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THE AMERICAN GARDENER

A Publication of the American Horticultural Society January/February 1998 $3.95

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AHS STUDY TOURS

May 7-17, 1998

Gardens of Ireland

with optional trip to Chelsea Flower Show

IRELAND IS A HORTICULTURAL HAVEN. The Gulf Stream currents bathe the coast with temperate waters, preventing extremes of hot and cold. Uncrowded roads wander past lichen-covered stone walls, villages with friendly pubs, and woods and bogs dancing with bog cotton and heather. The soil is light and rich, nurturing a wide variety of delicate and rare plants. We are offering an optional extension to London (May 17-21) for the Royal Chelsea Flower Show, one of the great gardening highlights of spring. Additional garden tours in England will include a trip to the Cotswolds, where we'll visit Hidcote Manor Garden and the home garden of Rosemary Verey. Leading this program will be AHS Board member Nancy Thomas of Houston, Texas.

Also Planned For 1998

- MARCH 10-26, 1998
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- MAY 2-9, 1998
  GARDENS OF THE CHESAPEAKE BAY, ABOARD THE M/V *NANTUCKET CLIPPER*
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Volume 77, Number 1 January/February 1998

DEPARTMENTS

On the cover: *Once solely the province of tropical gardens and extravagant flower arrangements, the lush tropical foliage and incandescent bracts of heliconias such as* Heliconia stricta *'Tagami' are tempting gardeners in cooler climates to give them a try. Photo by Bill Johnson.*

FEATURES

members' forum

NEOMARICA LONGIFOLIA

Neomarica longifolia is a member of Iridaceae and is commonly known as yellow walking iris, as well as twelve apostles, rooster tail, and apostle plant. I didn't buy mine, but inherited it in 1985 from my then-future mother-in-law. She did not live to see her son marry, and her plants are the best thing I inherited from her—they live on for her here in Florida.

The Wise Gardening Encyclopedia lists a white *Neomarica,* but I have yet to meet it. Somewhat more common is a blue and white one, *N. gracilis,* which blooms on a flat, leaflike stalk, but I prefer the yellow one, which blooms on a tall, round stalk.

The flowers are a soft, bright yellow, about two-and-a-half inches across and quite iris-shaped, with flared, almost horizontal falls and short upright standards. A stem can have as many as three flowers open at one time, about three inches apart, and they last for two or three days. When the flowers fade, plantlets start to form, weighing the plant down until one or more of the plantlets touches the ground. If left alone, they root, so the plant "walks" to a new location—hence its most common name. The appearance of the fans of young plants explains the name "rooster tail," but I have no idea what the origin is of the reference to apostles.

These two- to three-foot-tall perennials create a nice light green, upright effect that I love, and the little yellow flowers are bright accents in my shady woodland garden. It's easy to grow outdoors here in the subtropics, wanting bright indirect light and good drainage, although it seems to be able to withstand an occasional flood. It's quite easy as a pot plant, as well. In the northern latitudes I would recommend a grow light for indoors, where it may bloom all year. It only stops here when frost kills it to the ground.

You can either divide the parent plant or pop off a baby and prop it upright wherever you want it to root. I rarely lose a baby no matter how careless I am when placing it.

It was a few years after I got it before I saw it anywhere else. Now I see it in the parks here, but I still don't see it for sale. Perhaps it's just too prolific and shareable for free.

If anyone is interested in trying it, write me at 12524 Lovers Lane, Riverview, FL 33569-6813, or call me at (813) 677-6347.

Terri Jones
Riverview, Florida

What's your favorite plant? Send us a short essay with a color photograph of yourself in your garden. If we publish it, you'll have your choice of one of the three books that received the 1997 AHS Annual Book Award.

LEFT: STEPHEN G. PATEGAS. RIGHT: COURTESY OF TERRI JONES

news from ahs

Editor's note: *This new department is a response to those who've told us you miss the news briefs on the back page of our old News Edition. It also gives us some space to tell you about new happenings at the American Horticultural Society. Rather than the president's "Commentary" at the beginning of each issue, we'll be starting with your views and ideas in "Members' Forum" and adding snippets on research, new plants, new gardening organizations, and AHS activities in "News from AHS."*

AHS DIRECTORY ALERT

In the next few weeks, members of the American Horticultural Society will be receiving their 1998 Directory of Member Benefits. It contains our eagerly awaited annual seed catalog, from which members can request up to 15 packets of free seeds. The directory also lists botanical gardens, arboreta, and flower shows that admit AHS members for free. These programs have expanded this year, with eight botanical sites and six flower shows added to the already extensive lists. The directory offers discounted books of seasonal interest and contains a special member survey. Watch for it!

NEW ENGLAND WILD FLOWER CATALOG

Don't have enough catalogs yet? If you're a member of the New England Wild Flower Society, you get their catalog for free, but nonmembers can also order it for $2.50. The 1998 catalog offers for sale seeds and spores of more than 200 varieties of native flowers and ferns appropriate for woodlands, wetlands, and meadow gardens. There are relatively easy-to-germinate seeds such as Jack-in-the pulpit, New England aster, cardinal flower, and liatris, and for more experienced gardeners, trilliums, gentians, pitcher plants, and rhododendrons. Don't delay, though, because catalog requests must be received by March 2, and seed sales end March 16. Requests will be filled in the order received. Send $2.50 to Seeds, New England Wild Flower Society, Garden in the Woods, 180 Hemenway Road, Framingham, MA 01701.

New England aster is, appropriately, one of the native species featured in the New England Wild Flower Society catalog.

COURTESY OF NEW ENGLAND WILD FLOWER SOCIETY/DOROTHY S. LONG

WORK GREENER, NOT HARDER

The spider plant hanging over your desk may be pretty commonplace, but a new study shows that without it your day might be more stressful and you might be less productive.

Virginia Lohr and colleagues at Washington State University asked research subjects to identify common symbols that appeared at random on a computer screen. They worked in a windowless room, half of them with plants nearby.

There was no difference in the number of errors, but those near plants worked 12 percent faster. Blood pressure went up an average of two points for the people in the plant group, compared to four points in the control group. In addition, people in the plant group reported feeling more attentive after the task was finished.

Previous studies have shown that medical patients have lower blood pressure if they are able to see plants—out a window or even in a photograph—but Lohr believes this may be the first indicating that workers are also more productive in the presence of plants.

DAFFY DEER DETERRENT

Researchers at Cornell University think that a chemical compound found in daffodils might someday be used to geneti-

THE AMERICAN GARDENER

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cally engineer deer-proof plants.

Daffodils are popular among gardeners plagued by deer, which pass them by and go straight for the tulips. A research team headed by wildlife biologist Paul Curtis has concluded that the deer are turned off by alkaloid complexes in the daffodils' flowers, stems, and leaves. They've isolated the chemical components and will apply them to plant surfaces to see if they repel voles, since deer make awkward laboratory subjects.

A resulting product might be a topical agent, applied in the same way as repellents on the market now. But the ultimate goal is to identify the daffodil gene responsible for synthesizing the chemical and to translate that genetic coding into vulnerable plants.

KEEPSAKE COIN

Want to contribute to the renovation of the U. S. Botanic Garden (USBG) in Washington, D.C., and get a limited-edition keepsake to boot? The U.S. mint has issued a silver dollar commemorating the garden. From the sale of each coin—$37 including a presentation box—the USBG receives $10 for renovation of its grounds and conservatory, which began last October. Construction is expected to be complete in spring 1999. This is the next-to-last commemorative coin to be produced by the mint, which is phasing out special issues. Nearly half of the 500,000 coins minted have been sold.

In addition, the National Fund for the United States Botanic Garden, a nonprofit group formed to raise money for the reconstruction, is offering commemorative key chains and pendants made with the silver dollars, as well as a tree ornament that depicts the conservatory. For a price list of these items, contact the fund at 245 First Street, SW, Washington, DC 20024-3201, (202) 226-4083, or call up www.nationalgarden.org on your computer. Silver dollars can be ordered directly from the mint by calling (800) MINT-USA.

SHE SOWS SEEDS FROM THE SEASIDE

Garden writer and former biology teacher Pam Jacobsen grew up on Long Island Sound, and when she married and moved to the Midwest she missed the sights and sounds of the sea. She made it as far back as Massachusetts but was still landlocked, so decided she would bring the ocean home by landscaping with seaside plants.

Now she's so enthused about the subject she's formed the North American Sea Plant Society, and already has 90 members from every coastal state in the country as well as Great Britain and Germany. Members receive a quarterly magazine, *Maritima;* participate in a seed swap; and can tap Jacobsen's resources to solve landscaping problems: how to stabilize a dune, ground covers that withstand salt, or plants for inland roadsides that are salt-treated in winter. Simple information searches are free, Jacobsen says, and there is a nominal charge for more complicated requests.

A year's membership is $12. Write NASPS, P.O. Box 262, Feeding Hills, MA 01030-0262, fax (413) 789-2076, or e-mail 103242.2424@compuserve.com.

ALL-AMERICAN DAYLILIES

The All-America Daylily Selection Council (AADSC) has chosen two '98 winners from 6,000 cultivars evaluated by its members throughout the country. Both are deciduous rebloomers. 'Lullaby Baby' is the smaller of the two with pale pink flowers three-and-a-half inches across. "Most pink daylilies have leaves that tend to bleach out in the sun, but the foliage on this one stays a beautiful dark blue-green," says council president John Schoustra. "It produces a whole bouquet of blossoms." The other winner, trademarked as Star Struck, has flower stalks two feet tall and begins blooming when other daylilies are done, often in concert with fall foliage. Its gold flowers are seven inches across and ruffled, with pale green throats. This cultivar has been in the trade for about a decade under the name 'Jen Melon', but there was concern that the name would confuse gardeners about the flowers' color. A computer search failed to show that there is also a cultivar named 'Starstruck'.

Wanted: Immortal Words

THE AMERICAN HORTICULTURAL SOCIETY is seeking a slogan—and we'd like members to help. Suggest a pithy phrase that sums up what membership means to you, and if it's selected, you'll receive the *American Horticultural Society Encyclopedia of Gardening* plus our new *AHS A–Z Encyclopedia of Garden Plants.* Write: Slogan, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.

focus january/february

invest in IPM

COURTESY OF AGRICULTURAL RESEARCH SERVICE, USDA

RECENT NEWS REPORTS HAVE CREATED SOME SCARY SCENARIOS. *Insects that are becoming resistant to our meanest pesticides, leading to a "pesticide treadmill" that demands newer and possibly stronger chemicals. Agricultural crops genetically manipulated to be impervious to herbicides, then passing this invincibility along to weeds. On the other side, tougher govenment regulations are causing some chemical companies to throw in the towel. They can't pay for the testing needed to keep their products on the market.*

What's a gardener to do? Many scientists say the most sensible and effective approach is the multifaceted strategy called integrated pest management (IPM). While the term sounds like it was coined by Washington bureaucrats, its principles are just common sense.

Still, IPM can seem daunting. It's so easy to grab a sprayer and drown your troubles with a broad-spectrum pesticide, while IPM requires a number of steps, a lot of decision making, and possibly even some research on insects and their life cycles.

In this issue, Scott Aker, an IPM specialist for the U.S. National Arboretum, tells how he has helped arboretum neighbors apply IPM to their home gardens. If you, too, need some help getting started, experts tell how you can separate the pros from the cons.

Above: Scott Aker, IPM specialist with the U.S. National Arboretum, shows arboretum neighbor Mattie Coates how to check her plants for pests.

