens by Kathleen Fisher. Creative Homeowner Press, Upper Saddle River, New Jersey, 2000.

Pond Basics by Peter Robinson. Sterling Publishing, New York, 2000.

Water Gardens by Peter Stadelmann. Barron's Educational Series, Hap-pauge, New York, 1992.

CONTAINERS

WAIT UNTIL the water in the pond is at least 50° Fahrenheit before placing containers of hardy water lilies or emergent plants into the pond. Tropical lilies and some floaters are tender and should not be set in the pond until the water temperature reaches 70°.

For aquatic plants, wide-mouth containers two-thirds full of heavy clay are ideal. Set the rhizome or root on the soil, cover with more soil, and push fertilizer tablets, available where water lilies are sold, into the soil.

Finally, add a layer of pebbles. Thoroughly water the container and let it drain before *very slowly* lowering it into its place at the appropriate depth. When planting aquatics, never use potting mixes for terrestrial plants; their components will disperse and muddy the water.

POND LIFE

FISH ADD life to the pool, entertain us, and—most important—eat mosquito larvae. They are necessary, but not in great numbers. Four small goldfish or minnows are plenty for a 50-gallon pond. More fish means more food and more waste to sully the water. Unless you have a large pool with adequate filtration and fenced-off plants, avoid big fish like koi.

Add a snail or two, because these scavengers will consume organic wastes and algae. Tadpoles, courtesy of resident frogs, will do the same.

Carole Ottesen is an associate editor of The American Gardener.

PLANTS FOR WATER GARDENS

The following is a list of plants that can be grown in the various mini-ecosystems of your pond. The USDA hardiness and AHS heat zones are listed with each species. Asterisked plants tolerate less than six hours of sun.

Moisture-loving Plants

- Blazing star (*Liatris spicata*, 4–9, 9–1)
- *Cardinal flower (*Lobelia cardinalis*, 3–9, 9–1)
- Joe-Pye weed (*Eupatorium purpureum*, 3–9, 9–1)
- Marsh marigold (*Caltha palustris*, 3–7, 7–1)
- *Ostrich fern (*Matteuccia struthiopteris*, 3–8, 8–1)
- *Rodgersia (*Rodgersia* spp., 5–8, 8–5)
- *Turtlehead (*Chelone* spp., 4–8, 9–1)
- *Wild oats (*Chasmanthium latifolium*, 5–9, 9–5)

Emergent Plants

The following thrive with just enough water to cover their roots—2 to 8 inches:

- Arrow arum (*Peltandra virginica*, 5–9, 9–5)
- Blue flag (*Iris versicolor*, 4–9, 9–1)
- Sweet flag (*Acorus calamus*, 4–11, 11–1)
- *Cattail (*Typha* spp., 4–9, 9–1)
- *Corkscrew rush (*Juncus effusus* 'Spiralis', 3–9, 9–1)
- Golden club (*Orontium aquaticum*, 6–11, 12–6)
- Green taro (*Colocasia esculenta*, 9–11, 12–9)
- *Hardy canna (*Thalia dealbata*, 6–11, 12–6)
- *Horsetail (*Equisetum* spp., 3–11, 12–1). **Can be invasive; keep in a container.**
- Japanese iris (*Iris ensata*, 4–9, 9–1)
- *Pickerel weed (*Pontederia cordata*, 4–11, 12–1)
- *Umbrella sedge (*Cyperus* spp., 10–11, 12–10)

Lotuses and water lilies need 12 to 18 inches of water over their roots:

- Lotus (*Nelumbo* spp., 4–9, 9–1)

- 'Momo Botan' (very double pink flowers, suitable for small ponds)
- 'Mrs. Perry D. Slocum' (cream-pink flowers, suitable for medium to large ponds)

■ Water lilies (*Nymphaea* spp.)

Day-blooming tropical water lilies

(10–11, 12–10):

- 'Afterglow' (very fragrant, pinky salmon flowers),

Nymphaea colorata (wisteria-blue-flowered; small, suitable for small ponds)

Hardy water lilies (4–11, 12–1):

- 'Arc-en-Ciel' (colorful pads, white flowers)

'Pink Sensation' (long-blooming pink flowers)

Night-blooming tropical water lilies

(10–11, 12–10):

- 'H.C. Haarstick' (red flowers, fragrant)

'Wood's White Night' (compact plant with fragrant, creamy white flowers)

Submerged Plants

- *Anacharis (*Egeria densa*, syn. *Elodea densa* and *Anacharis densa*, 6–11, 12–6)
- *Canada pondweed (*Elodea canadensis*, 5–11, 12–5)
- *Water shield (*Cabomba caroliniana*, 6–11, 12–5)

Floaters

- *Floating heart (*Nymphoides* spp., 7–11, 12–6)
- *Mosquito fern (*Azolla caroliniana*, 7–10, 11–6)
- Spatterdock (*Nuphar* spp., 5–11, 12–5)
- Water hyacinth (*Eichhornia crassipes*, 8–11, 12–7)
- Water lettuce (*Pistia stratiotes*, 8–11, 12–8). **Can be invasive in warm climates.**



Species Lilies

The jewellike and often fragrant flowers of species lilies are not just for collectors of the exotic.

BY WOODRUFF B. IMBERMAN

IMAGINE YOURSELF in the shoes of explorer and horticulturist Ernest Wilson, who traveled the Min Valley of Szechwan (now rendered Sichuan) Province of China in the first decade of the 20th century. At that time China was still governed by an empress, whose fiat was shaky, and in her remote provinces travel was far from safe. In his book, *The Lilies of Eastern Asia*, Wilson reported

suddenly rounding a bend in the craggy remote valley in 1902 and making the first find by Westerners of the regal lily (*Lilium regale*) growing wild “along a 50 mile stretch, in narrow, semi-arid valleys encompassed by mountains composed of mud-shales and granites.... In summer the heat is terrific, in winter the cold is intense, and in all seasons these valleys are subject to sudden windstorms against

which neither man nor beast can make headway. There, in June, by the wayside, in rock-crevices by the torrents’ edge, this lily in full bloom greets the weary wayfarer. Not in twos or threes but in hundreds, in thousands.... For a brief season this lonely, semi-desert region is transformed by this lily into a veritable fairy-land.”

The regal lily is one of many “wild” lilies that have bedazzled plant explorers

and gardeners alike through the centuries. Many are bound up with similarly romantic tales of their discovery and mystique, but these plants are not just the stuff of myth of ancient Persia mentioned by Scheherazade in the *The Arabian Nights*, nor lore told to early settlers by Native Americans around campfires, but real flowers that you can grow in your garden to gleam in the morning sun, to nod gently in the afternoon winds, and to perfume your soft summer evenings.

Known collectively as species lilies, these venerable plants are the progenitors of the thousands of modern hybrids, many of which are now commonly sold in grocery stores and are standard fare in flower bouquets—especially the ubiquitous ‘Stargazer’. More than 100 species lilies have been identified, virtually all growing in cold or temperate areas of the northern hemisphere, including Asia, Europe, and North America.

Although hybrid lilies—created by crossing two or more species lilies to enhance or combine desirable features—are the biggest sellers, there is a rapidly growing interest in species lilies from avid gardeners who want something special in their gardens, says Edward McRae, conservator of the Species Preservation Lily Group, and author of *Lilies: A Guide for Growers and Collectors* (see “Resources,” page 45). “A surprising number of discerning gardeners are willing to help grow and preserve these lovely plants in their gardens,” says McRae, noting that many species lilies are endangered in the wild because of overcollection of bulbs, urban sprawl, and other environmental degradations.

There are a number of reasons why species lilies are attracting the attention of American gardeners. Some of us admire their powers of survival. After all, they have thrived for thousands of years with no care in their own natural ecosystems, where they easily withstand the insects and diseases that plague many of the modern hy-

brids. In addition, most species lilies are quite cold hardy and only require winter mulching in the northern extremes of their range. Most require a period of cold dormancy—vernalization—to set blooms, however, so they do not thrive as perennials in gardens south of USDA Zone 8.

Many species lilies adapt well to a variety of garden settings, but a few are more demanding. “Some species lilies are difficult to grow,” McRae says, “because they have adapted to the specific soil, climate, and drainage conditions in their own particular small ecosystem—say at 6,000 feet

these lilies will provide exotic blooms all summer long, and they will happily multiply for the avid amateur gardener.”

Many species lilies bloom in mid-summer, peaking from late June to early August, but a good number of species are noted as early or late bloomers. Bloom time and duration for individual species varies to some degree depending on region, so it is best to check with a local expert if you want to select species based on bloom times.

In general, lilies adhere to the same adage as clematis: Head in the sun and feet in the shade. Most will grow best in a site where their bulbs are shaded but their foliage and flowers receive part to full sun, such as along the edge of a woodland or in a border surrounded by low-growing plants. Preferred exposure also depends on growing region; in hotter areas, lilies will benefit from afternoon shade in summer. A few require dappled or heavy shade. Although many species lilies thrive in moist but free-draining, relatively neutral, organic-rich soils, some individual species tolerate or require slightly alkaline or acidic soil.

The lilies profiled here are ones that generally perform well in gardens in temperate regions of North America. They are organized loosely by usual bloom time, from early to late.

EAST ASIAN SPECIES

THE CENTER OF diversity for lilies is southern and central China, but many are also native to other sections of eastern Asia, including Korea, Japan, and Siberia.

Among the most easy to grow of the Asian species is *L. pumilum* (sometimes listed as *L. tenuifolium*), native to Korea, Manchuria, and eastern Siberia (USDA Zones 3–7, AHS Zones 7–1). Blooming as early as May or June, this lily develops up to 20 brightly gleaming and slightly fragrant red flowers, some with black spotting. It is low growing but somewhat variable in height, reaching anywhere from one to three feet. “Their slender stems fit anywhere in your garden,” says Judith Freeman, who owns The



on the warm south side of a remote mountain in Yunnan province of China, or in cold rocky New England soils.”

But, adds McRae, a wide selection of species lilies “are not as finicky and are easily grown in many areas in the United States.” These more adaptable species include plants that come in a variety of forms, flower colors, and bloom times. An added benefit is that many have fragrant flowers. “With reasonable care,” McRae says, “plantings of a careful selection of

Of the Asian species lilies, two of the easiest to grow are the regal lily, opposite, and *L. pumilum*, this page.

Gold-band lilies, right, have beautiful and deeply fragrant flowers that open to as much as a foot in diameter.

Lily Garden, a nursery in Vancouver, Washington, that is one of the best-known lily suppliers in North America.

Blooming slightly later—in June to early July, just before the hybrid trumpet lilies—is the aforementioned regal lily (*L. regale*, Zones 4–7, 7–1), which stands two to four feet tall. It develops up to eight white, trumpet-shaped flowers decorated with golden throats and reddish-brown coloring on the reverse. These strongly perfumed blooms gleam enticingly in the summer dusk. One of the ancestors of most hybrid trumpet lilies, the regal lily is inexpensive, widely available, virtually indestructible, and easily grown where winter temperatures are cool enough to allow for the needed vernalization. A layer of winter mulch can be helpful in the coldest part of its range.

L. leucanthum var. *centifolium* (Zones 6–8, 8–5) blooms in late July to August, just after the regal lily. Its big, highly fragrant white trumpets are a bit longer than the regal's and are marked with pale gold throats and rose-purple reverses, which outshine most of the modern trumpet hybrids. First discovered in Gusu Province of China in 1914, this lily can reach over seven feet in height and forms up to 20 blossoms. It can be easily grown in most temperate gardens, but is not particularly winter hardy and requires heavy mulching or reliable snow cover to withstand winter winds in the upper Midwest and New England states.