IPM: an inside look

by Scott Aker

My fascination with integrated pest management (IPM) began when I was a rookie Extension agent in suburban Maryland in the late 1980s. In a sea of troubled gardeners, I was never comfortable making the standard pesticide recommendations like a doctor writing prescriptions for patients. I knew from experience that prescribing the same pesticides repeatedly could make tough pests resistant to them, much as the germs we host acquire resistance to over-prescribed antibiotics. IPM offered some non-pesticide alternatives that I could include with any pesticide advice I offered, and soon IPM control methods found their way into my stock answers for pest questions. I came to realize that pests will always be a part of our planet; the best we can do is manage them. You might be able to control troublesome insects and diseases for a short time, but you will never be able to eliminate them from your garden. Once you realize this, you can begin to manage pests with your own IPM program.

What is IPM? In short, it is a logical framework in which pest-control decisions are made to minimize the use of pesticides, especially the most toxic ones. Plants are carefully inspected on a regular basis to detect and identify pests before they have done much harm and to determine if beneficial insects are present. Pests are tolerated in small numbers but are watched carefully so quick action can be taken if they do multiply enough to cause damage. When gardeners do intervene, they take an integrated approach—often using physical, cultural, and biological controls at the same time and even in combination with pesticides. Mites and aphids can be washed from plants with

water from the garden hose, providing physical control. Careful watering, soil preparation, fertilization, and plant selection can give plants appropriate cultural conditions for healthy growth. Beneficial mites can be purchased and sprinkled on plants afflicted with pest mites to create a balance between predator and pest. Following such steps, plants are inspected again to determine how effective the control measures were. IPM allows the gardener to make more informed pest-control decisions that are more reliable than panicked application of pesticides when damage has already been done.

In 1992, I was charged with developing a comprehensive IPM program for the U.S. National Arboretum in Washington, D.C. As the program developed, an important component became the promotion of IPM technologies in landscapes and home gardens. While challenging, this endeavor has been the most satisfying part of my job. Most gardeners are more than ready to give up their reliance on synthetic chemical pesticides for controlling the pests they encounter. Yet after years of talking about IPM with professionals and home gardeners, I found that although they agreed with the logic of IPM and wanted to use it, they just didn't know where or how to start. I clearly needed to bring gardeners' opinions from "Sounds like a good idea" to "I want to try that!" With this goal in mind, the National Arboretum held its first IPM workshop in 1995. This event brought horticultural professionals together for three days of intensive hands-on training where they could work in small teams to develop IPM programs and recommendations for gardeners in the neighborhood around the arboretum.

At first I viewed our arboretum neighbors as a kindly group of people who allowed us to use their landscapes for field exercises, but I came to realize that what they had to offer was more significant than that. Like all gardeners, they wanted to enjoy their gardens as much as possible with the minimum input of time, pesticides, and money. They taught me that home gardeners need to focus their pest management on a few important skills:

Aker raises the planting depth of a Hiba arborvitae *(Thujopsis dolabrata)* to make it less susceptible to root rot.

Know What You're Looking At. Even experienced gardeners are sometimes unfamiliar with the pests and diseases they encounter. Professional advice may sometimes even lead you astray. Check your local library for pest and disease books (see sidebar, page 13); ask an experienced gardener in your neighborhood or contact a Master Gardener or an Extension agent for problems that defy diagnosis. In some states, you can submit a sample to an entomologist or plant pathologist and pay for a definitive identification. The time and money are well spent since all your efforts are based on a solid understanding of the pest you are dealing with. Don't forget to learn to spot the beneficial insects like lady beetles, lacewings, and predatory mites. They can save you hours of work and keep your plants healthy by steadily consuming pests as quickly as they multiply.

Take Risks Whenever You Can. Realize from the start that some damage is inevitable. As difficult as it might be, you

The Best Possible Growing Conditions

Growing conditions are at the root of most pest and disease problems, especially if the problem is chronic. Give your garden the best odds by following some simple steps.

Look for Survivors. Walk your neighborhood to find out what plants thrive in the climate and soil conditions in your area. Pay close attention to survivors found in vacant lots or old homesteads.

Choose Wisely. Carefully research or test new plants you want to include in your garden. Sometimes garden books offer conflicting views, so get a second opinion. And don't assume that any plant you buy will thrive without special care; nurseries sometimes sell plants that are marginally tolerant of conditions in their area.

Analyze Your Soil. Look for differences in texture, fertility, and depth. A typical small lot can include areas of both very sandy and heavy clay soil. Get these different types of soil tested for pH and nutrients.

Soil Preparation is a Must. Incorporate two inches of organic matter before you plant. Don't just focus on the planting hole, but improve soil over a broad area to accommodate spreading roots.

Wet or Dry? Target those spots that always seem to dry out quickly and those that retain moisture. Dig some holes and fill them with water. Time how long it takes for all the water to drain out of the hole. If soil is heavy or poorly drained, construct raised beds or use plants that enjoy or tolerate wet feet—bald cypress, summersweet, cardinal flower, and Japanese iris are just a few natural swamp dwellers. Conversely, cacti, liriope, and juniper are good choices if your soil is chronically dry.

Sunny or Shady? Light varies with time of day and season. Plot shade and light patterns in spring after leaves are fully grown and check again in summer and autumn. Remember that trees and shrubs create more shade as they mature.

Microclimates. In selecting plants for hardiness and heat tolerance, remember that temperatures can vary by as much as 10 degrees from one area of your garden to another. Areas near driveways, central air-conditioning units, and walls tend to be hottest, while the north and east sides of your house tend to be cooler.

Beware of Bargain Plants. You could be planting a problem. Make sure plants are healthy before you buy them. Sickly plants may bring disease or noxious pests such as nematodes or black vine weevils—which are nearly impossible to get rid of once they arrive—into your yard. —*S.A.*

must become comfortable with the thought of insects and diseases existing in your garden. Act only when necessary, and strive to let nature bring a pest or disease outbreak back into balance before you intervene. Above all, don't panic! Resist the temptation to spray immediately when you see a pest problem in its infancy. If you check it frequently, there is little chance for significant harm. Wait and see if beneficial insects arrive before the pests do much damage.

Train Your Eyes. Evaluate your plants every time you look at them. Look for anything that seems abnormal. Conduct beat tests (see sidebar, page 10) regularly to spot mites, aphids, scale crawlers, thrips, and lacebugs before they have a chance to do much damage. Remember that pests usually occur in large numbers. Learn to identify the villains and don't worry too much about the hundreds of harmless species of insects you will encounter in small numbers. Every time you inspect, record pest and disease information on a map of your garden or in a journal.

Teach Yourself to Brainstorm Solutions. Anything goes in IPM, as long as it's effective. Corn gluten meal can help control crabgrass; mites and aphids can be removed with a thorough washing. Give your plants the best possible growing conditions to stack the odds against pests (see sidebar, page 8). Often you can simply hand-pick pests from the plants more quickly than you can mix a pesticide and apply it. Try using insect-eating nematodes if borers appear in your trees. When you must use a pesticide, look for the least toxic option. Most gardeners can manage easily with horticultural oil, insecticidal soap, and *Bacillus thuringiensis*—three of the least toxic pesticides.

Blend Control Methods. Instead of a single solution for a problem, think of using various solutions together at the same time. If your dwarf Alberta spruce has mites, you may want to start by hosing them off the plant with a strong jet of water. After washing, you could apply some predatory mites to finish off any you may have missed. If your roses have black spot, remove infected leaves from the plants, avoid overhead watering, and spray them with a fungicide—or remove them and plant resistant cultivars. Different control methods can complement each other and usually provide better results than any single approach.

Challenge Conventional Wisdom With Logic. Unfortunately, old habits die hard. Roses do not need to be sprayed with a fungicide every week during the growing season. If the weather is dry and cool, there is little chance that black spot will be a problem and you can suspend spraying until hot, humid weather arrives. The standard recommendation of applying a pre-emergent herbicide to lawns when forsythia is in full bloom is flawed if a late winter warm spell prompts forsythia to bloom in February, long before crabgrass can germinate. Folk remedies like coffee, Tabasco, and mouthwash have never been proven to work on any pest or disease. Think logically. Why are you applying the fungicide? What conditions does black spot need to grow and spread? At what soil temperature does crabgrass begin to germinate? Could the disappearance of a pest have absolutely nothing to do with a potion that you applied and instead be the result of the timely arrival of the pest's natural predators?

Follow Up. Don't assume that your control efforts will always be effective. Pests and diseases often withstand our efforts to control them. Keep a constant vigil to ensure that things really are under control. What could be more satisfying than confirming that all your hard work has paid off? Over time, you may realize that some of your plants have chronic problems. Whenever you can, choose plants that are less likely to encounter pests and diseases.

Once you start to check for pests frequently, you will discover a new world of fascinating creatures that call your garden home. If you use IPM and limit your use of pesticides, you'll transform your garden into a richer, healthier ecosystem.

Scott Aker is an IPM specialist at the U.S. National Arboretum in Washington, D.C.

getting professional help

You think integrated pest management (IPM) sounds like a good idea, but you'd like some help getting started. Are there professional IPM consultants you can call on?

While IPM services have become standard at most public gardens, universities, and government facilities, until recently they weren't readily available to gardeners and homeowners. That appears to be changing. The University of Maryland in College Park has been conducting an IPM short course for landscape managers for about 15 years. Ethel Dutky, an Extension plant pathologist at the university, says they thought they would phase it out after a few years, but there continues to be heavy demand for the course. "My feeling," she says, "is that it is something more consumers are asking for."

As a result, landscape maintenance services are apt to advertise "ecologically oriented" or "non-chemical" services. But how can you be sure the people you hire really understand IPM and won't just start blasting away with toxic sprays the first time they see an aphid?

Conduct a Tough Phone Interview. This will save a lot of time and trouble, says Tanya Drlik, an IPM specialist with the Bio-Integral Resource Center, a Berkeley, California, group that conducts research

Spraying horticultural oils to control pests on large evergreens such as this hemlock is best left to professionals.

PHOTOS COURTESY OF AGRICULTURAL RESEARCH SERVICE, USDA

and disseminates information about integrated pest management. She suggests asking a prospective company how long they have been using IPM. "What's their definition of IPM? What does the term mean to them?" One of the most important tenets of IPM is the first word in its acronym—integrated. "Ask if they consider a number of different methods," Drlik adds.

Beware of the Bait and Switch. Our experts say some companies will swear up and down that they practice IPM, then recommend a spraying program. Check the advice you get or the product your service intends to use. Does it represent the latest research? "Call the Cooperative Extension Service or look up a university IPM Web site and find out what the best options are for that problem," says Steven M. Zien, a California-based ecologist who publishes a quarterly newsletter called *B.U.G.S. Flyer.*

They Should Be Licensed. Ironically, IPM experts say one of the first things you need to know is whether the consultant you're considering is licensed to use pesticides. Although requirements vary from state to state, that's usually the best indicator that a landscape maintenance worker has gone through some kind of training program and will be able to apply pesticides if necessary.

To find out what kind of license or certification your state requires, call your local Extension Service or the state chapter of the National Arborist Association (see sidebar, page 13).

They Should Be Insured. "Say they spray herbicide on a windy day and it drifts onto your neighbor's property and their plants die," explains Zien. "You are legally responsible."

They'll Be Painfully Honest. Be suspicious of companies that offer to rid your garden of a problem insect. The goal of IPM is not to eradicate pests, but to keep them at tolerable levels. Companies "that offer 100 percent control of pests cannot possibly be following IPM practices and, therefore, cannot truthfully make the claim that they use IPM," writes Zien in his newsletter.

IPM specialists will look for beneficial insects. If they see enough, they may come to the conclusion that you may get better and longer lasting control by doing nothing.

Observes Drlik: "Sometimes you just need someone to tell you, 'I can't do anything that will save this plant,' or that it will not be worth the time or money to save a certain plant." And Dutky adds: "A truly reputable IPM user will make recommendations to the homeowner for removal of susceptible plants" and replacement with less troublesome ones.

They'll Communicate Well. This is important because, no matter how good your service is, you will need to work with them by keeping an eye out for problems between visits. Zien says he alerts his clients to potential trouble spots and asks them to call him if they think a pest problem may be getting out of hand.

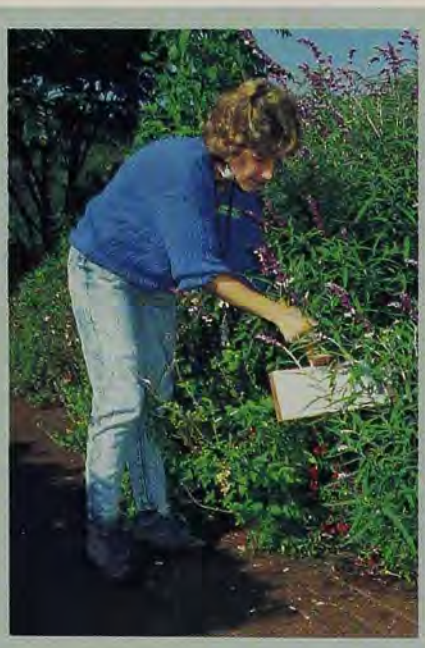
They'll Know Their Bugs. Since IPM uses different approaches to different pests, the candidate should be able to identify insects and understand their life cycles. At the very least, says Drlik, "they should know where to go to find out something, not just take a guess at it." In most cases, she says, they would consult Extension service or university entomologists.

Of course, Zien emphasizes, IPM specialists will also look for beneficial insects. "If they see enough, they may come to the conclusion that you may get better and longer lasting control by doing nothing."

They Won't Recommend Regular Spraying. A lot of landscape companies will offer to spray every month to prevent problems. "Pest control companies are still doing it because they don't think clients are willing to pay for inspections," says Zien. They should come out once a month to check for problems, and spray only if they find a pest beyond the threshold of tolerance.

They'll Keep Good Records. Dutky emphasizes that with IPM "making any kind of pest management decision should be information-based, not just calendar-based." Look for someone proposing to monitor your yard and report to you in writing. They should map your property, marking problem sites—a service some landscape maintenance companies can now provide using computer programs.

They'll Advise You on Plant Culture. "Fertile soil is important in an IPM program because fertile soil will create healthy plants," notes Zien. He recommends that his clients use organic fertilizers such as fish meal, rock meal, manure, and compost to ensure that nutrients are released slowly and steadily. Among synthetic chemical fertilizers, the best option is a slow-release fertilizer such as Osmocote. "Quick-release fertilizers cause pollution problems and don't last long in the soil—you get a cycle of having too much fertilizer, then too little fertilizer." And because quick-release fertilizers are usually high in nitrogen, they may stimulate a rapid flush of growth that "actually makes plants more susceptible to pests," says Zien. Heavy applications to lawns in spring and early summer can also make them more



COURTESY OF AGRICULTURAL RESEARCH SERVICE, USDA

Doing a Beat Test

Many of the most destructive pests are also small and well-camouflaged. You can spot them easily, however, by placing a rigid, white surface such as a clipboard with a sheet of paper attached under the plant or branch and tapping the plant vigorously. Pests will fall on the paper where they can easily be seen. Blow gently on the paper to dislodge dust, pollen, and plant debris. Insects and mites stay on the paper since their legs have tiny barbs that hook into the fibers of the paper. Use a 10X magnifier to get a better look. Small beneficial insects such as reddish fast-moving predatory mites and minute lady beetles may also be spotted using this technique. —*S.A.*

susceptible to drought stress, he says.

They'll Know Their Lawns. In evaluating a lawn care service, Drlik asks: "Are they taking into consideration the type of grass you have, mowing at the proper height, and leaving grass clippings on the lawn to provide extra nitrogen? Are they taking care of thatch and aerating the lawn?"

Zien recommends asking a lawn service if they offer alternatives to pre- and post-emergent herbicides. Mowing grass high and overseeding bare patches helps shade out weeds, for instance. Corn gluten meal is proving a non-toxic alternative to pre-emergent herbicides in preventing crabgrass and other weeds. You can also learn to live with more weeds. Based on his experience, Zien says, "People can tolerate anywhere from 10 to 40 percent weeds in their lawn," depending on the type of weeds.

Expect to Pay For Quality Work. "Don't expect to pay any less for a monitoring program than for a spray program," Zien warns. "What you are paying for in a spraying program is the labor of the person doing the spraying. In many cases monitoring will take longer than just coming out and spraying a pesticide."

Dutky agrees. Regular monitoring of your garden for pests means "paying for a higher quality of service than just having someone come out and spray," she says.

a nasty cocktail

During a series of studies conducted in the early 1980s by the University of Maryland at College Park, researchers learned that many home gardeners expect pest control specialists to spray—or they think they're doing nothing. They also found that long-term, heavy-duty chemical intervention was linked to more serious insect infestations.

Ethel Dutky, an Extension plant pathologist at the university, says that in the course of a pilot study on IPM in the home landscape, she and other researchers discovered that some arborists were offering homeowners multiple-spray programs using a pesticide cocktail composed of a fungicide, a miticide, and an insecticide.

A study—later published in the *Journal of Arboriculture*—revealed that the longer properties were exposed to such intensive pesticide application, the more

likely they were to exhibit unusual scale-insect and spider-mite infestations. "If you have a property where they have been spraying something like Sevin all over for years, then you really are knocking the beneficials way back and allowing pests to build up." Dutky says ecologists had theorized that uncontrolled use of pesticides would have such an effect, but the study provided the first "information from real landscapes that we could correlate to devastating pest explosions."

She urges: "Stay away from cover spray programs—they are very inappropriate for a landscape application. What it really winds up doing is damaging the ecology of the landscape."

an ounce of prevention

An article in the October 15 *American Nurseryman*, a trade magazine, offers some good suggestions for basic cultural practices that you should adopt as part of an IPM program.

Pruning. You can often prune out limbs that are diseased or harboring pests such as webworms. The author, Steve Sullivan, notes that thinning a tree canopy or inner branches can allow better coverage with horticultural oils. And he notes that shearing—the indiscriminate cutting back of shrubs into unnatural shapes—creates an outer foliage layer that encourages pests and diseases by reducing the amount of air, light, and moisture that reaches their interior.

Proper Mulching. Too much mulch around the base of a plant can keep the bark moist, offering easier entrance for pests, so avoid piling mulch around the trunks of your trees and shrubs. While there is some debate about how much the type of mulch can affect your soil, you should keep the needs of your plants in mind if you mulch heavily and repeatedly. Sullivan—regional horticulturist for the Brickman Group Ltd. in Laurel, Maryland—advises using pine needles on acid-loving plants such as azaleas and rhododendrons, and saving hardwood mulch for plants that can tolerate a higher pH.

Avoid Plant Stress. Be aware that newly relocated plants are more vulnerable than established ones, and give them extra pampering during dry periods. Keep an eye on the soil conditions. Even if you have given a plant well-aerated soil in the beginning, soil can become compacted or

poorly drained for a variety of reasons: new construction or garden elements that change drainage patterns, or altered traffic patterns that result from a new patio or even a new pet.

Water Properly. Applying water directly to soil around the the plant is more efficient for a number of reasons. Particularly with certain susceptible plants such as roses and dogwoods, overhead watering can leave foliage wet and create ideal conditions for fungal diseases such as black spot and anthracnose. If you must use overhead irrigation, do so early in the day so that leaves will dry out quickly.

Look Out for Overhangs. Americans' passion for foundation plantings often leads to their siting plants in a highly unfavorable location. Not only can the plants become too large, so that they're crushed against a wall, but they're blocked from rainfall. They will be more prone to drought stress and will also miss out on nature's own way of removing mites and other villains. And remember that soil near the foundation can have a higher pH than the rest of your yard because of calcium carbonate leaching into the soil from the concrete.

And We Repeat. Sullivan reiterated advice of the experts we've already quoted. Chose pest-tolerant plants. Create a diverse landscape that will attract beneficials. Don't overfertilize, especially with high-nitrogen fertilizer, which will cause a flush of new growth that is especially tasty to pests. And sometimes, do nothing.

going buggy!

Remember that funny-looking bug you saw on your maple tree? Now you can find out for sure what it really is. The University of California at Davis has set up a hotline to identify insects by phone—for a fee. Calls to (900) 225-BUGS (2847) cost $3 for the first minute and $1 per minute thereafter. If identifying the insect takes an unusual amount of time, callers may be switched to a fee-free line. If the hotline staff still can't identify the insect, they may ask you to mail your bug to them.

Lynn Kimsey, professor of entomology, came up with the idea for a hotline because entomology department staff were being overwhelmed by numerous calls about insects and spiders. Entomology students who do well in a half-semester training course are offered a renewable internship to answer hotline questions. The internships are funded by the money raised by the hotline.

Asked about particularly challenging inquiries, Kimsey notes that there is a psychiatric disorder called delusional parasitosis that can be brought on by stress or drug use. Students suspect they may be dealing with such cases when callers complain about being repeatedly bitten by insects they never see.

But sometimes callers are simply a bit confused. One Alabama man told hotline staff that he was getting linear bites on his ankles during his evening walk. It turned out that he was a northerner who had just moved south and didn't realize that his "bites" were caused by razorgrass.

Americans' passion for foundation plantings often leads to their siting plants in a highly unfavorable location where they're blocked from rainfall.

In the next issue of The American Gardener, *we'll look at some of the IPM practioner's weapons—beneficial insects and other less toxic pest and disease controls.*

Organizations

Bio-Integral Resource Center (BIRC), P.O. Box 7414, Berkeley, CA 94707, (510) 524-2567. Publishes *The IPM Practitioner* (10 annual issues) and *Common Sense Pest Control Quarterly.* This nonprofit corporation researches and publishes information on integrated pest management. Call or write for membership information.

Biological Urban Gardening Services (BUGS), P.O. Box 76, Citrus Heights, CA 95611-0076. Publishes quarterly *B.U.G.S. Flyer,* an informative newsletter covering topics relating to integrated pest management and ecological gardening practices. Individual memberships are $12.50 a year.

National Arborist Association, Route 101, P.O. Box 1094, Amherst, NH 03031-1094, (603) 673-3311. www.natlarb.com
This national tree care organization can provide information on member companies in your area.

Books

Complete Guide to Pest Control: With and Without Chemicals. George W. Ware, Thomson Publications, Fresno, California, 1996. AHS member price: $26.95, softcover. Book code: THP 001.

The Gardener's Guide to Common-Sense Pest Control. William Olkowski, Sheila Daar, and Helga Olkowski. The Taunton Press, Newtown, Connecticut, 1996. AHS member price: $17.95, softcover. Book code: TAU 002.

Natural Insect Control: The Ecological Gardener's Guide to Foiling Pests. Warren Schulz, ed. Brooklyn Botanic Garden, New York, 1994. AHS member price: $7.15, softcover. Book code: STO 049.