Also blooming in late summer is *L. henryi* (Zones 3–8, 8–1). Growing from four to seven feet with relatively weak stems, *L. henryi* often needs staking to support its 30 or so drooping, bright orange flowers. The tips of the petals curve back dramatically, and each flower is highlighted by an emerald green nectary in the center. A less common, pale yellow variety (*L. henryi* var. *citrinum*) seems to attract butterflies by the dozen. These lilies grow best in a neutral to slightly alkaline soil. *L. henryi* is the parent of numerous hybrids, including flat-faced, spicy-scented Aurelians, like one modern hybrid called 'Thunderbolt' that reaches seven feet, and bowl-shaped Aurelians such as 'White Henry', which has heavy tex-



BASIC LILY BOTANY

Lilies are the type genus for the lily family (Liliaceae), which includes more than 200 other genera of bulbous plants. All lilies grow from a bulb that, much like a garlic bulb, is composed of numerous fleshy scales attached to a short stem. Most lily bulbs stay in place throughout their life span, often forming offshoot bulblets near the main stem, but some species send out underground rhizomes that form new bulbs at some distance from the mother bulb. Such lilies, termed rhizomatous, include eastern North American species such as *L. canadense* and *L. superbum*.

From each bulb, a single green to purple stem grows upward. The unbranched stem supports leaves that range from narrow and linear to broadly lance-shaped. In most lilies the leaves are arranged alternately around the stem, but in some species they form whorls spaced at intervals.

Lily flowers form as single terminal flowers or in inflorescences, where multiple flowers develop from one or more points along the upper portion of the stem. The flowers come in three general shapes that are termed turk's-cap, trumpet-shaped, and bowl-shaped. Turk's-cap flowers droop and have petals that are reflexed, or curve upward, toward the stalk. Trumpet-shaped flowers typically have a narrow, tubular form that flares outward at the tips of the petals. Bowl-shaped flowers are usually outward- or upward-facing, more open than trumpets, and their petals are sometimes reflexed slightly at the tips.

Lily flowers are composed of three petals and three sepals that are so difficult to distinguish from each other they are often lumped as tepals by botanists. Within each flower are six stamens surrounding the pistil. Successfully fertilized flowers form elongate seed capsules filled with numerous flat seeds, some of which have papery edges that serve as aids to wind dispersal.

—W.B.I.

tured, golden-throated white flowers that grow almost as tall.

As the hot days of August arrive, gold-band lilies (*L. auratum*, Zones 4–7, 8–1) show why they are among the most desirable species lilies. Native to the Japanese isle of Honshu, gold-band lilies grow no more than three to four feet tall, but develop four to 10 highly fragrant blossoms up to a foot in diameter. They are the parents of a number of Oriental hybrids distinguished by large, open-faced flowers. A fairly sunny, moist but well-drained site at the edge of a woodland or shade garden is ideal.

Even later blooming—through Labor Day—is *L. speciosum* (Zones 4–8, 8–1), which grows between three to six feet tall and produces vivid rose-red flowers with highly recurved petals. Native to southern Japan, Taiwan, and parts of China, it is among the most heat tolerant and virus resistant of all lilies. Plant it in a site along the edge of a woodland or in dappled shade for best results.

Other good choices among the Asian species include the nodding lily (*L. cernuum*, Zones 2–6, 6–1), a lilac-rose-flowered species native to sandy or rocky soils in Korea, northeastern China, and Siberia; it does not tolerate moisture in late summer and is short-lived. The morning-star lily (*L. concolor*, Zones 3–7, 7–1) develops delicate, scarlet-red, starlike flowers in midsummer if planted in a site with well-drained, neutral to slightly alkaline soil. *L. hansonii* (Zones 2–7, 7–1) has fragrant, orange-red, turk's-cap flowers on two- to five-foot stems; plant it in rich, organic soil in dappled shade or along a woodland edge.

EASTERN AND CENTRAL NORTH AMERICA

THE ASIAN LILIES are coveted for their exotic history, large flowers, fragrance, and bold colors, but North America's native lily species are becoming popular in their own right and some are hardier than their Asian counterparts. Many

have elegant drooping, turk's-cap style flowers in various shades of orange.

East of the Rocky Mountains, early to midseason bloomers such as American turk's-cap (*L. superbum*), meadow lily (*L. canadense*), and *L. michiganense* are well adapted to most gardens.



Meadow lily, above, has a broad range in eastern North America and exhibits many regional forms and varieties. American turk's cap, right, is known to reach 10 feet tall.



Bob Richards, an amateur lily grower in New Hampshire, has made a hobby of seeking out and propagating forms of *L. superbum* (Zones 4–8, 8–3), a lily native from Massachusetts west to Indiana and south to the Carolinas. Richards raises these statuesque lilies—which grow up to 10 feet tall—so well that one of his lilies won the Best of the Show award at the North American Lily Society's international show held last summer.

“Beauty is where you see it,” says Richards. “I like the shape of *L. superbum*, with its orange-yellow turk's-cap flowers standing out in July and August amongst the clumps of goldenrod, native grasses, wild asters, and the occasional brier patches of native roses that grow around here.”

Shorter but just as elegant are *L. michiganense* (Zones 2–7, 7–1) and *L. canadense* (Zones 2–6, 6–1), native to the upper Great Lakes region and southern Canada, where they grow in moist meadows, ditches, and roadsides. “Both types grow from two to five feet tall,” says McRae. Blooming in midsummer, *L. michiganense* has graceful, slightly fragrant flowers of rich orange-red, with heavy brown spotting. *L. canadense* is even showier, its drooping, bell-shaped flowers ranging from lemon to dark orange, with red spots. “Their flowers are no more than two to three inches across,” says McRae, “but what they lack in size is adequately compensated by their charm. A single vase can add grace to an

entire room.” Both species thrive in moist but well-drained, slightly acidic soil in part or dappled shade.

Several lilies—including *L. grayi* and *L. catesbaei*—are native to the woodlands and coastal plain of the Southeast, but for the most part they have not proven widely adaptable in gardens. One exception is Carolina lily (*L. michauxii*, Zones 8–9, 9–8), which grows one to three feet tall with very fra-

grant, orange-red flowers that are yellowish white at the throat. It blooms in July to August and will grow best in slightly acidic, well-drained soil in full sun or dappled shade. Based on this lily's southern range, there is speculation that it does not require a lengthy cold-dormant period to flower.

WESTERN NORTH AMERICA

OF THE West Coast lilies, the leopard

lily (*L. pardalinum*, Zones 4–8, 8–5) is the one that adapts most easily to temperate gardens. It is fairly tall, sometimes reaching five feet, the upper foot or so topped with typical turk's-cap flowers boasting orange-red-tipped petals and yellow centers marked with strong brown-red spots, all bordered in orange yellow. "Few lilies are so colorful and easy to grow," says McRae. "*L. pardalinum*, which is the father of the Bellingham strain of hybrid lilies, is a must for a serious gardener, especially one who wishes to try his or her hand at hybridizing new types."

Native to meadows and open woodlands from British Columbia east to Idaho and south to northern California, Columbia lily (*L. columbianum*, Zones 6–8, 8–6) grows two to five feet tall. Two to 10 small, gold to orange-red flowers, highlighted with purple spots around the throat, bloom anytime from June to August, depending on elevation. Columbia lily thrives in moist but well-drained loamy soil and detests wet feet in summer. McRae suggests growing it in light shade among small shrubs such as rhododendrons.

Another lily that grows best where

summers are dry is Humboldt lily (*L. humboldtii*, Zones 7–8, 8–7), native to dry, open woodlands in the Sierra Nevada of central California. Growing four to six feet tall, this species has brilliant orange flowers spotted with brown or purple that open in June. Provide it with excellent drainage in a sunny location for best results.

Some other western natives look wonderful in the wild but are too demanding to thrive in garden settings. "There is little point trying to grow lilies like *L. bolanderi*, *L. kelleyanum*, or *L. maritimum*, all of which grow in the Pacific Northwest, or *L. parryi*, from the higher elevations in southern California, outside their native habitats," says McRae. "These threatened lilies thrive in particular environments that are very difficult to reproduce in the typical garden. That's why preservation of these wild areas is so important."

LILIES IN THE GARDEN

FEW GARDENERS can resist lilies, but integrating them effectively into the garden can be tricky. They look best when

planted in groups of five or more, either by themselves or surrounded by suitable companions. Cluster shade-loving species along a woodland edge or beneath a relatively open canopy—but well clear of tree roots that will compete for moisture. Lilies that tolerate more sun can be massed in a mixed border or next to a wall with shorter plants shading their roots.

Tall lilies can be grown up through or against a backdrop of shrubs that will protect them from wind and even provide some support. Good choices include rhododendrons and deciduous azaleas.

Airy-textured blue- and purple-flowered plants are nice accents to most species lilies. In early summer, plants that complement them include catmints such as *Nepeeta* 'Pool Bank', salvias, penstemons, monkshood (*Aconitum* spp.), foxgloves, and Siberian irises.

In midsummer, companions might include *Phlox paniculata* 'Blue Boy' or 'Blue Paradise', blue oat grass (*Helictotrichon sempervirens*), delphiniums, and even low shrubs such as *Caryopteris* 'Longwood Blue' or 'Dark Night'.

Late-summer- and fall-blooming



The speckled flowers of leopard lily nod gracefully against a backdrop of *Clematis* 'Duchess of Albany'.

plants that could be paired with lilies are blue-flowered asters such as *Aster frikartii* 'The Monk', boltonia (*Boltonia asteroides*), Russian sage (*Perovskia atriplicifolia*), and white chrysanthemums.

PLANTING LILIES

FOR BEST results, plant or divide lilies in early fall while the soil is still warm enough to foster root development that will anchor and sustain the bulb through the dormant season. Under certain conditions, lilies can be successfully planted in spring. The key is to wait until the soil has warmed up and is not too wet. Before planting, I soak new lily bulbs in a 5 percent bleach solution for 15 minutes to reduce the risk of rot. I also soak them in a growth enhancer such as Rapid Grow for three to four hours.

Plant mature bulbs so the top of each bulb is at a depth equivalent to at least three times its length. For some of the largest lily bulbs, this can mean they are covered by up to 10 inches of soil. While this depth may seem extreme, it insulates bulbs from temperature fluctuations and protects them from damaging heat in warmer areas.

LIVING BEAUTY AND HISTORY

IT'S IMPOSSIBLE not to love the graceful shapes of the species lilies, shapes that perhaps remind romantic gardeners of the glories of ancient Persia where so many grew, the lilies seen by Marco Polo as he explored the Silk Route through the Altai Mountains of central Asia in the 13th century, or the exuberance of our own forty-niners, who found them as they searched for gold in California's mountains.

In those times, there was still mystery in the world—new things to discover over the next horizon, wild areas to explore, and new cultures to learn from. You can share vicariously in this history—and congratulate yourself for playing a role in preserving it—when you gaze over your garden on a sunny summer day and admire the grace and beauty of your new species lilies—new to your garden, but old to humankind. ☪

Woodruff Imberman is past president of the Wisconsin Illinois Lily Society and a Board member of the Species Preservation Lily Group. He lives in Winnetka, Wisconsin.

Resources

North American Lily Society. Yearly membership is \$20 and includes quarterly bulletins, a yearbook, and access to a seed bank of rare lily species and hybrids. Membership applications are available online at the society's Web site (www.lilies.org), or write to North American Lily Society, c/o Executive Secretary, P.O. Box 272, Owatonna, MN 55060.

Species Lily Preservation Group (SLPG). An affiliate of the North American Lily Society (see above), SLPG is an international organization whose mission is "...to further the knowledge, preservation and propagation of species lilies."