Organic Pest and Disease Control. Barbara Ellis, ed. Houghton Mifflin Company, New York, 1997. AHS member price: $11.65. Book code: HOU 016.

Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide. Steve H. Dreistadt. ANR Publications, University of California-Davis, 1994. AHS member price: $28.50, softcover. Book code: UCA 002.

Web Sites

USDA Agricultural Research Service Pesticide Database. www.arsusda.gov/rsml/ppdb.html.
This database describes chemical, physical, and biological features of hundreds of pesticides, including breakdown rates and potential for water pollution.

offshoots

ON THE GENETICS OF LAZY GARDENING

by Julie Shaw Cole

Psychologists theorize that we pop out of the womb with a certain amount of hard wiring in place. That is, we are who we are from day one. Of course they acknowledge that nurture does have a strong effect on what we do with the person we start out being.

My father always thought we were lazy kids. He would come home on a Saturday morning, just popping in and turning right around to go back to work, and find us still asleep. He'd grouse and grump, but mother would counter with sleeping dog stories and such. She, of course, was probably delighting in a few stolen minutes of solitude while we slept. If she wasn't doing laundry or cleaning up our persistent messes or baking pies or going to work herself, she liked to snatch quiet time to read novels and biographies and listen to opera.

Dad couldn't fathom our need for sleep beyond dawn. He was raised on a farm and must have gotten up with the pigs and horses every day. Even in his teens, when the family moved into town, he earned his money by rising at dawn to deliver papers.

Dad couldn't deal with our delight in books. He would rather be out and doing. If he were in school today, he might have been told he was hyperactive. He worked from dawn to dusk year round when we were little, and two-thirds of the year when we got older and he had his own business. In our teens each of us spent at least one summer doing the dawn-to-dusk routine with him. There was no being lazy then. His was a difficult model to follow and probably has permanently warped our work habits.

So how could I end up being a lazy gardener? Really lazy people would not knowingly choose such a labor-intensive avocation. It must have been by genetic happenstance. My father was never happier than when he was outdoors and moving fast. As a child his activity might have been running, riding horses, sports, or farm work. As an adult, he played golf, taught golf, and maintained golf courses. So from him, I got my need to be outdoors and around nature.

Mother enjoys being outside, once or twice a day, to water her tomatoes, but she would rather be working in a laboratory or, since she's retired, reading. Oh, she hiked Yellowstone in her youth and met Dad on the golf course. But she really seems to prefer the realm of the mind.

So I am a combination of the two. I enjoy being outside, especially on those luscious, cool, early summer days when the garden is just getting going. The beans and potatoes and tomatoes have blossomed and promise abundance in just a few weeks. I can heft a shovel and dig a trench with the best of them. Well, not the best, but I do get a hole dug. Of course, that might be influenced by the side of the family that was in the funeral business. Nonetheless, my own undertakings do tend to result annually in a modest but adequate amount of urban garden.

THINK GLOBAL, DIG LOCAL

From my mother's side came my enjoyment of garden books and magazines and seed catalogs and endless gardening encyclopedias that tell me just when and why the potatoes do what they do. I like to try new things. I like to think about what gardens mean to me and to many people. I like to consider how personal gardens fit into the global picture—like the writer Thomas Moore who, in his book *The Re-Enchantment of Everyday Life*, equates all gardens with our personal search for paradise, or the divine:

"The comic adventurer Candide roamed the world in search of the meaning of life and ended up sitting at home in his garden. We might take a lesson from him, save the time and money, and tend our garden. Its gift of repose and contemplation is the soul's treasure we seek under the pseudonyms of success and happiness. The meaningfulness of the garden, equal in all respects to its meaninglessness, is the goal in our quest for meaning."

One person's laziness may be another's contemplation. The apparent dichotomy of meaningfulness and meaninglessness makes gardening balanced and complete. It fulfills my father's intense need for purpose, which he met in a way many might consider quite purposeless, and my mother's need for quiet and mindfulness, which she is still enjoying.

I consider myself very fortunate. I inherited the need to be in motion balanced by the need to be contemplative. What else could I have been but a gardener, with such genes and such modeling?

In the '50s there was a religious program on TV that had a theme, " If everyone lit just one little candle what a bright world this would be." If everyone grew just one little garden, what a beautiful and balanced world this would be.

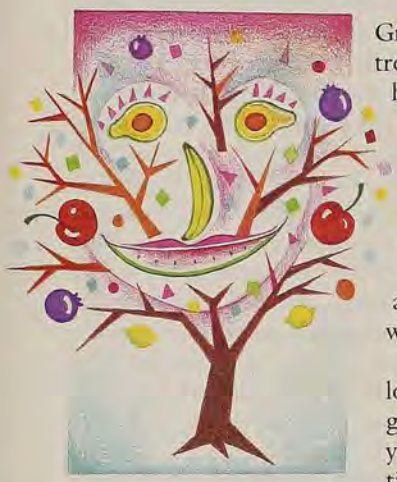
BILL FIRESTONE

Julie Shaw Cole is a free-lance writer in Louisville, Kentucky.

gardeners' information service

***Our grafted peach tree was hit** by construction equipment and is now resprouting from the base of the trunk. What can we expect to happen?*

—A.N., San Diego, California



Grafting is normally done to give a tree a characteristic that it doesn't have—compact size, disease-resistant roots, or the ability to bear several different flowers or fruits, for instance. You may have seen something advertised as a "fruit cocktail tree," which has peaches, plums, nectarines, and apricots all growing on the same tree; this was done by grafting.

If you are afraid you may have lost the scion—the plant that was grafted onto the rootstock—check your plant for unusual characteristics. Usually these will be easy to see. In your case, your tree may start producing leaves of a different shape, or a different variety of peach. Modern roses, which are commonly grafted, will produce flowers that are smaller or a different color. Usually the rootstock is chosen for toughness and may not be up to your standards for ornamental or fruiting qualities. Only you can decide if the surviving tree is worth keeping.

***I was given a Harry Lauder's walking stick** for my birthday. Where did it come from, how did it get its name, and how do I take care of it?*

—S.S., Indiana, Pennsylvania

Harry Lauder's walking stick *(Corylus avellana* 'Contorta'), also known as corkscrew hazel, was discovered growing in a Gloucestershire, England, hedgerow about 1863. Its sinuously curved stems and branches are eye-catching in winter and are popular in flower arrangements. It was named after Sir Harry Lauder, a Scottish entertainer who sported a trademark curly walking stick. Lauder (1870-1950) was famous for songs such as "I Love a Lassie," "Roamin' in the Gloamin'," and "Keep Right on to the End of the Road."

'Contorta' is often grafted onto rootstock of either the species or the American filbert *(C. americana)*. If yours is grafted—you can usually tell by looking for a swollen area or scar tissue on the main stem between the lowest branches and the roots—remove any straight shoots that emerge from below the graft. Left unpruned, these will eventually displace the contorted limbs. Otherwise, it shouldn't need much attention. Normally the cultivar becomes a rounded shrub up to 10 feet tall and as wide.

RON FLEMMINGS

***My daughter gave me** some summer-flowering allium bulbs for Christmas. Can I plant these the same way as I do my spring-flowering bulbs, and can you give me suggestions for other summer-flowering bulbs to add to my garden this spring?*

—A.E., Chapel Hill, North Carolina

Like most hardy bulbs, alliums are best planted in early fall, but you may get away with planting them in early spring if you can store them in a cool, dry place. Another option is to plant them now in a large container and place it outside or in an unheated garage so they will get enough chilling to bloom. Make sure the soil around them stays slightly moist but not waterlogged.

Some other hardy summer-flowering bulbs to consider include Sicilian honey garlic *(Nectaroscordum siculum)* and native spider lilies such as *Hymenocallis caroliniana* and *H. liriosome,* which are hardy to USDA Zone 7. "Crinum lilies would be really good for Chapel Hill," says Nancy Goodwin, creator of Montrose gardens in Hillsborough, North Carolina. Crinums and spider lilies have an advantage over some other summer bloomers in that they don't mind clay soils, and some even thrive with wet feet. Despite references that indicate these bulbs are hardy only in Zone 9 or 10, Goodwin has had no problem growing *Crinum* 'Ellen Bosanquet', *C.* 'Milk and Wine', or ×*Amarcrinum memoria-corsii,* a hybrid between *Amaryllis belladonna* and *Crinum moorei.* Good choices for lower-growing bulbs, according to Goodwin, are rain lilies such as *Zephyranthes candida, Z. flavissima,* and *Habranthus robustus,* which flower after rainfall throughout the summer. Old favorites include *Gladiolus, Crocosmia,* and, of course, many, many lilies *(Lilium* spp.). For more detailed information on garden bulbs for all seasons, seek out a copy of Scott Ogden's *Garden Bulbs for the South.* It is available through the AHS Horticultural Book Service.

—Sara Epp, Editorial Assistant

Use Your GIS

GARDENERS' INFORMATION SERVICE CAN HELP YOU find an elusive plant, suggest plants for special needs, or diagnose a problem and find a cure. AHS members can call GIS toll-free at (800) 777-7931 ext. 31 between 11 a.m. and 3 p.m. Eastern Time, Monday through Friday (except holidays), or e-mail us any time at gardenahs@aol.com. Please be as detailed as possible in the information you give us, tell us how to get back to you, and tell us where you live so we know your gardening conditions.

Readers who enjoyed the article on old roses in the May/June issue will be happy to know that we now have a new AHS Resource Bulletin called "Collecting and Rooting Old-Rose Cuttings," based on information provided by the Heritage Rose Foundation. To order, send $1 with a self-addressed, stamped envelope to: AHS, GIS, 7931 East Boulevard Drive, Alexandria, VA 22308.

mail-order
explorer

A NOSE FOR SEEDS: THE FRAGRANT PATH

by Karan Davis Cutler

If the horticultural world is divided into those who love gardens and those who love plants, Ed Rasmussen falls into the second category. That's not to say that Rasmussen doesn't like designing gardens—his cover more than 30 acres of prime eastern Nebraska farmland—but his heart belongs to plants, especially to "fragrant, rare, and old-fashioned plants."

This is how the catalog for Rasmussen's seed company, The Fragrant Path, describes its stock-in-trade. The business name comes from the title of Louise Beebe Wilder's 1932 classic book about scented plants. "We plan meticulously for color harmony and a sequence of bloom," Wilder observed, "but who goes deliberately about planning for a succession of sweet scents during every week of the growing year?" Answer? Ed Rasmussen, who has a sensitive nose: "I can smell the Cargill plant—it turns corn into alcohol—and that's 10 miles away," he laughs.

Rasmussen, 48, began selling seeds by mail in 1982, after earning a business degree from the University of Nebraska, a tour in Vietnam with the U.S. Army, securing an associate's degree in ornamental horticulture from the local community college, and a stint as a cabinetmaker. While he was in the army, his family moved from Omaha to a 200-acre farm two miles southwest of Fort Calhoun, a town of 500 located in hills formed of loess—a fine-particled, loamy soil deposited by wind. "They're good-sized hills that were shaped by the wind, rolling long-grass prairie. You can dig a well and never hit rock or sand. It's almost like having topsoil 200 feet deep. On the other hand," Rasmussen adds, "the ground drains so well that we can't build a pond."