SLPG members trade bulbs and seeds with each other the world over. Its members and friends throughout the world search for stands of rare species lilies and collect their seeds. The group maintains nurseries and greenhouses in Oregon, where lilies raised from seeds are grown and propagated. SLPG members have the opportunity to purchase these rare species bulbs and grow them in their gardens.

Annual membership in SLPG is \$7, sent to Margarite Barber, 336 Sandlewood Road, Oakville, ON, L6L 3R8 Canada. Visit the SLPG page on the North American Lily Society's Web site (www.lilies.org) for membership and additional information.

The Gardener's Guide to Growing Lilies by Michael Jefferson-Brown and Harris Howland. Timber Press, Portland, Oregon, 1995.

Lilies: A Guide for Growers and Collectors by Edward Austin McRae. Timber Press, Portland, Oregon, 1998.

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B&D Lilies, Port Townsend, WA. (360) 385-1738. www.bdlilies.com. Catalog \$3. *L. auratum* var. *platyphyllum*; *L. canadense*; *L. cernuum*; *L. concolor*; *L. hansonii*; *L. henryi* var. *citrinum*; *L. leucanthum* var. *centifolium*; *L. pardalinum*; *L. pumilum*; *L. regale*; *L. speciosum*; *L. superbum*.

Heronswood Nursery, Kensington WA. (360) 287-4172. www.heronswood.com. Catalog \$5. *L. auratum*; *L. columbianum*; *L. concolor*; *L. henryi*; *L. leucanthum*; *L. pardalinum*.

J.L. Hudson, Seedsman, Star Route 2, Box 337, La Honda, CA 94020. Catalog \$1. Seeds of *L. canadense*; *L. columbianum*; *L. henryi*; *L. regale*.

The Lily Garden, Vancouver WA 98682-6067. (360) 253-6273. TheLilyGdn@aol.com. Catalog free. *L. auratum*; *L. henryi*; *L. leucanthum* var. *centifolium*; *L. pumilum*; *L. regale*.

The Lily Nook, P.O. Box 846, Neepawa, Manitoba, R0J 1H0 Canada. (204) 476-3225. www.lilynook.mb.ca. *L. henryi*; *L. leucanthum* var. *centifolium*; *L. pumilum*.

Old House Gardens, Ann Arbor MI. (734) 995-1486. www.oldhousegardens.com. Catalog \$2. *L. auratum* var. *platyphyllum*; *L. hansonii*; *L. henryi*; *L. pumilum*; *L. superbum*.

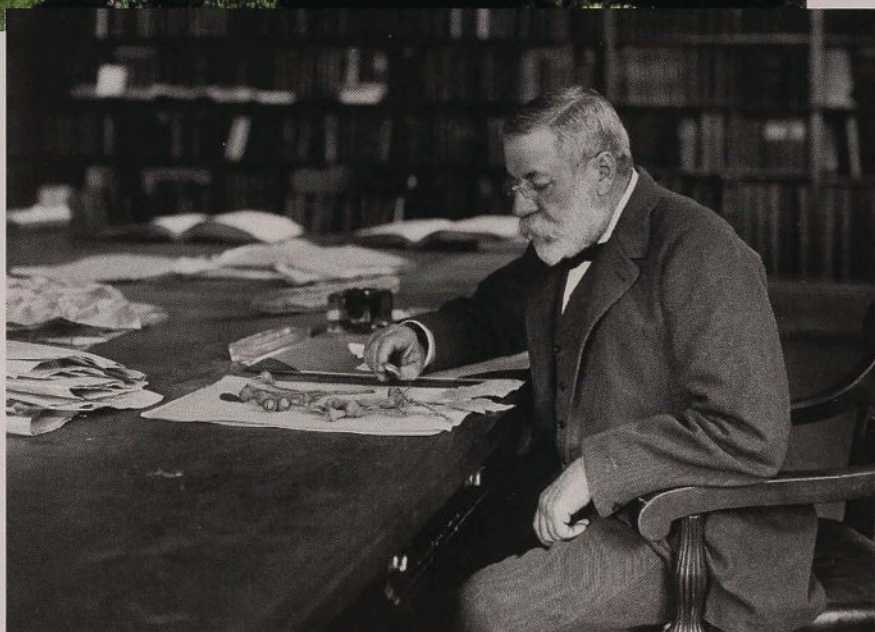
We-Du Nurseries, Marion, NC. (828) 738-8300. www.we-du.com. Catalog \$3. *L. michauxii*; *L. superbum*.

Sargent's Legacy



Born to wealth and privilege, Charles Sprague Sargent's life's work was creating one of the nation's greatest horticultural institutions—the Arnold Arboretum.

BY CAROLE OTTESEN



IN 1872, 31-year-old Bostonian Charles Sprague Sargent became the founding director of Harvard's Arnold Arboretum. If at first glance he seemed an unlikely candidate—he had a poor academic record and no formal training in botany or horticulture—he swiftly proved otherwise. His 54-year tenure was spectacular.

He could not have begun a career in botany at a better time or in a better place. In the last quarter of the 19th century, the country was still young, raw, and rapidly expanding westward, but Boston remained its intellectual hub. Across the Charles River in Cambridge, Harvard's Fisher Professor of Natural

History and head of its botanic garden was the foremost botanist in the country, Asa Gray.

In the course of Gray's lifetime, botany had grown from the 18th century's mere cataloging of the natural world into a serious scientific discipline, refining and systematizing the contributions of the past as well as absorbing new information from worldwide botanical exploration. A vast body of data existed for comparisons to be drawn, relationships to be made, and theories supported. In England, Charles Darwin had just published *On the Origin of Species*. His good friend Gray, a first-rate morphologist, was Darwin's supporter and spokesman at Harvard.

“Each species, represented...by half-a-dozen specimens, will be planted in immediate connection with its varieties, making with its allies, native and foreign, loose generic groups.... Each of these groups will rest on the main avenue so that a visitor driving through the Arboretum will be able to obtain a general idea of the arborescent vegetation of the north temperate zone without even leaving his carriage.” —Charles Sprague Sargent, 1879



Opposite, top: The lilac collection at the Arnold Arboretum. Opposite, bottom: Sargent examining an herbarium specimen of an oak in the arboretum library in 1904. Above: Cherry trees named after Sargent—*Prunus sargentii* 'Columnaris'—bloom in spring on the arboretum grounds.

It was an era in which the leaders of any discipline in the English-speaking world comprised a small circle whose members were known to each other, when the influence of wealthy patrons was expected, and introductions or letters of introduction were the social grease that kept the machinery running. Sargent's impeccable family background facilitated his entrée into the elite world of botany.

DEEP NEW ENGLAND ROOTS

SARGENT'S FAMILY traced its roots back to merchant and shipowner Epes Sargent, who had come to the New World

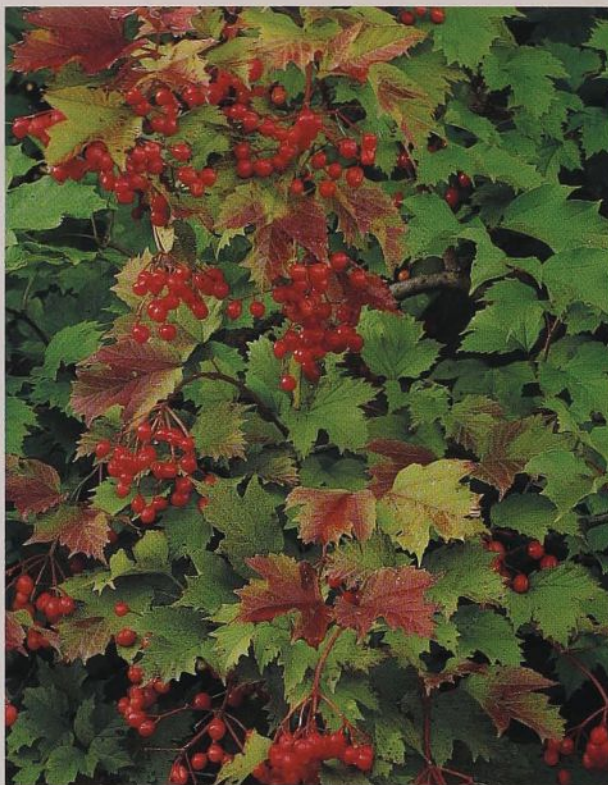
from England before 1675. By the time Charles Sprague Sargent was born, four generations later in 1841, the family had grown rich and was numbered among Boston's "Brahmins," the socially elite. The solid, successful merchants on the family tree shared branches with New England's luminaries, including a Chief Justice of the Supreme Court of Massachusetts, the founder of the American Academy of Dramatic Art, the richest man in New England, and the acclaimed painter John Singer Sargent.

The few facts known about Charles Sargent's youth are that he was born and brought up in Boston and spent summers first

in nearby Medford and, later, in Brookline when Holm Lea became the family estate. He attended the Epes Sargent Dixwell School for boys and, in 1858, entered Harvard. After graduating in 1862, he served in the Union Army during the Civil War. After the war, he eschewed the more traditional professions such as law and finance that were expected of a man of his class and fortune. His wealth freed him to pursue his interest in botany. He spent three years traveling in Europe, returned to Boston in 1868, and undertook the management of Holm Lea, which at 130 acres was the largest private property in such close proximity to Boston.

FRIENDS AND MENTORS

FAMILY AND FRIENDS helped to guide Sargent. His uncle Henry Winthrop Sargent and a neighbor, Horatio Hollis Hunnewell, both enthusiastic amateur horticulturists, owned estate gardens that housed important collections. Their gardens proved excellent classrooms, opening up a new world of plants to the budding botanist and schooling him in plant relationships and botanical Latin. Uncle Henry, a good friend of preeminent American landscape designer Andrew Jackson Downing, introduced



the younger Sargent to the European tradition of landscape design.

While Sargent was learning the rudiments of botany and horticulture, Gray was writing the *Flora of North America*, but the going was painfully slow. Professorial responsibilities as well as the management of Harvard's botanic garden weighed upon Gray, consuming his energies. He could devote so little time to his magnum opus that he petitioned Harvard's president Charles W. Eliot for relief. In 1872, he was given leave to hire a director for the botanic garden, called simply "the Garden," and for a new property destined to become the Arnold Arboretum.

Charles Sargent's neighbor and garden mentor, Hunnewell, was not only a friend of Gray and a man who had contributed generously to Harvard, but also a personal friend of President Eliot.

Hunnewell is suspected of putting forth Sargent for the position. In May 1872, Charles Sprague Sargent became a Professor of Botany; in June, 1872, he was named director of the Garden and of the arboretum project.

AT THE HELM OF THE ARNOLD

DESPITE A LACKLUSTER academic record—Sargent had ranked 88th of 90 in his graduating class at Harvard—and no formal training or experience in botany or horticulture, he brought an extraordinary package of personal attributes to the table. In addition to his wealth and powerful connections, he brought intelligence, a strong will, robust energy, an extraordinary ability to raise funds, and a passion for completing what he started. Most important, he brought his great love of trees.

He was to need and use all of his attributes and associations to wrest an arboretum from what he described as 120 acres of "worn-out farm land." More daunting even than the condition of the land was the paltriness of the arboretum's annual stipend. A mere \$3,000 was all that could be counted upon to develop roads and a watering system, to build offices and greenhouses, to hire help, and to buy, plant, and care for the trees on the property.