Other than a few pioneer trees such as box elders and mulberries, a half-dozen elms already dying of Dutch elm disease, and a grove of black locusts planted for fence posts by the original homesteaders in the 19th century, the land was bare. Rasmussen began landscaping with a vengeance but soon exhausted the standard offerings of Henry Field, the brothers Stark, and other midwestern companies. "There wasn't much variety in mail-order catalogs in 1970," he says, "so I began seeking the few specialists, like the [F.W.] Schumacher Company in Massachusetts. I had to grow most things from seeds or grafts."

At the same time he was reforesting his land—a local tradition begun by Nebraskan J. Sterling Morton in 1872, when one million trees were planted in the state on the first Arbor Day—Rasmussen was sowing the foundation for The Fragrant Path. His plantings, a diverse mix of flowers, vines, shrubs, and trees, soon numbered in the thousands. The 1982 catalog offered 250 species and cultivars; today, the inventory tops 1,000, and Rasmussen has grown every plant that is listed. Fragrant plants—most of them grouped in the front of the 65-page catalog—remain a priority, but non-scented plants are also included. "I had to include some nonfragrant species to round out the collection," he explains. "Besides, who could have a garden without morning glories?"

It is an eclectic mix. "Ed has a wonderful selection," says Nancy Smith of Tonganoxie, Kansas. Smith, who publishes *Back in Thyme,* a newsletter devoted to old-fashioned plants, has been ordering seeds from Rasmussen for 10 years. "He has woody things like pink yellowwood *[Cladrastis kentukea* 'Rosea'] and beautiful prairie species, plus plants, such as dwarf false indigo *[Baptisia australis* var. *minor],* that you never see in other seed catalogs. It's pretty gutsy to handle these things, and horticultural gutsiness ought to be recognized."

On the 30 acres around his house, Ed Rasmussen grows many of the plants featured in his catalog, including flowering tobacco and prince's-feather, left, and corn poppy and larkspur, above.

PHOTOS COURTESY OF ED RASMUSSEN

Eclectic is the right word for a catalog that offers seeds from everything from 'Moon and Stars' watermelon and apple mayweed or pineapple weed *(Matricaria matricarioides)* to vesper iris *(Iris dichotoma)* and golden raintree *(Koelreuteria paniculata).* Scott Kunst, who runs Old House Gardens, a mail-order firm specializing in antique bulbs (see the July/August '97 issue of *The American Gardener),* is another fan: "Ed was selling rare

and heirloom varieties long before everyone else. I like his personal touch. When I read his catalog, I have a sense of walking through his garden."

Rasmussen confesses that his gardens are less orderly than his catalog, which is grouped by types of plants, such as "Climbers," "Fragrant Perennials," "Herbs," and "Fragrant Trees and Shrubs," then alphabetically by botanical name. He supplies about half of the seeds he sells: "I produce the things that are harder to find," he says, "such as variegated Japanese hop vine *[Humulus japonicus* 'Variegatus'] and flowering tobaccos *[Nicotiana suaveolens* and *N. sylvestris],* but I buy seeds of more common plants like Russell lupines."

The catalog offers seeds from everything from 'Moon and Stars' watermelon and apple mayweed to vesper iris.

Each year, Rasmussen subtracts a dozen or so plants from his catalog, then adds between 50 and 100. Among the latest newcomers are a dozen old-fashioned sweet peas *(Lathyrus odoratus),* Chinese magnolia vine *(Schisandra chinensis),* and Manchu rose *(Rosa xanthina),* which has fernlike foliage and fragrant semi-double flowers. Every seed ordered from The Fragrant Path—there were more than 10,000 orders last year—is counted and hand-packaged by Rasmussen from his 12-by-15-foot basement seed room, which sometimes is expanded to take advantage of the ping pong and pool tables. "Not exactly high-tech," he admits.

Jasmine tobacco *(Nicotiana alata),* moonflower *(Ipomoea alba),* cinnamon vine *(Dioscorea batatas),* and single hollyhocks *(Alcea rosea)* were last year's best sellers. Among Rasmussen's personal favorites are nicotianas, morning glories, and poppies. "I have a lovely double pink opium poppy. I found it growing just outside the fence surrounding the local prison," he says with a smile, "but I may have to stop selling it—the government is cracking down. And I love big things like the shoo-fly plant *[Nicandra physalodes]."*

In addition to flora that are fragrant, rare, and old fashioned, customers can depend on the catalog's selections being relatively rugged and self-sufficient. Winter snow cover isn't a given in Rasmussen's USDA Zone 5 location, and with only two wells, he's limited to growing plants that don't need extra watering. Still, he admits, his is a good climate for gardening—an average of 180 frost-free days—and one that allows him to cultivate an unusually large mix of flowers, vines, shrubs, and trees, probably the most diverse in Nebraska.

As for next year? "I'm always looking for new plants," Rasmussen says, "but I never know what they are until I find them."

To receive a copy of Ed Rasmussen's seed catalog, send $2 to The Fragrant Path, P.O. Box 328, Fort Calhoun, NE 68023. Rasmussen's gardens are not open to the public, but he does lead a few prearranged tours for horticultural groups each year.

Karan Davis Cutler is a free-lance writer and editor in Essex Junction, Vermont. Her latest book is The Complete Vegetable and Herb Gardener, *published by Macmillan.*

urban gardener

ABOVE-AVERAGE MEDIANS

by Terri J. Huck

AHS AWARD WINNER

In a classic example of making the most of what you've got, garden enthusiasts in Coronado, California, are transforming their grassy median strips into gardens. Their innovative approach to rescuing their downtown area has earned them the 1998 Urban Beautification Award from the American Horticultural Society.

Ten years ago Coronado's downtown was crumbling. To help revitalize it, the city council appointed a Downtown Task Force, which became the nonprofit Coronado MainStreet Ltd.

This group is now a participant in the National Trust for Historic Preservation's National Main Street Program, which has proved a valuable resource for networking with like-minded communities. In explaining the philosophy behind the trust's efforts, Toni Gaylord, executive director of the Coronado group, notes that downtowns were once the heart of every community throughout the country. "Then shopping centers came and everyone moved out, but the historic buildings were still in the downtown areas. The idea has been to restore or reuse these historic buildings and revitalize downtowns as gathering places for the communities."

Coronado, on a 13-square-mile peninsula across the bay from San Diego, has a year-round population of about 18,000. A charming seaside village once accessible from the city only by ferry, Coronado now boasts a shopping district, bungalows, and oceanfront mansions, as well as the historic Hotel del Coronado and two other major resort hotels.

Coronado's "main street" is Orange Avenue, anchored by the Hotel del Coronado and flanked with apartment buildings, a library, a park, and the eight-block business district. Queen palms *(Syagrus romanzoffiana)* and deodar cedars *(Cedrus deodara)* line the four-lane road. A wide median strip runs down the center where trolley tracks used to be.

In 1988, Coronado MainStreet held public workshops to solicit the community's ideas for preserving and beautifying their town. Residents expressed a desire for "flowers, color, growing and blooming plants" and came up with the idea of turning the business district's medians into gardens.

The MainStreet Design Committee has led the effort. Professionals in such fields as landscape architecture, garden design, and architecture have joined avid gardeners in volunteering their time and expertise. But they wanted input from the entire community, so to encourage comment, they first installed three temporary gardens. One was planted with annuals and one with perennials such as red valerian, false dragonhead, pincushion flower, sedum, and sage. Since California was experiencing a drought at the time, the third garden was planted with drought-tolerant natives.

"These gardens were temporary to see how the community liked them," says Gaylord. "We deliberately planted them shallow." Photographs were displayed in the public library, and community members voted on the concept. Once the community was behind them, the committee made the three gardens more permanent, with brick edging and a small crape myrtle. The committee developed a master plan for garden spaces so that when donors stepped forward with specific requests for new designs, they could be matched with available space.

An elaborate Coronado garden features a topiary girl with a bronze umbrella, left. Another garden showcases roses and the unifying boxwood and brick edging, above.

PHOTOS COURTESY OF CORONADO MAINSTREET, LTD.

These gardens posed some unusual design challenges. Median strips in Coronado vary in size and shape, and so does the architecture of the buildings, which the design committee insists must be taken into consideration. For example, the Spreckels Building—a Georgian curvilinear building with Tiffany windows—in the 1100 block is more imposing than buildings in the 900 block and is large enough to balance flowering trees and tall topiaries. Designers also have to contend with lamp posts, electrical boxes, underground utility cables, and a required eight-foot mowing zone.

Because Orange Avenue curves, each garden is revealed successively to pedestrians and motorists, allowing designers more flexibility. Nevertheless, planners wanted to tie them together with a common element, so boxwood edging is used throughout—even in the wildflower garden.

FLOWERS AND FUND-RAISING

Some donors have given money to support the program in general, while others were more involved in actual designs. For instance, when Diana Gurney—longtime operator of a popular flower stall in Coronado—was dying of cancer, friends donated money to establish a garden in her honor. Gurney designed it herself, filling it with blooming plants such as crape myrtle, Peruvian lilies, bearded iris, hibiscus, and roses. Annual donations fund ongoing maintenance of the garden.

In the 1100 block, an elaborate garden was designed in the French parterre style, with evergreen pear, ligustrum topiary cones, 'Peace' roses, and hybrid daylilies. The centerpiece is a topiary of a little girl holding a bronze and copper umbrella, accompanied by a Yorkshire terrier.

To install and maintain the gardens, the MainStreet program relied on volunteer labor until 1993. Then the group hired a professional gardener, Alan Smith of Unique Landscaping, who performs such chores as mowing the garden perimeter. A licensed arborist prunes the trees, and timed irrigation systems donated by MainStreet board members water the gardens.

The community has shown a remarkable commitment to the gardens. While each garden design is approved by the city council, all funding for installation and maintenance is provided by private donors—with total contributions of more than $150,000. The design committee puts on an annual Garden Party fund-raiser—priced at $15 a ticket to encourage community-wide participation—at which site plans and photographs bring residents up-to-date on garden progress.

Nine gardens have been established, and there is room for more. Gaylord would especially like to tackle the area near the ferry dock, which was very industrial 10 years ago and now features waterfront condominiums.

Reflecting on the changes this program has wrought, she says, "In 10 years, you forget where you were." It's important to go back to the beginning and remind people just how far you've come, she points out—especially new city council members.

Throughout the planning process, MainStreet Coronado gardeners face a happy dilemma—choosing from an incredible variety of plants that grow in their temperate climate. "We have a different growing season here" than most of the country, Gaylord notes. "Roses bloom from January to November." Smith uses a fertilizer of his own concoction to keep everything blooming and received so many requests for the recipe that he now packages it and sells it as Organic Gold. Ever one to recognize a golden fund-raising opportunity, Gaylord is hoping to sell it by the bagful to raise money at their next Garden Party.

Terri J. Huck is managing editor of The American Gardener.

conservationist's

notebook

VANISHING NATURAL HERITAGE: WET FLATS

Story and photographs by D. Bruce Means

If the number of plant species that can be packed into a square meter is any indication of the value of a habitat, the wet flats of the southeastern United States are among the most valuable in the world. In North Carolina's Green Swamp, botanists have counted more than 50 species per square meter—the North American record for plant-species richness. Three of the world's six carnivorous plant families, including eight pitcher plants, eight butterworts, seven sundews, and a dozen or so bladderworts, can be found in southeastern wet flats. Much of this rich habitat, unfortunately, is in the path of rapid development occurring along the coastal plain. By one ecologist's estimate, 97 percent of the Gulf Coast wet flats and related seepage bog habitats have been destroyed in the past century.