After the initial shock at the seeming impossibility of this venture, Sargent manufactured his own good fortune rather than wait for it. He threw himself into making the arboretum a reality. His accession to director of the Arnold Arboretum coincided fortuitously with his friend Frederick Law Olmsted's commission

Sargent's incredible life work and horticultural accomplishments are evident by the number of plants named in his honor. These include *Malus sargentii*, left, *Viburnum sargentii*, top, *Cupressus sargentii*, and *Juniperus chinensis* var. *sargentii*. *Lilium sargentiae*, collected in China by E.H. Wilson, honors Sargent's wife, Mary Allen Robeson Sargent. *Tsuga canadensis* 'Sargentii' honors his uncle, Henry Sargent.

Resources

Sargent's main works are all out of print, but can often be obtained through antiquarian book dealers or are available at academic libraries.

The Silva of North America, 14 volumes, Houghton Mifflin: Boston, Massachusetts, 1891–1902.

Forest Flora of Japan, Houghton Mifflin: Boston, Massachusetts, 1894.

Manual of the Trees of North America (Exclusive of Mexico),

Houghton Mifflin: Boston, Massachusetts, 1905, 2nd edition, 1926.

For further reading about Sargent

"The Arnold Arboretum: An Historic Park Partnership" by Sheila Conner in *Arnoldia*, No. 4, Vol. 48, Fall, 1988.

Charles Sprague Sargent and the Arnold Arboretum by S. B. Sutton. Harvard University Press, Cambridge, Massachusetts, 1970.

to design a park system for the City of Boston, and Sargent made the best of it. Olmsted agreed—gratis—to draw plans for the arboretum that would blend a natural style with taxonomic order, but first Sargent had to raise and donate funds for the survey, contour map, and incidentals. Then, using all of the weapons in his personal arsenal—including procuring the signatures of 1,305 prominent Bostonians on a petition—Sargent performed the amazing feat of convincing both Harvard and the City of Boston to abide by a plan he had developed with Olmsted: The city would take the land and lease it back to Harvard for 1,000 years at \$1 per year, with an option to renew. The city could use the arboretum as a public park in exchange for maintenance services. The city would build roads and provide a water system; Sargent would plant the trees.

Forty years later, in 1914, David Fairchild, the first head of the U.S. Department of Agriculture's Seed and Plant Introduction

Station, described Arnold Arboretum as the premiere garden of its kind in the country. In *The World Was My Garden*, Fairchild wrote: "The Arnold Arboretum, established in 1872, had an endowment of \$150,000 and had already grown into a famous institution under the guidance of Professor Sargent, who raised over \$30,000 annually for forty years to maintain it. This Boston institution had more than two hundred acres and a library of over 25,000 volumes."

The library, which today specializes in Old World plants with an emphasis on those of Southeast Asia, had grown from nothing. In 1872, Sargent donated \$10,000 to buy books. In addition, he turned over his own collection of some 10,000 books and pamphlets as a nucleus. By 1929, two years after his death, the collection, bolstered by a bequest from Sargent, numbered 40,000.

To achieve his ends and to get things done, Sargent frequently opened his own purse. Just as frequently, he applied to his friends for funding and other assistance. One story, possibly apocryphal, has the normally retiring Sargent holding a dinner party every time he needed funds for another project. Typically, the story goes, he would stand up, announce what sum he had donated to the cause, and ask for similar gifts from his guests.

What is true is that Sargent was successful in fundraising throughout his career. Among the many gifts that he instigated was one from his friend Hunnewell, who gave \$30,000 to Harvard, earmarked for an arboretum building to house the library, herbarium, and museum. Friends also assisted Sargent when, in 1888, he published the weekly magazine *Garden and Forest*, the first American journal devoted to horticulture, botany, landscape design, preservation, and conservation. Olmsted helped and Hunnewell and other wealthy patrons became stockholders.

In addition to the magazine, Sargent spent 20 years writing the *Silva of North America*. The first of 14 volumes appeared in 1891, dedicated to "Asa Gray, Friend and Master." In preparation for writing the *Silva of North America*, in an age when travel was laborious and complicated, Sargent tramped through the wilderness to see native trees growing in the wild.

THE FOREST AND THE TREES

ALTHOUGH SARGENT may be better known as the man who hired celebrated plant explorer Ernest H. "China" Wilson away from the British Veitch nursery firm, he also did his own



In this photograph, taken around 1904, Sargent contemplates some of his treasured trees on the grounds of the Arnold Arboretum.

“Muir and I traveled through many forests, and saw together all the trees of western North America, from Alaska to Arizona. We wandered together through the great forests which cover the southern Appalachian Mountains.”

—Charles Sprague Sargent

exploration on the West Coast, in Florida, and in the southern Appalachians. He often accompanied naturalist and conservationist John Muir. “Muir and I traveled through many forests, and saw together all the trees of western North America, from Alaska to Arizona. We wandered together through the great forests which cover the southern Appalachian Mountains,” wrote Sargent.

Sargent didn't restrict his interest to trees. In 1886, using early plant explorer André Michaux's journal as a guide, Sargent found a perennial that had been collected by Michaux 100 years before and never found again. Asa Gray had searched in vain for it, but it was Sargent who found Oconee bells (*Shortia galacifolia*) growing near Highlands, North Carolina, at the headwaters of the Keowee River, below the Balsam Mountains.

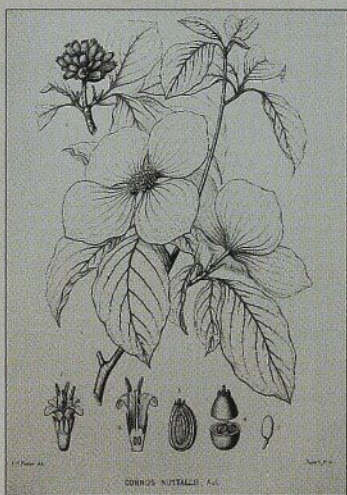
DONATED SARGENT VOLUMES ENHANCE AHS LIBRARY AT RIVER FARM

The American Horticultural Society is proud to announce the generous gift of a first-edition of Sargent's 14-volume *Silva of North America*, received from Norman G. Fischer of Wye Nursery in Hillsboro, Maryland. These remarkable volumes, published between 1891 and 1902, will occupy a prominent place in the special collection of American horticultural reference works preserved in the AHS Library.

Referred to as “Sargent's *Silva*” and illustrated by Charles E. Faxon, the books were Sargent's masterwork. “I have,” he wrote in the preface to the first volume, “examined the trees of America growing in their native homes from Canada to the banks of the Rio Grande and the mountains of Arizona, and from British Columbia to the islands of southern Florida.”

Written over a period of 20 years, Sargent's *Silva* bridged a gap for American botanists. Previously, the standard references had been the volumes of *North American Sylva*, published by François André Michaux in 1819 and enlarged by Thomas Nuttall in 1849. But these had become outdated as new territories entered the Union and botanists made their way into previously inaccessible areas of the American wilderness.

—C.O.



A page on *Cornus nuttallii* from the fifth volume of Sargent's *Silva of North America*, published in 1893.

In 1892, he traveled to Japan, where he made the first thorough scientific study of its woody plants, which was published in his *Forest Flora of Japan*. He introduced Japanese plants including the wild “torch” azaleas, *Rhododendron kaempferi*, *Acer nikoense* (later renamed *A. maximowiczii*), the longstalk holly, (*Ilex pedunculosa*), and the Sargent cherry (*Prunus sargentii*). Many other plants named in his honor bear the species name *sargentii*.

Despite his focus on the trees, Sargent didn't miss the forest, which he would later champion. Returning from the area that is now Glacier National Park in Montana, he made one of the first proposals for its protection. And he joined in early efforts to protect the Adirondack region from widespread tree cutting by the lumber, paper, tanning, and mining industries and to set aside large areas as a reserve.

Back in Boston, Sargent campaigned for setting aside national parks and forest preserves and took up the yoke of his other responsibilities—the continuing development and maintenance of the arboretum, herbarium, and library, the magazine, and his writing—to say nothing of his home and family, including his wife, Mary, and their five children.

Nevertheless, from time to time, he took on the responsibility of mentoring a special student. Beatrix Jones Farrand, the only female founding member of the American Society of Landscape Architects was one.

When the young, inexperienced, and untrained Sargent accepted the directorship of the Arnold Arboretum, no one could have predicted his success. In his 54 years as director, he took what he described as “worn-out farm land” and more than doubled its size (to 250 acres from 120), and raised the funds to turn it into an arboretum with an herbarium and library of international standing. And he more than accomplished his goal to display “every tree and shrub capable of withstanding the climate of Massachusetts.”

His love of trees was disseminated through his writings and, more spectacularly, through his considerable influence in establishing our national and state parks. It is not surprising that his friend, naturalist and conservationist John Muir, who accompanied Sargent on many of his travels, “affectionately dedicated” his book, *Our National Parks*, “To Charles Sprague Sargent Steadfast Lover and Defender of our Country's Forests.”

Carole Ottesen is an associate editor of The American Gardener.



In 1886, Sargent rediscovered Oconee bells (*Shortia galacifolia*), above, last seen by André Michaux 100 years earlier.

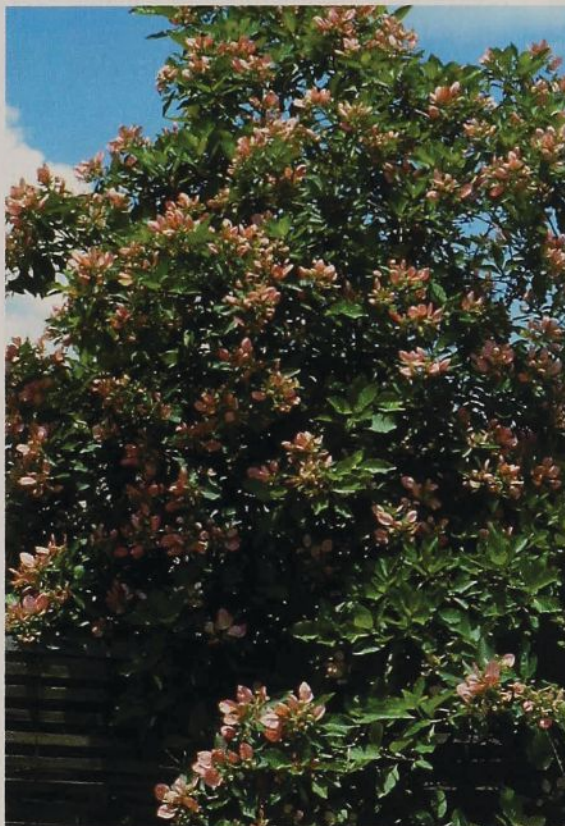
Fever Tree

by Donald Humphrey

THE DOVE tree (*Davidia involucrata*) of China is cloaked in the romance of plant exploration. The famed Veitch nursery in England dispatched E.H. Wilson to China in 1904 expressly to collect seed of this fabled tree so it could be brought into cultivation. It is renowned for the two unequal white bracts that subtend the inconspicuous flowers, giving it its other common name, handkerchief tree.

Though the dove tree has no relatives in the New World, sequestered away in the outer coastal plain from South Carolina to northern Florida is a small and very rare tree that bears some resemblance to it and might be called the American pink handkerchief tree—*Pinckneya bracteata* (syn. *P. pubens*). A member of the family that includes coffee and gardenia, *P. bracteata* occurs in low sandy swamps and stream margins and, though rare, may be locally abundant where it is found.

Described by Leonard E. Foote and Samuel B. Jones Jr. in *Native Shrubs and Woody Vines of the Southeast* as “one of the most attractive” flowering shrubs or small



trees of the region, this seldom cultivated tree bears several common names—fever tree, Georgia bark, and feverbark—that refer to its historic use in folk medicine for the treatment of malaria. It can reach 20 to 30 feet in height in the wild, but it tends to be smaller when grown in a garden.

Fever tree is found in nature in USDA Zones 8 and 9, but it grows in Zone 7 in at least three locations: the North Carolina Botanical Garden in Chapel Hill, North Carolina; the U.S. National Arboretum in Washington, D.C., and Green Spring Gardens Park in Alexandria, Virginia. The tree at Green Spring is one I grew from seed in the mid-1980s and is now about seven feet tall. It has bloomed well and set seeds for the past two years.

The remarkable feature of fever tree flowers is that the showy portion is not the corolla—which is tubular and an insignificant greenish yellow—but one or two of the leaflike calyx lobes that become pink and up to two and a half inches long and about an inch wide. Blooming occurs in May and June, and since the flowers are clustered at the end of the branches, the effect is eye-catching. Even after the flowers fade, the pink lobes carry on the display. Loose clusters of oval fruit capsules are said to ripen in autumn, but on the tree at Green Spring, they remain closed through the winter and do not open to disperse the seeds until the following spring.

In the garden, fever tree is best used as a single specimen or underplanted with low shrubs and perennials. Its native habitat suggests that it will not flourish in dry soil, and, indeed, I lost a tree that was competing for moisture with the roots of a large willow oak during a recent summer drought. The tree at Green Spring grows in a loamy soil that is watered as needed, and it seems to be flourishing. Good drainage, sun or light shade, and an acid soil appear to be the other prerequisites for success in the garden. Given these conditions, fever tree seems suited for gardens from east Texas up the Mississippi River valley to southern Illinois and the southern coastal plain and Piedmont to Virginia and up the coast at least to Philadelphia.

Donald Humphrey is former manager of Green Spring Gardens Park in Alexandria, Virginia.

Sources

Fairweather Gardens, Greenwich, NJ. (856) 451-6261. www.fairweathergardens.com.
Forestfarm, Williams, OR. (541) 846-7269. www.forestfarm.com.
We-Du Nurseries, Marion, NC. (828) 738-8300. www.we-du.com.
Woodlanders, Aiken, SC. (803) 648-7522.

Book Reviews

Bold Visions For The Garden.

Richard Hartlage. Fulcrum Publishing, Golden, Colorado, 2001. 160 pages. Publisher's price, softcover: \$29.95

MOVE OVER Gertrude Jekyll! Richard Hartlage has arrived to throw some wild American colors—and even wilder American shapes—into your peaceful pastels and gentle British combinations. Not to get jingoistic here, but this seems a very American vision. No, the author doesn't make that claim; I'm making it for him. He does make a clear statement in favor of strong—make that occasionally outlandish—shapes, colors, and architectural elements. His style is emphasized in this lively-looking book by the paper itself, which occasionally provides a bold background of chartreuse, orange, blue, and black rather than a more traditional white.

A descendant of several generations of Kentucky soil-tillers, Hartlage is cur-

rently curator and director of the Elizabeth C. Miller Botanical Garden in Seattle, Washington. It is through his unerring artist's eye and photographic lens that we discover a range of vibrant—occasionally disquieting—but highly original landscapes from coast to coast, created not only by himself, but by a few of his favorite designers.

And what compelling landscapes these are: a wildly Medusalike aloe accenting a curved orange masonry wall; a shiny stainless steel fountain guarded by

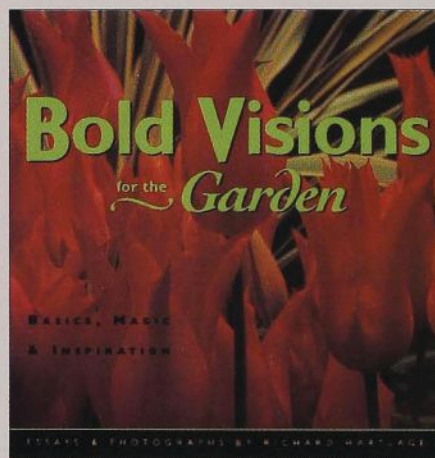
symmetrical lollipops of topiary myrtle; white birches vying for space among pale green ferns and crimson-black glass rods by artist Dale Chihuly; and a variegated yellow acorus setting off the bright blue of a painted wooden fence.

Hartlage's favorite landscapes are littered with the likes of such intriguing non-plant forms as giant Australian clam shells, a serpentine wall covered in green glass tiles, and a mazelike sequence of purple, pink, and blue "rooms." But equal time is given to such horticultural eye catchers as giant reed grass, elephant ears, *Acanthus montanus* 'Frieling's Sensation', *Molinia caerulea* subsp. *arundinacea* 'Skyracer', and undulating hedges of dark green yew.

No matter what your personal gardening style, you are sure to be wooed by Hartlage's view of what "works" in the garden in terms of color, scale, light, sequences, boundaries, paths, textures, and forms. His is a powerful case indeed for the "marrying" as he calls it, of the too often warring disciplines: landscape architecture and horticulture. It is a marriage that "most inspires me," says Hartlage, "when thoughtful garden architecture and deft horticulture converge to create a unique place."

Seen through his eyes, this is surely one marriage that has been made in heaven.

—Linda Yang



Below: A serpentine wall covered in green glass is an unusual focal point in this garden. Photograph by Richard Hartlage from his book *Bold Visions for the Garden*.



Former garden columnist for The New York Times, Linda Yang is author of four books, including *The City Gardener's Handbook*, recently republished by Storey Books.

Insects and Gardens: In Pursuit of a Garden Ecology.

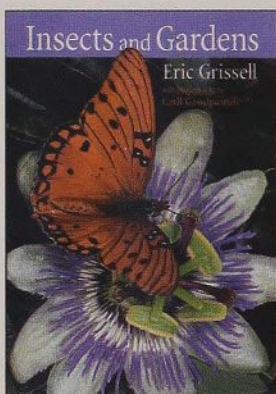
Eric Grissell. Carl Goodpasture, photographer. Timber Press, Portland, Oregon, 2001. 345 pages. Publisher's price, hardcover: \$29.95.

HERE'S A statement to grab your attention: A garden is a "nonfunctional ecosystem." Or how about this? A "natural

garden" is (gasp!) an oxymoron. I came across these outrageous statements in the first three pages of Eric Grissell's highly entertaining and enlightening book, *Insects and Gardens*. Grissell, a research entomologist for the USDA in Washington, D.C., really knows how to rattle a cage!

Grissell encourages us—with both wit and cunning—to begin thinking of insects as "animals," rather than creepy crawly things we'd rather stomp on or swat. He explains that thrips are the only insects that don't have right mandibles and asserts that this tidbit is "a good thing to remember when the party gets a little dull." Following the statement that female earwigs protect their eggs until they hatch, Grissell asks us, "Does that sound like an insect that should be condemned without some additional thought?"

But Grissell's underlying theme is a serious one: We gardeners (and he's one,



too) must work within the laws of nature if we expect to develop gardens that function as balanced, naturalistic systems. In 1993, he says, 1.1 billion pounds of pesticides were used in the United States. As a result, we are killing the "good guys" along with the "bad," reducing food sources of desirable inhabitants, encouraging insects to build greater resistance to the chemicals we're using, and contaminating our environment.

"But my prize roses are being destroyed by aphids!" you cry. Here's where the interwoven issues of balance and diversity enter. We learn from the author that outbreaks of insects we label "pests" are the result of a disruption in the balance of the garden. To assume stability, we need to encourage a variety of plant and animal species to take up residence.

Grissell describes a "three-tiered system," with biological diversity increasing biological complexity, which in turn increases biological stability. He explains just how to create and increase this diversity in your garden. So, back to your

roses. With a diverse array of plants, you'll invite parasitic wasps into your garden. They lay their eggs in aphids and...zap! death by natural causes.

I highly recommend *Insects and Gardens*, which is a recipient of the American Horticultural Society's Book Award for 2002 (see page 10 for details about the award). Grissell's lifelong fascination with the insect world is contagious and the magnificent photographs by Carll Goodpasture perfectly illustrate the author's concepts, from the graphic "bug-eats-bug" photos to the intimate views of the nectar feeders.

I give this book two antennae up!

—Kathryn Lund Johnson

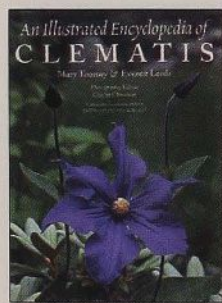
Freelance writer and photographer Kathryn Lund Johnson of Middleville, Michigan, wrote about "Compost Critters" in our July/August 2000 issue.

An Illustrated Encyclopedia of Clematis.

Mary Toomey and Everett Leeds. Published in association with the British Clematis Society, Timber Press, Portland, Oregon, 2001. 426 pages, Publisher's price, hardcover: \$59.95.

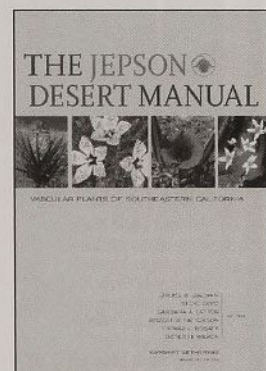
MY HUSBAND and I have been collecting clematis for 20 years and I own many books about the genus. As someone who writes and talks a lot about clematis, I frequently need to look something up about a particular species or cultivar. This usually requires searching through many different books until I find what I am looking for. Toomey and Leeds' extensive encyclopedia, which includes 650 color photographs (one for nearly all of the selections discussed in the book), should largely put an end to the multi-volume search. It is that comprehensive.

The first eight chapters deal with history and botany, cultivation and care, pruning, propagation and hybridization, use in



the garden landscape, problems, and clematis in North America. The North American chapter was written by Maurice Horn and Linda Beutler, and I would have liked

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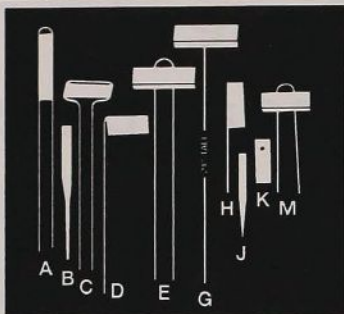
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more on this subject, but it is, after all, a British book.

Most of the book—295 of the 426 pages—consists of an extensive alphabetical listing of the clematis. In the montana group, for instance, 32 plants are listed with pictures of all but one. No other clematis book to date even comes close.

The organization of the encyclopedia section, however, is somewhat confusing from my perspective. Cultivars are listed alphabetically rather than in association with the species or group with which they are most closely linked—*texensis*, *montana*, *alpina*, *macropetala*, *viticella*, etc. I'm sure there is a nomenclatural justification for this, but truth is not always clarity. To my way of thinking, a listing by groups would help organize the plants, providing clues to culture and appearance, based on similarities within the group. To be fair, all the plants in each of the groups are listed in Appendix 1, and each individual listing indicates which group the cultivar is affiliated with. But to compare the details of a selection in a particular group, I had to look up each one separately, mark each of the pages, and thumb back and forth.

For those seeking sources, an extensive list of nurseries is included in Appendix 5. Of course, not all of the clematis mentioned in this book can be found at these nurseries—it is, after all, an encyclopedia. And many of the selections are not currently available in this country, although every year more reach our markets, increasing the number of fascinating selections from which gardeners can choose.

This very complete book provides details on those selections that will be new to gardeners in this country as well as those that have been around a while. Whether you are trying to select a new clematis suited to your gardening conditions or looking for cultural details about one you are already growing, you will probably find the information you need in this book. I am delighted such a comprehensive resource is finally available.

—Dorothy Rodal

Dorothy Rodal lives in Portland, Oregon, where, until recently, she owned and operated a small clematis nursery with her husband.