Wet flats are also known as wet prairies or wet savannas because their squishy soils, largely devoid of trees and shrubs, extend over vast expanses of the coastal plain. It was once thought that these boggy areas were formed by water trickling down a gentle slope—the condition that prevails in true seepage bogs—but it appears that packed clay or organic hardpans underlie them close to the surface, allowing water to pond up after rains.

Some wet flats are found in the Carolinas, but they are most common on the Gulf coastal plain from the Florida Panhandle to Mississippi. William Bartram, writing in his 1791 *Travels,* may have been the first naturalist to record how extensive these bogs were along the Gulf Coast. From his writings, and those of botanist Roland Harper in 1918, we get the impression that the area near the coast from Pensacola, Florida, to Pascagoula, Mississippi, was once a nearly continuous wet flat.

FLORAL DIVERSITY

Growing in the open as they do, the herbs of wet flats are true heliophiles—sun lovers. Grasses and grasslike plants—sedges and rushes, for example—dominate the landscape, but more showy flowering plants are abundant. Starting in April, you see raucous floral displays of the large, exotic pitcher plants *(Sarracenia* spp.), followed closely by the rapid rise of their insect-trapping tubular leaves. The bright yellow flowers of the trumpet pitcher plant *(S. flava)* stand on two-foot stems, soon to be overtopped by their three-foot yellow-green pitchers. In even soggier conditions at the

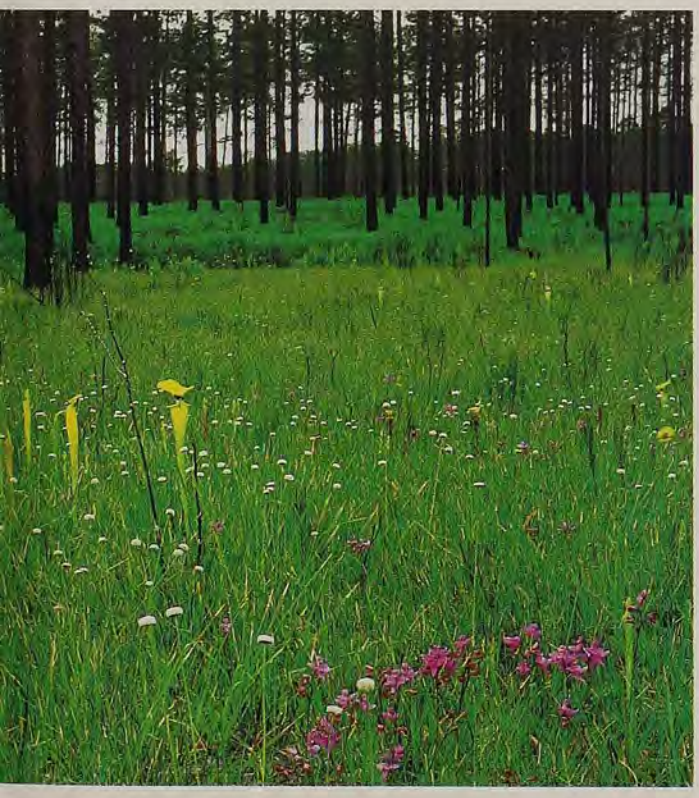
Wet flats, right, are home to an incredible diversity of plants and animals, including this tree frog, above, perched on a pitcher plant.

edges of wet flats, where shrubs begin to be seen interspersed among the herbaceous plants, you have to search a little to see the garnet flowers of the parrot pitcher plant *(S. psittacina)*. The tubular leaves of this species grow parallel to the ground, with the beaklike opening of the pitcher facing upward. And inside the wettest shrub bogs lurk the baroque leaves of the common pitcher plant *(S. purpurea)*, whose three-inch-wide lavender flowers are the most spectacular of all.

At the same time the pitcher plants are putting on their show, deep in the vegetation you can find the sensuously soft yellow, blue, or white flowers of the carnivorous butterworts *(Pinguicula* spp.). They snare insects with nature's own flypaper—tiny beads of stickum that dot the surfaces of their rosette-forming leaves.

If you become jaded by the sheer abundance of the beautiful carnivorous plants, you have only to wait a couple of weeks to view earth's showiest flowers, the orchids. Beginning with the grass pinks, the seasonal procession brings out delicate rose pogonia and rosebud orchids, then ladies'-tresses and, in the heat of midsummer, the fringed orchids. Meanwhile, ranks of pipeworts *(Eriocaulon* spp.), white-top sedge *(Rhynchospora latifolia,* also called *Dichromena latifolia),* blue-eyed grasses *(Sisyrinchium* spp.), yellow-eyed grasses *(Xyris* spp.), and meadow beauties *(Rhexia* spp.) all bloom in their turn. September and October bring on the composites, which include *Liatris, Helianthus, Solidago, Eupatorium, Coreopsis, Aster, Chrysothamnus (Bigelowia),* and more.

The diversity found on wet flats is even more amazing because four factors interact to make these areas a harsh environment for most plants. First, their soils are highly acidic, with pH values ranging from 3.5 to 5.0. Second, they are quite poor in nutrients—so much so that botanists have conjectured that low nutrient levels probably were the major factor in the evolution of carnivorous plants. Third, the roots of plants in wet flats are often inundated so that oxygen availability is low. Fourth, it is not uncommon during periods of low rainfall for bogs to briefly dry out, so bog plants must be able to tolerate the stress of desiccation.



VANISHING HABITAT

Wet flats are diminishing chiefly for two reasons. Many have been drained to create crop land, pasture, or tree farms. A secondary cause is the human suppression of fire for well over half a century. Several species of evergreen shrubs normally found downslope from herb bogs—such as black and swamp titi, dahoon holly, large gallberry, odorless myrtle, St. John's-wort, and fetterbushes—have begun to invade wet flats.

In the past, these fire-sensitive plants were controlled when blazes starting in the naturally incendiary longleaf pine forests were allowed to burn down into them. This woody growth not only shades out the herbaceous vegetation, but shrubs recycle more moisture back into the atmosphere than herbs, creating the effect of a botanical sump pump. After a bog has been taken over by shrubs, much of the diverse herb community dies because the species are not adapted for dense shade and longer dry spells.

Carnivorous butterworts snare insects with nature's flypaper—tiny beads of stickum that dot the surfaces of their leaves.

The Gulf Coast is home to more than 2,000 plant species. Because more than 100 species are packed into a given wet flat, these relatively small acreages contain a disproportionately high percentage of the regional biological diversity. And, unfortunately, only a small proportion of remaining wet flats are protected. The best and largest examples are in the Apalachicola National Forest in Florida, Kisatchie National Forest in Louisiana, and Grand Bay National Wildlife Refuge in Mississippi.

CROWN POINTE—A CASE STUDY

The Crown Pointe Preserve, a 170-acre wet flat on Perdido Bay in Escambia County, Florida, illustrates some of the difficulties inherent in restoring and managing wet flats. Acquired as a mitigation exchange for wetlands that were destroyed to build a subdivision, the preserve—owned by the nonprofit Coastal Plains Institute and Land Conservancy—is part of about 7,000 acres of wetlands that local conservationists are trying to preserve from rapid development west of Pensacola.

Prescribed fire is the best tool for restoring overgrown flats to natural conditions, but burning at Crown Pointe was considered risky for two reasons. Because fuel has accumulated on the site for 20 years, a burn had potential to become overly hot, destroying the herbaceous plants it was intended to save. Also, the preserve is boxed in on three sides by new subdivisions. Only the bay side offered an opportunity for directing smoke and flaming embers away from homes, highways, and airfields.

After carefully conducted burns in the summer of 1997, however, Crown Pointe Preserve is amazingly rejuvenated. Wildflowers that had been suppressed for years bloomed copiously. Only a single fire was required to top-kill all the 10- to 30-foot-tall brush. These stubborn plants are already vigorously resprouting from their root crowns, however. Repeated fires in the normal lightning season should eventually eliminate the shrubs, but the process may take decades. In the meantime, the project will serve as a model on which other restoration programs can be based.

D. Bruce Means, a research ecologist, writer, and consultant who lives in Tallahassee, Florida, is president and executive director of the Coastal Plains Institute and Land Conservancy.

When it comes to awakening a consciousness of the landscape, Darrel Morrison is a natural.

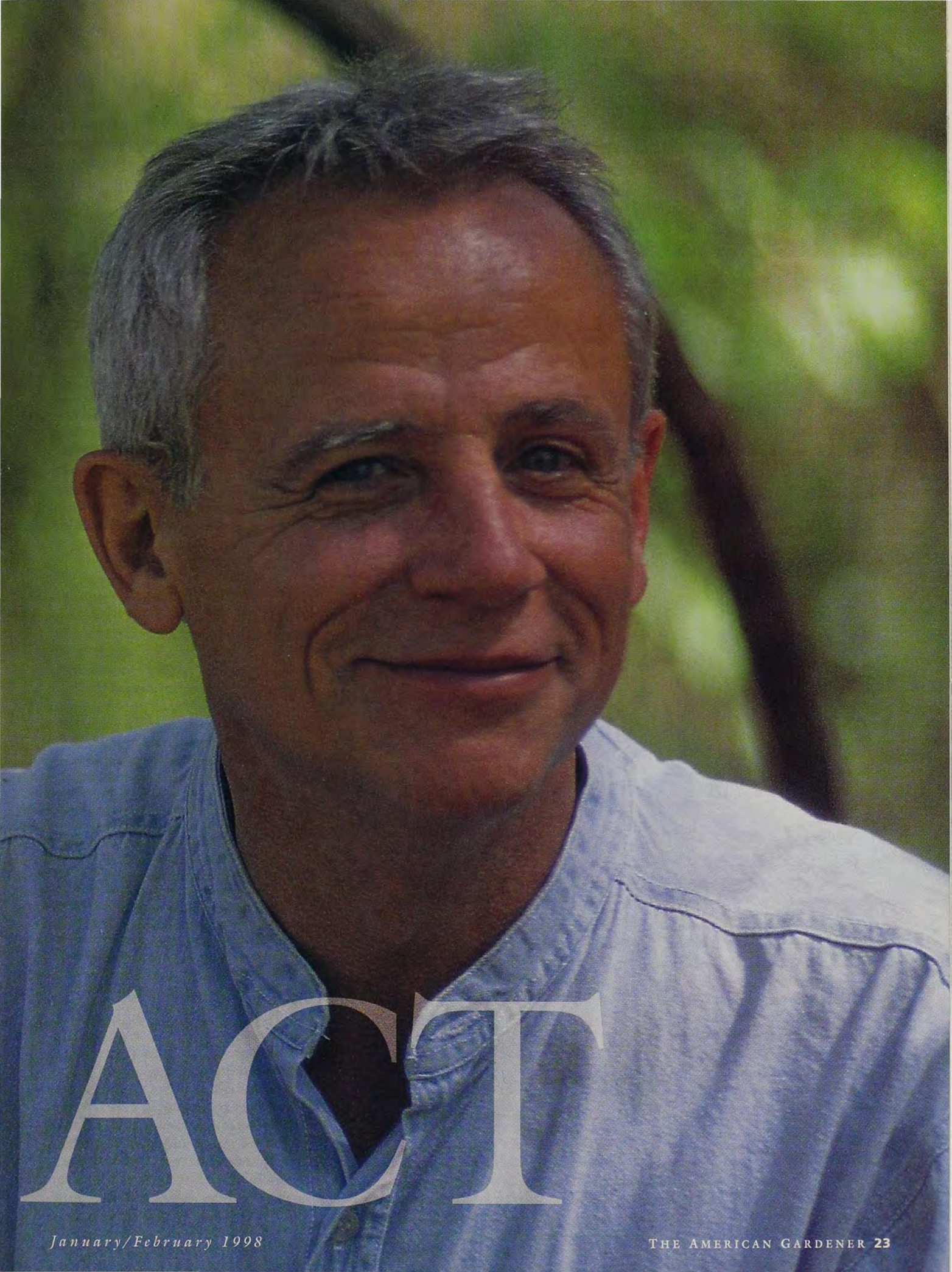
CLASS

by Kathleen Fisher

"Now if I were doing this, I would create another low wall over here to echo the first one," Darrel Morrison is telling one of his students. "Not so much hump in that berm," he says to another. The assignment for this graduate class in landscape architecture is to create a design for the courtyard of a one-story medical clinic. The space is 48 by 36 feet. Earlier, the 20 or so students had trooped out to a lawn on the University of Georgia campus and formed a rectangle of those dimensions, to get a gut-level feel for the space they would be dealing with. In the classroom, they talked about the feelings associated with a clinic: Visitors are likely to be feeling fearful, for themselves or family members. They will be wanting privacy, but the last thing they need is to feel trapped.