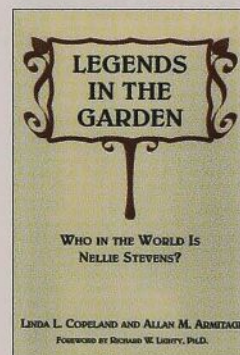
Legends in the Garden:

Who in the World is Nellie Stevens?

Linda L. Copeland and Allan M. Armitage.
Green Leaves Press, Atlanta, Georgia, 2001.
194 pages. Publisher's price, hardcover: \$24.95.

OUR MEMORIES of friends and fellow gardeners are often entwined with plants they gave us. In *Legends in the Garden*, the authors have introduced us to 46 new people and places associated with plants that have been part of many of our gardens and lives for years.

These tales are at least as much about people and places as plants. Linda Copeland and Allan Armitage have communicated with the people who were there when *Calycanthus floridus* 'Athens' and 'Michael Lindsay' were named. They know the 'David' behind



the incredibly mildew-resistant white phlox and the Kim of 'Kim's Knee High' and 'Kim's Mop Head,' two wonderfully dependable coneflowers.

In cases where a plant's namesake has died, the authors talked with the person's descendants or colleagues, or searched old records to find their stories. This book will acquaint you with the boys who found 'Corbett' columbine, the plant explorer who brought us zoysia grass and 'Meyer' lemon, and, of course, teacher Nellie Stevens, whose namesake holly has been a garden favorite for nearly half a century.

Legends in the Garden is one of those rare gems that reflects good scholarship, good writing, and fills a void so obvious that you are left wondering why such a book had not been written before. I hope the authors decide to follow up with another volume or even a series. If they do, I am sure it will be filled with more welcome new friends and places.

—Richard E. Bir

Richard E. Bir is a horticultural extension specialist at North Carolina State University and author of Growing and Propagating Showy Native Woody Plants.

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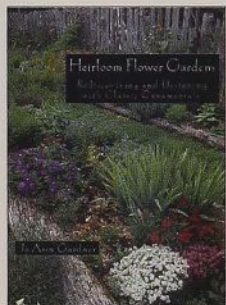


Gardeners' Books

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

Heirloom Flower Gardens: Rediscovering and Designing with Classic Ornamentals.

Jo Ann Gardner. Chelsea Green Publishing Co., White River Junction, Vermont, 2001. 312 pages. Publisher's price, softcover: \$24.95.



IN THIS updated and revised edition of the 1992 original, Jo Ann Gardner presents a grand bouquet of heirloom flowers "beautiful and reliable, like old

friends you look forward to seeing every season from year to year." As with old friends, there are stories to tell. If you've ever wondered who Mrs. Moon was, or which lily Jefferson planted at Monticello, sit down with this book. Gardner's easy style combines cultural information, history, and lore; it reads like a lively conversation with a garden-loving friend.

How to Grow More Vegetables: (and fruits, nuts, berries, grains, and other crops) Than You Ever Thought Possible on Less Land Than You Can Imagine.

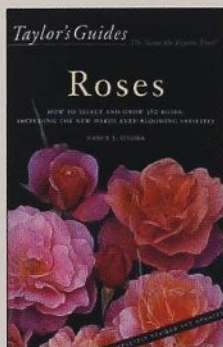
John Jeavons. 10 Speed Press, Berkeley, California, 2002. 240 pages. Publisher's price, softcover: \$17.95.

THIS CLASSIC reference for bio-intensive gardening has been updated and ex-

panded several times since its original publication in 1974. Though the lessons in sustainable food production, efficient use of resources, and improvement and preservation of soil fertility are much the same, this new edition includes updated gardening charts and new techniques developed for small-scale food production. For gardeners who aspire to produce their own food using sustainable gardening techniques, this reference is loaded with inspiration and ideas.

Taylor's Guide to Roses.

Nancy J. Ondra. Houghton Mifflin, Boston, Massachusetts, 2002. 474 pages. Publisher's price, softcover: \$23.

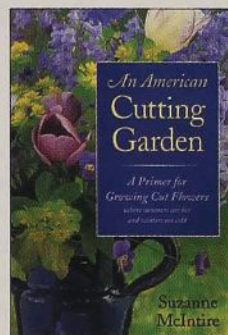


NO SURPRISES here. This is good, solid, straightforward information on roses that is clearly and simply stated. The introduction graphically illustrates rose anatomy to end any confusion you may or may not have about roses' "eyes," "bud unions," "petioles," and "stipules." The chapter "Rose Growing Basics" covers siting and culture. And the roses pictured in the "Gallery of Roses" are lovely to look at and divided by type—old garden roses, floribundas, hybrid teas, etc.

An American Cutting Garden: A Primer for Growing Cut Flowers Where Summers are Hot and Winters are Cold.

Suzanne McIntire. University Press of Virginia, Charlottesville, Virginia, 2002. 288 pages. Publisher's price, hardcover: \$29.95.

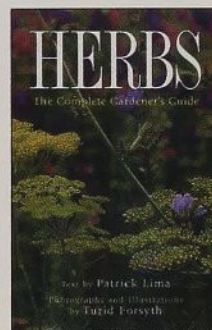
A USEFUL addition to every flower arranger's bookshelf, this is a book to have at hand when you place your



seed/plant order. There are no illustrations, but plenty of advice in the chapter "Two Hundred Choice Plants for your Cutting Garden." And you don't have to be an experienced gardener with a sunny acre to grow many of these cut flowers. There are suggestions for beginner, small, and shady gardens, as well an especially useful appendix on "A Sequence of Bloom with the Dates of First Flowers."

Herbs: The Complete Gardener's Guide.

Patrick Lima. Photographs and illustrations by Turid Forsyth. Firefly Books, Buffalo, New York, 2001. 224 pages. Publisher's price, hardcover: \$35, softcover: \$24.95.



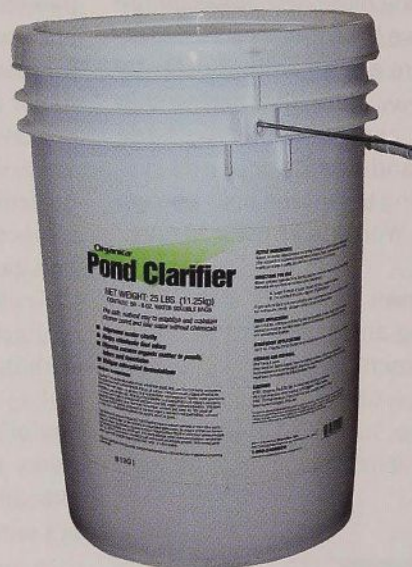
THIS comprehensive guide approaches herbs from multiple perspectives: as culinary seasonings, as useful remedies, and as fragrant additions to garden and home. It is, however, the coverage of herbs as they can be used to enhance the landscape that is most appealing about this book. An entire chapter is devoted to "Garden Silverware: Plants with Gray Foliage" and another to "Shades of Green: Choice Selections for Dark Corners." An abundance of intensely colored photographs and detailed watercolors bring these multi-faceted plants to life. Recipes using fresh herbs and recommendations for preserving them are included.

Seasonal Garden Goods

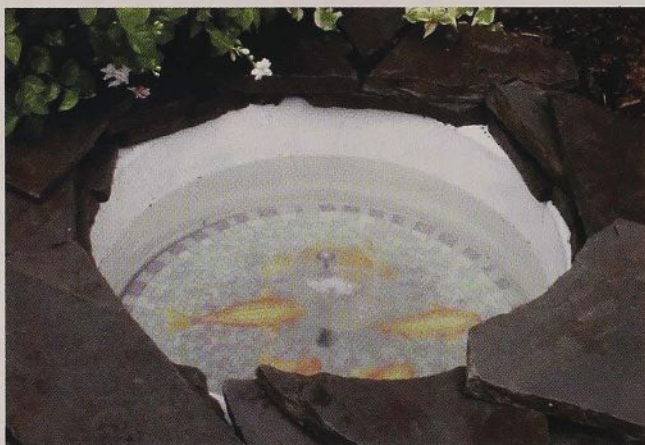
Whether you already have a pond or are just thinking of testing the waters, here are some products that can improve maintenance and provide inspiration.



Eliminate mosquitoes in standing water without pesticides and without making the water harmful to birds, pets, fish and wildlife with **Mosquito Dunks®**. The doughnut-shaped dunks contain *Bacillus thuringiensis israelensis*, a bacteria that kills the mosquito larvae that feed on it; one dunk treats 100 square feet of water and lasts 30 days. A package of six sells for \$14.95. Gardens Alive, 5100 Schenley Place, Lawrenceburg, IN 47025. (812) 537-8650. www.GardensAlive.com.



Pond Clarifier is a concentrated microbial-based product that quickly biodegrades excess nutrients, organic matter, and hydrocarbons in water to reduce algae, scum, and foul odors; it does not harm humans, animals or fish. Use it to clean and clarify any small pond or lake. A half-pound pack (not shown) is available for \$6.95; you'll need two to five pounds to treat a one-foot deep acre of water. Peaceful Valley Farm Supply, 110 Spring Valley Drive, Grass Valley, CA 95945. (530) 272-4769. www.groworganic.com.



Looking for a water feature that's small, decorative, and a snap to set up? The **Atlantis Pool** is a 30-inch round, 12-inch-deep subterranean pool molded from lightweight polyurethane and resin that only needs to be set into a hole in the ground, filled with water, and plugged in for water to bubble from a fountain at its center. Choose from four designs for the mosaic for the pool's bottom. The Atlantis retails for about \$230; to find a local or mail-order source or to see the other pools in this line, visit the Web site below. American Pools & Fountains Ltd., (214) 631-1808. www.apandf.com.

If you have fish in your pond, icing-over of the water in the winter can threaten their health and safety. **Iceguard** prevents the water in a pond from freezing, so vital oxygen is available to the fish and dangerous toxic gases can dissipate. Made of plastic foam, this device does its job by simply floating in the water. One Iceguard sells for \$49 and protects 150 square feet of water and is effective for winters in most parts of the United States. Lilypons Water Gardens, P.O. Box 10, Buckeystown, MD 21717-0010. (800) 999-5459. www.lilypons.com.



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

Regional Happenings

NORTHEAST

JUNE 1. **17th Annual Plant Sale.** Tower Hill Botanic Garden, Boylston, Massachusetts. (508) 869-6111.

JUNE 7 & 8. **Mystic in Bloom.** Tour of 12 gardens. Mystic, Connecticut. (860) 536-0220.

JUNE 8. **New England's Largest Wildflower Sale.** The Garden in the Woods, Framingham, Massachusetts. (508) 877-7630.

JUNE 14 & 15. **2002 Pocket Gardens of Portsmouth Tour.** Benefits South Church. Portsmouth, New Hampshire. (603) 436-4762.

JUNE 23. **Garden Tour, Garden Party, and Auction.** Wethersfield Beautification Trust. Wethersfield, Connecticut. (860) 257-8318.

JUNE 28-30. **An American Beauty: Celebrat-**

ing 100 Years of Gardening in America. Newport Flower Show. The Preservation Society of Newport, Newport, Rhode Island. (401) 847-1000 ext. 140.

JUNE 29. **Old-Fashioned Kids Fair.** Old Sturbridge Village, Sturbridge, Massachusetts. (508) 347-3362 ext.338.

JUNE 29 & 30. **4th Annual Lavender Day Festival.** Lavender and Herb Growers of Franklin County. Visitors Center, Greenfield, Massachusetts. (413) 773-9393.

JUNE 30. **Working Landscapes: Gardens and Farms of Southern Columbia County.** Self-guided tour in historic town in Hudson Valley. Ancram Preservation Group. Ancram, New York. (518) 398-6436.