AHS AWARD WINNER

MICHAEL HAYMAN



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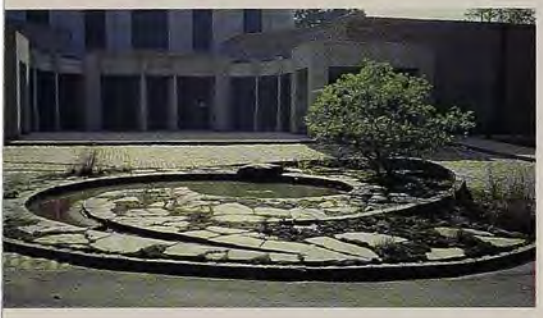
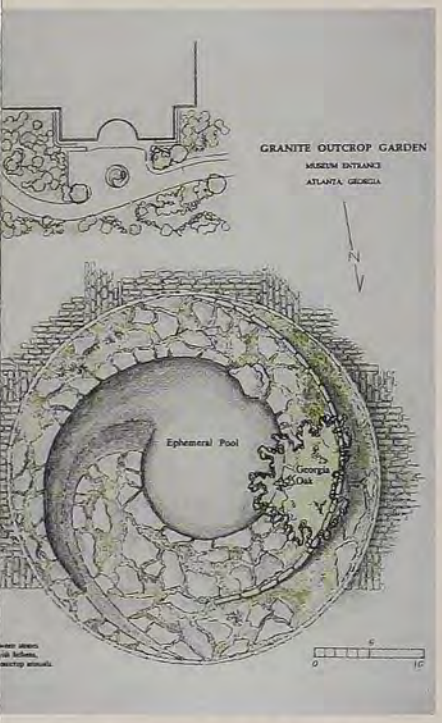
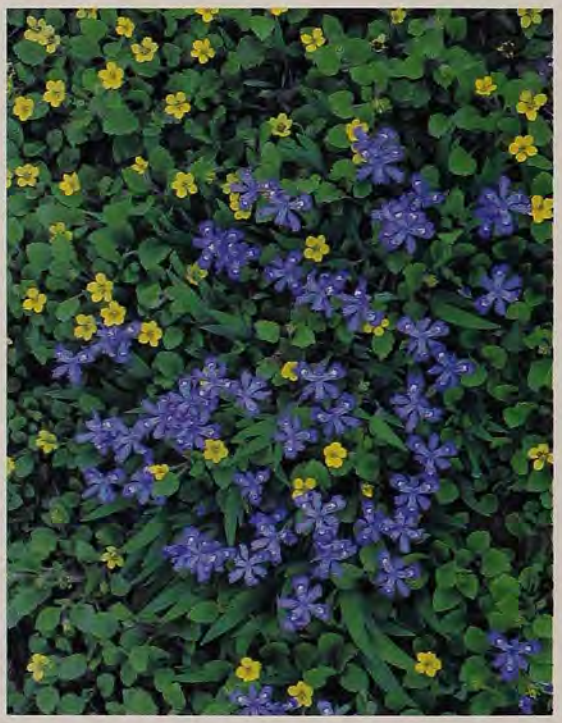






Plantings at the Atlanta History Center reflect natural Georgia ecosystems or succession phases. Broomsedge, top, is an early succession species, while the pool in the entrance courtyard, center and above, represents a granite outcrop. In the semi-shade of a mature woodland area grow *Chrysogonum virginianum* (green-and-gold) and *Iris cristata*, right.

"Think in terms of a creating a sequential experience in walking to the door," Morrison advises. "You can do that with four-foot modules—or the movement can be very fluid. Give them a landing space where they might want to stop."

The designs are being created with corrugated cardboard and an assortment of media—paints, pastels, pens. Some students are carving their cardboard to create more three-dimensionality. For plants, they bring in twigs and leaves, bits of moss and dried seed heads. Morrison gently reminds a few not to get carried away with microdesign—drawing tiny squares to represent granite stepping stones, for example, or debating plant species. "Think about mass versus space," he instructed them in class, "and avoid decorating your design with little features."

We ask the professor, who's returned to Georgia this year from a semester's sabbatical at the University of Michigan, how he guides students toward a design that's eye-pleasing and functional without stifling their personal creativity—with phrases such as "If I were doing this," for instance. Morrison's eyes always seem to be twinkling, and this question elicits one of his frequent laughs. "Teaching landscape architecture is scary!" he agrees. "I tried hard when I was at Michigan not to be too controlling, and in a course evaluation the students said I should have come down harder on them."

He may claim that teaching is hard, but Morrison is clearly good at it. This spring, he will receive the American Horticultural Society's Teaching Award at its annual meeting in Nashville. His influence goes far beyond his classroom, and far beyond Georgia. It touches those who attend the annual Cullowhee Native Plant Conference in North Carolina, which he helps plan, and those who visit the National Wildflower Research Center outside Austin, Texas, for which he served as site planner.

When a project calls for native plants in a naturalistic setting, he or one of his students is likely to be there. Morrison is helping the National Park Service decide how to manage vegetation on seven battlefield parks in the mid-Atlantic and Southeast; has designed a native Wisconsin garden for the University of Wisconsin Arboretum; is consulting on the design for the visitors center and education complex at the Santa Barbara (California) Botanic Garden; and is advising Storm King Art Center in the Hudson River Valley on establishment of native grasses in the sculpture garden there.

A Guiding Hand

One of his protégés is Bonnie Harper-Lore. She's a landscape architect with the Federal Highway Administration who chaired a group that developed guidelines for more environmentally sensitive planting along U.S. roadways. "I graduated 16 years ago, and he's still always there for me when I need him," she says, then laughs. "I sound like I'm talking about my father, and we're probably about the same age."

But that sentiment is echoed by Bob Grese, an associate professor of landscape architecture at the University of Michigan who studied under Morrison at the University of Wisconsin in the early '80s. "The first week I arrived he invited me out into the field to check on a project with him. I felt that already, someone was taking me under his wing. He gave me a strong sense that I had something valuable to contribute, which is something I've tried to emulate with my own students. Any time any of his students receives an award, he's very much like a proud father."

It's often said that landscape architects can create a drainfield or parking lot, but know precious little about plants. Morrison not only knows *Trillium catesbaei* from *T. cuneatum*, but has a quick grasp of entire natural plant communities. He prefers to re-create the factors that allow soil, plants, and available water to work together, and then let succession occur naturally.

"In our urban landscapes we see very little seasonal and successional change, except for forced change, such as replacing the tulips with marigolds," Morrison has observed. The willingness to let time exert its power, he says, "puts us in the exciting role of being four-dimensional artists rather than three-dimensional ones."

Another of his former students, Cathy Davis, is now a landscape architect in Asheville, North Carolina. "In most landscape architecture programs, it's assumed that plant knowledge is something you'll pick up as you go along. The best class I had in college was his Plant Communities of the Southeast, where we actually visited the communities, rather than reading about them in books.

"And he would always point out how things were intertwined—that the fruit of our native *Cornus florida* was important for birds because of its high fat content, and the Asian *Cornus kousa* fruits were food for monkeys. I consider myself very lucky to have had him for a teacher, and I think his teachings have a trickle-down effect."

Morrison also has a lasting impact on the other professionals he teams with on projects around the country, although it's hard to tell where his influence begins and ends. When you talk to people who've worked and studied with him, "synergy" is a word that crops up frequently.

He spent three years making site visits to the National Wildflower Research Center project and immediately became somewhat legendary for a practice he recommends to his students—a site campout. Morrison explains: "It's important to experience the evening sights and sounds—and especially at sunrise and sunset, the light quality." A natural region should have its own distinctive scent, and this changes, too, as day turns to evening.

Richard Archer, a principal in Overland Partners in San Antonio, which served as architects for the National Wildflower project, decided to follow suit. "To understand the micro-environment at all times of day and night made a tremendous difference," he says. "We influenced each other's views and developed an attitude toward the buildings and grounds before we began drawing. It took on a life of its own."

For example, he says, while architects tend to look up at their work, people who love the landscape tend to look down. From an observation tower, center visitors get a "macro" view of a stylized meadow Morrison planted in bands of different heights and colors. But from a sub-basement in another building, they have what Archer calls a "worm's-eye" view of plants. "Adults don't usually get down and lie on their stomachs in a meadow," he says, "but we hope this will cause them to experience the landscape in that way."

Some of the design's educational features are subtle, like the water court at the entry "because water is so precious on the site," says Archer. Rain is captured from the roof of each building and diverted to a cistern, which supplies almost all the water for the center's drip irrigation system. Morrison designed the pathways to evoke the flow of a river and gave the entry walk an erratic edge, as though vegetation was taking over human efforts to control it.

Former student Grese says that despite Morrison's strong convictions, he never tries to sway opinions forcibly, but always by example. "Modest" is a word that friends typically use to describe him. When *The American Gardener* was touring the Athens campus with him last spring, he invariably told people, "They're doing a story," carefully avoiding the final phrase "about me."

Morrison advises student Jon Humphries as he begins a design on paper, left. The five acres where Morrison built his home serve as a classroom for studying both native plants, such as *Rhododendron canescens,* top, and design principles. The Oconee River disappears around a bend there, above, evoking a sense of mystery.

An Artist's Eye—and Ear

Morrison grew up on an Iowa farm with two older brothers. Their mother was an avid gardener, growing "the typical vegetables, and I think she had a hundred varieties of iris at one point," he recalls. "Each of us had our own little plot by the time we were five or six." All three boys inherited an artistic bent: One brother was an advertising art director and the other is an architect. Morrison is likely to paint a landscape as he gets a feel for it—as he did in Santa Barbara. He may create a plan with pastels as he listens to George Duke's *Muir Woods Suite* through headphones. "It helps get fluidity into your design," he explains of that particular piece. He invites students to try their own music, and occasionally, to surprise him with a selection while he designs at the blackboard. "Once it was Holst's *The Planets,* which is very intense, but it turned out pretty good actually!" He likes to think the exercise shows students they can take on projects outside their previous experience: They may be uncomfortable or even fail—or

OPPOSITE LEFT: COURTESY OF DARREL MORRISON (3); OPPOSITE RIGHT, MICHAEL HAYMAN. THIS PAGE, LEFT AND TOP RIGHT: MICHAEL HAYMAN; BOTTOM RIGHT: DARREL MORRISON.

they may be pleasantly surprised.