JULY 13. **The Fells Garden Tour.** John Hay

National Wildlife Refuge, Newbury, New Hampshire. (603) 763-4789.

MID-ATLANTIC

MAY 11 THROUGH SEPTEMBER 22. **Wings of Fancy.** Live butterfly show. Brookside Gardens, Wheaton, Maryland. (301) 949-8230. www.brooksidegardens.org.

MAY 15 & 16. **Structure in the Collector's Garden.** Lectures and garden tours with Dan Hinkley and Christopher Woods. Lewis Ginter Botanical Garden, Richmond, Virginia. (804) 262-9887. www.lewisginter.org.

MAY 25-AUG. 31. **2002 Festival of Fountains.** Longwood Gardens, Kennett Square, Pennsylvania. (610) 338-1000.

JUNE 6-8. **12th Annual Native Plants in the**

Calling All Master Gardeners to Upstate New York

THE EIGHTH BI-ANNUAL 2002 Northeast Regional Master Gardener Conference "Rooted in Tomorrow", is coming July 24 to 27, 2002, to the Cornell University campus in Ithaca, New York. The conference is designed as advanced training for individuals who wish to remain Master Gardeners and includes seven pre-conference and five post-conference tour options as well as 50 choices of workshops and lectures. The venues are on campus and throughout the Finger Lakes region. Charlie Mazza, conference director, feels strongly that "at a conference you don't only learn by sitting in a lecture." To that end, organizers have replaced the traditional banquet with a choice of 13 dinner parties, each devoted to dinner and to selected horticultural topics.

Conference keynote speaker André Viette, author, nursery proprietor, daylily breeder, and host of the nationwide call-in radio show "In the Garden with André Viette," will speak at the opening ceremonies on July 25. Viette, who gardens on five and half acres in Virginia, will speak on "Easy Gardening With No Work." Featured speaker George Hudler, a Cornell professor and author, explores the international effects of fungi and molds in his lecture on July 26 "Great Moments in History and How the Fungi Got Us There."

Minns Garden, right, is located on the campus of Cornell University, site of the 2002 Northeast Regional Master Gardener Conference.



Registration, available online, continues until June 14. For more information about the conference go to www.hort.cornell.edu/gardening/mgc2002. A toll-free number (866) 336-1300 is also available until June 14, Monday through Friday from 8:30 a.m. to 3:00 p.m. (EST). After June 14, contact Wendy Wirth at (607) 255-1789; e-mail: waw3@2cornell.edu; or fax (607) 255-9998.

—Mary Chaddock, special to The American Gardener

Landscape Conference. Millersville University, Millersville, Pennsylvania. (717) 872-3030. muweb.millersville.edu/~npitl/.

JUNE 8. **Container Water Gardens.** Class and tour of aquatic plants collection. U.S. National Arboretum, Washington, D.C. (202) 245-5898. www.usna.gov.

JUNE 8 & 9. **Blue Ridge Garden Festival.** Benefits Explore Park educational programs. Explore Park, Roanoke, Virginia. (800) 842-9163. www.explorepark.org.

JUNE 26-30 (OPEN TO PUBLIC JUNE 28-30). **55th Annual North American Lily Society Show.** Potomac Lily Society and Mid-Atlantic Lily Society. The Hyatt, Herndon, Virginia. (703) 435-1882 or e-mail KathleenHoxie@aol.com.

JUNE 14-16. **Sustainable Mini-Farming.** Workshop. Sponsored by Grow Biointensive. York College, York, Pennsylvania. (707) 459-5958.

AUG. 15. **The Influence of Printed Material on the Design of Early American Gardens.** Historic Garden Symposium. Gunston Hall, Mason Neck, Virginia. (703) 550-9920. www.GunstonHall.org. ADVANCE REGISTRATION REQUIRED.

SOUTHEAST

MAR. 2-JULY 14. **Pierre-Joseph Redouté: A Man Passionate About Flowers.** Exhibition. Mint Museum of Art, Charlotte, North Carolina. (704) 337-2000. www.mintmuseum.org.

MAY 14-19. **15th World Bromeliad Conference.** Bromeliad Society International. St. Petersburg Hilton, St. Petersburg, Florida. (941) 748-2120. bsi.org.

MAY 15-19. **André Michaux International Symposium.** Daniel Stowe Botanical Garden, Charlotte, North Carolina. (704) 868-3181. www.michaux.org.

MAY 23-25. **Plant Development and Utilization.** Symposium. Multi-organization sponsorship, including North Carolina State University and USDA Forest Service. Asheville, North Carolina. (828) 684-3562.

MAY 31 & JUNE 1. **Hydrangeas: Beginning To End.** Topical meeting for Center for Applied Research. Augusta Technical College, Thomson, Georgia. (706) 597-8309. www.canr.org.

NORTH CENTRAL

MAY THROUGH JUNE 16. **A Force of Nature:**

The Life and Work of Jens Jensen. Exhibition. Chicago Cultural Center, Illinois. (312) 744-6630.

MAY 22. **Butterfly Gardening.** Informational session. Cincinnati Zoo and Botanical Garden, Cincinnati, Ohio. (513) 559-7744.

JUNE 8 & 9. **National Peony Show.** American Peony Society. Olbrich Botanical Garden, Madison, Wisconsin. (608) 883-2221.

JUNE 15. **Grand Opening of Olbrich's Thai Pavilion and Garden.** Olbrich Botanical Garden, Madison, Wisconsin. (608) 246-4550.

JUNE 23. **3rd Annual Garden Tour.** Madison Area Pond Society. Madison, Wisconsin. (608) 845-9452.

JUNE 29. **Topeka Garden Tour.** Topeka Beautification Association. Topeka, Kansas. (785) 272-3690.

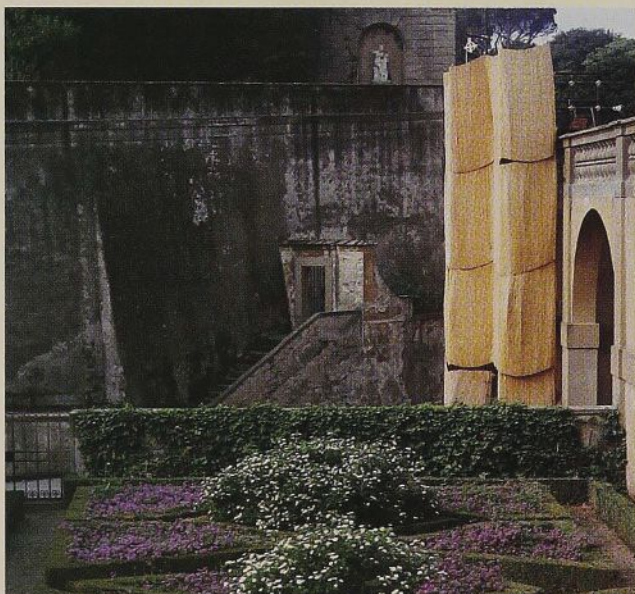
JUNE 29 & 30. **Garden Art Festival.** Chicago Botanic Garden, Glencoe, Illinois. (847) 444-9600. www.chicagobotanic.org.

JULY 10-AUG 11. **Olbrich's Blooming Butterflies with Insect Wonders of the World.** Olbrich Botanical Garden. Madison, Wisconsin. (608) 246-4724.



2002 American Horticultural Society TRAVEL STUDY PROGRAM

Gardens and Hilltowns of Umbria and the Marches *September 17-29, 2002*



Without question, our most popular Travel Study Programs are to the unique regions of Italy. This trip will be no exception, as it begins in Perugia and concludes in Rome. It has all of the ingredients for the perfect Italian experience—good gardens, good hotels, good food, and, most importantly, good friends!

Leading this program for the Society will be AHS Board Member Robert Volk and his wife Carolyn, from San Mateo, California. Bob, as you will come to know him, serves as president of the Men's Garden Club of Los Angeles. Bob and Carolyn have led many successful and memorable AHS programs.

For complete details of the exciting 2002 schedule, visit the AHS Web site at www.ahs.org, or call the Leonard Haertter Travel Company at (800) 942-6666.

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

AHS Events

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

JULY 11–14. **Low-Maintenance Landscaping with Native Plants.** Wild Ones 2002 National Conference. Fawcett Center, Columbus, Ohio. (614) 939-9273. www.for-wild.org.

JULY 14. **Daylily Show.** Wisconsin Daylily Society. Olbrich Botanical Garden. Madison, Wisconsin. (608) 221-1933.

SOUTH CENTRAL

MAY 18. **Herb Festival.** Fort Worth Botanic Garden. Fort Worth, Texas. (817) 871-7686.

MAY 18 & 19. **FloraKansas: Great Plains Plant Bazaar.** Dyck Arboretum of the Plains, Heston, Kansas. (620) 327-8127.

MAY 18 & 19. **Maifest Hanging Basket and Garden "Doo-Dad" Sale.** Hermann Garden Club. Hermann, Missouri. (573) 486-3060.

MAY 21. **Neighborhood Garden Tour.** Dallas Arboretum, Dallas, Texas. (214) 327-8263. www.dallasarboretum.org.

MAY 29–JUNE 2. **Begonias International, 2002.** National Convention of the American Begonia Society. Houston, Texas. (281) 897-0155.

SOUTHWEST

THROUGH JUNE 12. **Discover The Beauty of Poisons: Watercolors by Anne Opelia Dowden.** Botanical art exhibit. Denver Botanical Garden, Denver, Colorado. (720) 865-3552.

JUNE 15. **Spring Garden Fair and Plant Sale.** The Arboretum at Flagstaff, Flagstaff, Arizona. (520) 774-1442.

JUNE 15 & 16. **Wildflower Festival.** Lookout Mountain Nature Center and Preserve, Golden, Colorado. (303) 526-0594.

JUNE 27. **Birdhaus Bash.** Garden party and auction. Denver Botanic Garden, Denver, Colorado. (720) 865-3552.

JULY 8–14. **Crested Butte Wildflower Festival.** Hikes, workshops, lectures, art exhibit and sale, slide shows, and flute concert. Crested Butte, Colorado. (970) 349-2571.

NORTHWEST

MAY 10–20. **Spokane Lilac Festival.** Spokane Lilac Organization. Spokane, Washington. (509) 535-4554.

Florists' Short Course and Trade Show in Ohio

THE OHIO FLORISTS' Association Short Course, in its 73rd year and one of the oldest floriculture industry events in the United States, will be held July 13 to 17, 2002. The Short Course is billed as a floriculture industry educational event, and because of the technical nature of many of the workshops, it is not generally open to the public. The Short Course offers plenty of interactive sessions—more than 180—for trade professionals. Some of the workshops travel to other industry sites in central Ohio. Short Course venues include the Greater Columbus Convention Center in Columbus, Ohio, as well as Ohio State University. The trade show held in conjunction with the course will include more than 525 companies exhibiting at 1,265 booths and feature showcase areas highlighting "New Plant Varieties and New Products."

The Short Course keynote speaker will be Jim Wilson, co-host of "Great Gardeners" on HGTV and former co-host of "The Victory Garden" on PBS. Wilson will share his 54 years of home and professional gardening experience in his lecture "A Funny Thing Happened On My Way to the Garden." The speech is a compendium of career highlights and insights relating to his experiences in the horticulture profession.

The deadline for Short Course registration is June 21. For more information, contact the Ohio Florists' Association, 2130 Stella Court, Suite 200, Columbus, OH 43215-1033; telephone (614) 487-1117; fax (614) 487-1216; Web site: www.ofa.org; or e-mail: ofa@ofa.org.

—Mary Chadduck, special to The American Gardener

MAY 17–19. **Rhododendron Festival.** Florence Chamber of Commerce. Florence, Oregon. (541) 997-3128.

JUNE 1 & 2. **Annual Rose Show.** Salem Rose Society. Oregon Garden, Silverton, Oregon. (503) 581-2363.

AHS JUNE 6–8. **AHS Great American Gardeners Annual Conference.** American Horticultural Society. Lectures by gardening experts and special garden tours. Renaissance Madison Hotel, Seattle, Washington. (800) 777-7931. www.ahs.org. ADVANCE REGISTRATION REQUIRED.

JUNE 22. **Whidbey Island Garden Tour.** Whidbey Island, Washington. (360) 321-4191.

JUNE 29. **5th Annual Gig Harbor Garden Tour.** Peninsula Adult Basic Education Program and Tacoma Community College Foundation. Gig Harbor, Washington. (253) 851-3776.

WEST

MAY 18. **Annual Plant Sale.** The Huntington Botanical Gardens, San Marino, California. (626) 405-2140.

MAY 18. **Plant Lovers Affair.** Plant sale. Mendocino Coast Botanical Gardens, Ft. Bragg, California. (707) 964-4352 ext. 12.

JUNE 1 & 2. **Encinitas Flower Celebration.** Quail Botanical Gardens, Encinitas, California. (760) 436-3036. www.qbgardens.com.

JUNE 6. **Landscaping With Herbs.** One-day course for landscaping professionals. The

American Center For Wine, Food and the Arts, Napa, California. University of California–Davis. (530) 757-8753.

JUNE 22. **Mendocino Art Center's 10th Annual Mendocino Coast Garden Tour.** Tour of eight gardens, plant sale, art exhibit, and silent auction. Mendocino, California. (800) 653-3328. www.mendocinoartcenter.org.

JULY 6 & 7. **Cactus and Succulent Show.** Cactus and Succulent Society of America. The Huntington Botanical Gardens, San Marino, California. (626) 405-2140.

JULY 11. **Estate Gardens of Southern California.** Garden talk and book signing by Karen Dardick. The Huntington Botanical Gardens, San Marino, California. (626) 405-2140.

CANADA

MAY 19, 20, & 26. **Lilac Festival.** Royal Botanical Gardens, Burlington, Ontario. (905) 527-1158. www.rbg.ca.

JUNE 5. **A Garden History Walk.** The Arboretum, University of Guelph, Guelph, Ontario. (519) 824-4120. www.uoguelph.ca/~arboretu. REGISTER BY MAY 22.

JULY 4. **Fern Identification and Propagation.** Workshop. The Arboretum, University of Guelph, Guelph, Ontario. (519) 824-4120. REGISTER BY JUNE 20.

JULY 10. **The English Garden.** Lecture and garden tour. The Arboretum, University of Guelph, Guelph, Ontario. (519) 824-4120. REGISTER BY JUNE 29.

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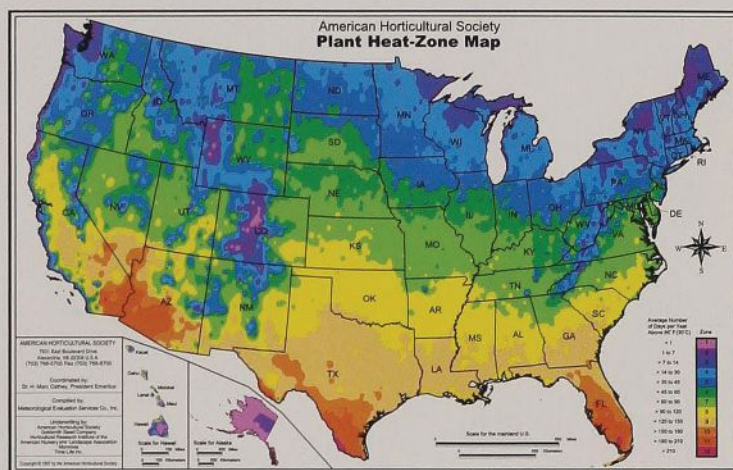
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Pronunciations and Planting Zones

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



A-H

- Amaranthus caudatus** am-uh-RAN-thus kaw-DAY-tuss
(USDA 0, AHS 12-1)
- Arisaema dracontium** air-ih-SEE-muh druh-KON-tee-um
(4-9, 9-3)
- A. triphyllum** A. try-FIL-lum (3-9, 9-3)
- Bassia scoparia forma trichophylla** BASS-ee-uh sko-PAR-ee-uh
forma. try-ko-FIL-uh (9-11, 12-2)
- Chelone glabra** chel-O-nee GLAB-ruh (3-8, 9-1)
- C. lyonii** C. ly-O-nee-eye (3-8, 9-3)
- C. obliqua** C. o-BLEE-kwuh (3-9, 9-3)
- Cleome hassleriana** klee-O-me has-ler-ee-AY-nuh (0, 12-1)
- Delphinium exaltatum** del-FIN-ee-um eks-al-TAY-tum (4-8, 8-5)
- Hibiscus acetosella 'Red Shield'** hy-BISS-kus uh-set-o-SEL-luh
(10-11, 12-10)

- L. pumilum** L. PYEW-mih-lum (3-7, 7-1)
- L. regale** L. ree-GAL-ee (4-7, 7-1)
- L. sargentiae** L. sar-JEN-tee-ee (3-7, 7-1)
- L. speciosum** L. spee-see-O-sum (4-8, 8-1)
- L. superbum** L. soo-PUR-bum (4-8, 8-3)
- Lobelia siphilitica** low-BEEL-yuh sih-fih-LIH-tih-kuh (4-7, 9-2)
- Mertensia virginica** mur-TEN-see-uh vir-JIN-ih-kuh (3-8, 7-1)
- Mitchella repens** mih-CHEL-luh REP-enz (4-9, 9-1)
- Panax quinquefolius** PAN-aks KWIN-kwe-FO-lee-us (5-8, 9-1)
- Pinckneya bracteata** PINK-nee-uh brak-tee-AY-tuh (7-11, 12-7)
- Ricinus communis 'Carmencita'** rih-SY-nuss com-YEW-niss
(0, 12-1)

S-Z

- Iris cristata** EYE-ris kris-TAY-tuh (4-8, 8-1)
- Leonotis leonurus** lee-o-NO-tis lee-o-NUR-us (10-11, 12-7)
- Lilium auratum** LIL-ee-um awe-RAY-tum (4-7, 8-1)
- L. canadense** L. kan-uh-DEN-see (2-6, 6-1)
- L. cernuum** L. SAIR-new-um (2-6, 6-1)
- L. columbianum** L. kol-um-bee-AN-um (6-8, 8-6)
- L. concolor** L. KON-kuh-ler (3-7, 7-1)
- L. hansonii** L. han-SOWN-ee-eye (2-7, 7-1)
- L. henryi** L. HEN-ree-eye (3-8, 8-1)
- L. humboldtii** L. hum-BOLT-ee-eye (7-8, 8-7)
- L. leucanthum var. centifolium** L. loo-KAN-thum var. sen-tih-FO-lee-um (6-8, 8-5)
- L. michauxii** L. mih-SHO-ee-eye (8-9, 9-8)
- L. michiganense** L. mih-shih-guh-NEN-see (2-7, 7-1)
- L. pardalinum** L. par-duh-LY-num (4-8, 8-5)
- L. philadelphicum** L. fil-uh-DEL-fih-kum (2-6, 6-1)

- Salvia leucantha** SAL-vee-uh loo-KAN-thuh (9-11, 12-4)
- Scutellaria incana** skoo-tuh-LAIR-ee-uh in-KAN-uh (4-8, 9-5)
- S. integrifolia** S. in-teg-rih-FO-lee-uh (4-9, 9-5)
- S. serrata** S. sair-RAY-tuh (4-9, 9-5)
- Spigelia marilandica** spy-JEE-lee-uh mair-ih-LAN-dih-kuh
(5-9, 9-2)
- Tithonia rotundifolia** tih-THO-nee-uh ro-tund-ih-FO-lee-uh
(10-11, 12-1)
- Trillium grandiflorum** TRIL-ee-um gran-dih-FLOR-um (3-8, 8-1)
- T. luteum** T. LOO-tee-um (5-8, 8-4)
- T. sessile** T. SEH-sih-lee (4-8, 8-1)
- Uvularia grandiflora** yew-vu-LAIR-ee-uh gran-dih-FLOR-uh
(3-8, 9-1)
- U. perfoliata** U. per-fo-lee-AY-tuh (4-8, 8-1)
- Vaccinium angustifolium** vak-SIN-ee-um an-gus-tih-FO-lee-um
(3-6, 8-1)
- V. ashei** V. ASH-ee-eye (5-9, 9-2)
- V. corymbosum** V. kor-im-BO-sum (4-8, 8-1)
- V. macrocarpon** V. mak-ro-KAR-pon (2-7, 7-1)

Scenes from River Farm



*Early summer comes to River Farm. June is vibrant with colors from a large variety of plants, including golden rain tree (*Koelreuteria paniculata*), above, flanking the building where *The American Gardener* magazine is produced, and *Crocosmia* 'Lucifer', left, growing in a red swath along a pathway in the perennial garden. With the blossoms comes the sultriness of typical Virginia summer days—together with the increasing numbers of visitors who come daily to River Farm to picnic, play, relax, and bask in its natural beauty.*

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—Brian E. Holley, Director, Cleveland Botanical Garden

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—Katy Moss Warner, AHS President and CEO

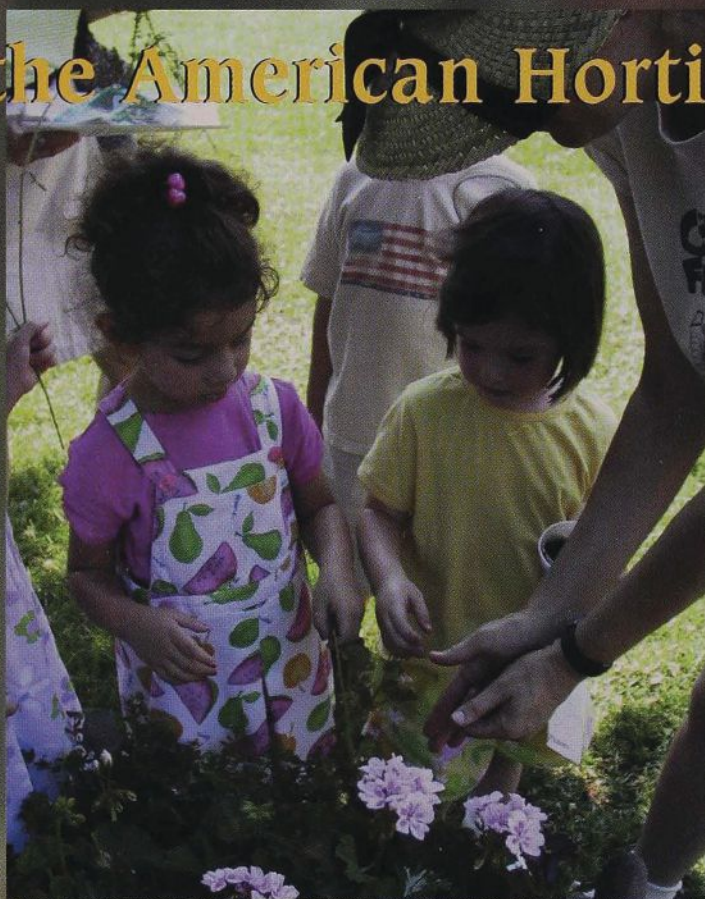


Garden Calm at River Farm

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



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Contact Ashby Pamplin, Director of Development, at (800) 777-7931 to find out how you can help.