Morrison earned his bachelor's degree in landscape architecture from Iowa State and his master's from the University of Wisconsin, where he taught from 1969 to 1983. "See how long it takes him to mention Jens Jensen," suggested Richard Bir, an Extension research specialist at North Carolina State University Arboretum and a fellow steering committee member of the Cullowhee Conference. Bir was referring to the Danish immigrant who settled in Chicago around the turn of the century, fell in love with the prairie, and became the Frank Lloyd Wright of natural landscapes. It only took 12 minutes into Morrison's classroom lecture for Jensen's name to come up.

Greg Armstrong is director of the University of Wisconsin Arboretum, where Morrison recently designed a new garden of native Wisconsin plants. Armstrong observes that Morrison is perpetuating a tradition begun by naturalist author Aldo Leopold and Bill Longenecker, the university's first landscape architecture chairman. "In Wisconsin he was kind of steeped in a tradition of ecological restoration—the arboretum itself is a restored landscape. Jens Jensen, while he operated mostly in Chicago, did establish a home in Wisconsin and left his signature on designs in Madison."

Morrison talked in his class lecture about the influences of our home landscapes—how a person from Georgia can feel lost at sea on the prairie, while someone from Iowa can feel claustrophobic in the dense woods of the East.

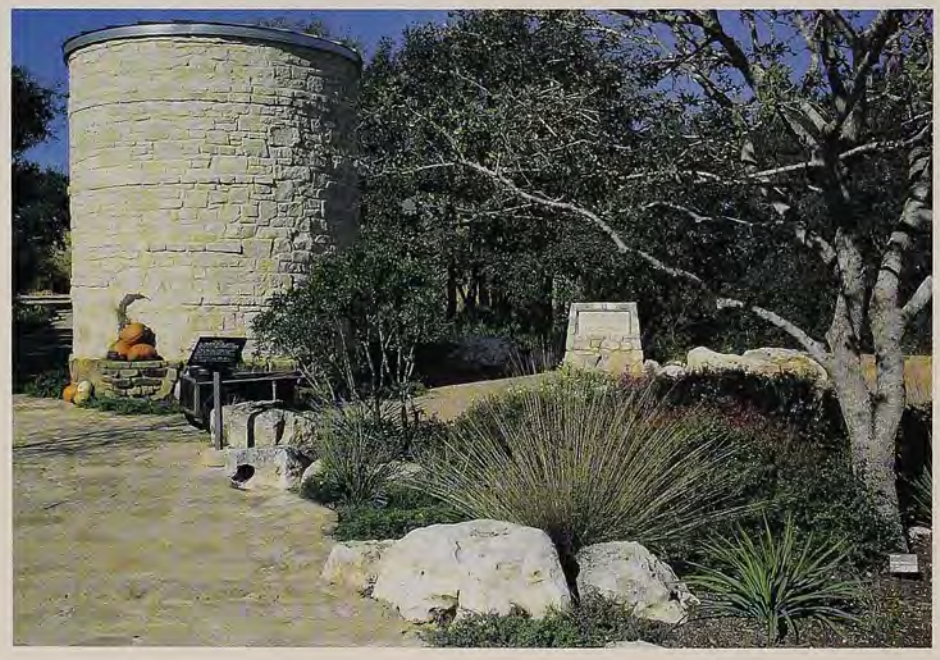
The land on which this Plains native chose to build a home is about five miles outside Athens—five acres sloping down to the Oconee River. The river here looks a lot like the "cricks" that meander through parts of the Plains, with river birch and sycamore trees hanging over the water instead of cottonwood. "For me the river represents a bit of openness in this very enclosed site, and this is the bare minimum!" Morrison exclaims. About 100 feet from the bank is a hump of peninsula with the river bending around it to the left. It's a textbook illustration of the landscape design dictum that calls for a sense of mystery. The goal is to create a feeling of end or enclosure, while at the same time assuring the viewer that there is an escape or, better yet, a pleasant surprise beyond it.

The land is cut with a ravine and had been scarred by logging and farming, but Morrison is letting it heal itself to a large degree. He removes invasive exotics (at one point we catch an overpowering perfume, and he appears embarrassed. "That's something I shouldn't have—*Elaeagnus* [autumn olive]," he says) and selectively prunes natives such as loblollies out of his front garden, which volunteer so enthusiastically they would eventually block all light from the house.

Morrison says there's an "intrinsic aesthetic" in Georgia, growing out of its distinctive topography, soils, and diversity of native plants. The plant palette on this site is a bit richer than if nature were left completely to her own devices, and it represents several plant communities. On a rock outcropping near the river we find *Heuchera, Geum,* and saxifrages. The woods boast among its shrubs sparkleberry *(Vaccinium arboreum)* and the fragrant native *Rhododendron canescens.* At ground level, baby blue *Amsonia tabernaemontana* wins admiring glances, and a Catesby's trillium is half hidden along one path. A hawkweed, *Hieracium venosum,* catches our eye with a rosette of foliage veined in blood red. "If this was in the trade, it would sell like hot cakes," Morrison comments.

About halfway between the river and house is a small fenced area intended for some vegetables and herbs, which Morri-

Others involved in designing the National Wildflower Research Center in Texas, for which Morrison served as site planner, describe the synergy that sprang from their collaboration. Walkways were designed to look as though the plants were encroaching on them, right; water collected from rooftops is held in a cistern, below, that feeds into a drip irrigation system.



son concedes hasn't seen much attention this year. He does point out some bearded iris that he transplanted from an earlier settler's dooryard garden elsewhere on the site. "Plants like peonies, lilacs, and irises represent our cultural plant heritage," he says, "and it's rewarding to be able to rescue them, too." But he's careful to keep even these exotics within the fenced garden, rather than mixing them into the native landscape outside this enclosure.

From the roof of the house—it's designed in two sections to resemble a sharecropper's cabin, and while it boasts a sprawling loft, it retains a cabin-in-the-woods feel—he captures rainwater in a streambed of granite collected from the site. A redbud adjacent to the front porch has grown to 14 feet in five years thanks to this select spot, he's convinced. He seeded river oats *(Chasmanthium latifolium)* alongside this periodic stream, and now they're beginning to self-sow.

This isn't just his private retreat and experiment station. It often serves as a classroom where his students can gain firsthand knowledge of plants and plant communities, sometimes sketching a single species in detail, sometimes analyzing the vegetation quantitatively. How many plants of how many species representing how many different ecosystems are present on this site?

Lessons on Succession

Another Georgia landscape that serves as a classroom to thousands is the entry garden to the Atlanta History Center in the upscale Buckhead neighborhood of that city. When Morrison and landscape architect Gary Gullatte—a former student now based in Columbus, Georgia—surveyed the two-acre site in the early '90s, they found a variety of environments that suggested corresponding natural areas or successional sites.

Thus an exposed slope on the east became an early successional forest containing loblolly, sassafras, sumac, and plum. It will be left to evolve into a hardwood forest, with sourwood, dogwood, and redbud growing in the understory. Such a mature wood already exists to the north of the building and has been underplanted with shrubs and curving swaths of herbaceous plants appropriate to the light level: in semi-shade, bracken fern, firepink, and bluestar; in deeper shade, Christmas fern, woods phlox, and wild geranium.

In a sporadically wet area, Morrison drew a "watercourse" using river oats. Beside it is a streamside forest populated with Piedmont and swamp azalea, elderberry, strawberry bush *(Euonymus americanus)*, red maple, and musclewood *(Carpinus caroliniana)*. There's also a wet meadow, planted in cardinal flower, ironweed, Joe-Pye weed, and ragwort *(Senecio aureus,* also known as *Packera aurea)*.

In the hot, exposed center of the entrance courtyard, Morrison created a stylized version of a granite outcrop, which spirals down to a "seasonal pond," filled only by rainwater. The outcrop is dominated by a Georgia oak *(Quercus georgiana)* rescued from a stone quarry where its roots were encased in rock. Barely 15 feet tall, it's estimated to be more than 100 years old.

The area that prompts the strongest reaction is the first-sucession strip along the street leading to the entry drive. The plants here are all pioneer species—natives that are the first to recolonize disturbed sites such as roadsides and old farm fields. There are grasses such as broomsedge *(Andropogon virginicus)*, splitbeard bluestem *(A. ternarius)*, and purple lovegrass *(Eragrostis spectabilis);* flowers such as goldenrod *(Solidago* spp.) and verbena; and "fencerow" trees such as Chickasaw plum *(Prunus angustifolia)* and sumac. Some longtime Georgians rejoice that the plants they grew up with are being honored. "If there is anything that's familiar and comfortable to us country people, it's the old tawny fronds of the plant that old-timers say God put here to hold the Earth together when nothing else avails," wrote *Atlanta Journal-Constitution* columnist Celestine Sibley, after seeing broomsedge displayed in this public garden. But other passersby ask why the area isn't being maintained.

Morrison's reaction to their reaction is illustrated by a story he tells about Louise Allen, a high-profile leader in Atlanta gardening and civic circles. As she watched him orchestrate installation of the granite outcrop, she commented, "Now you know, Darrel, this may be controversial.... I certainly hope so!"

Kathleen Fisher is editor of The American Gardener.

Among the many natives featured at the Atlanta History Center are *Amsonia tabernaemontana,* left, and *Erigeron pulchellus* (Robin's plantain).

LEFT: PHOTOS BY JAMES M. INNES. RIGHT: PHOTOS BY MICHAEL HAYMAN.

This Disa uniflora *is a watercolor on paper by Carol Woodin, a New Yorker who has brought home a gold medal from the prestigious Royal Horticultural Society exhibit.*

Botanical Illustration *in Today's Framework*

This centuries-old art form is drawing a new crowd.

by Diane Bouchier

In 1816, George Brookshaw described the subtle pleasures of botanical art, writing, "There are men of abilities, who think it beneath them to paint flowers, and affect to treat that branch of the art with contempt. Of such, I have only to observe, that they are total strangers to the pleasure the mind receives from the study of nature...." Today artists around the world are rediscovering these pleasures and, in the process, creating a stunning revival in this centuries-old art form.

Among the organizations founded in recent years are the Society of Botanical Artists (based in London) and the Japanese Association of Botanical Illustrators. Three years ago practitioners in this country formed the American Society of Botanical Artists, which held five juried shows throughout the country last year.

Interest in depicting plants accurately dates back to prehistoric times. A frieze in the ancient Egyptian tomb at Karnak (circa 1450 BC) was painted following a successful military campaign in Syria and depicts all the known plants of the conquered territory. However, most early botanical art was used purely for decoration on household objects.

It was with the publication of the early herbals, or books describing the medicinal value of certain plants, that botanical art found its first informational application. The most famous of these early herbals was Dioscorides' *De Materia Medica*. While it is probable that the original version did not

Curtis's Botanical Magazine *kept botanical art alive in Britain in the 18th and 19th centuries. This image of a lilac is from a 1793 edition.*

LEFT: COURTESY OF CAROL WOODIN. RIGHT: HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION.

have illustrations, an edition called the *Codex Vindobonensis* appeared in 510 AD with copies of illustrations thought to have been done by one Cretavas, who lived in the first century BC. The *Codex Vindobonensis* became a major text throughout the Middle Ages and the Renaissance.

While many other herbals appeared, the quality of their illustrations suffered from the fact that the artists took their models from other, earlier illustrations. It was only with the rise of humanism in the 14th century that artists looked directly to nature for such works as the appealing floral portraits incorporated into the *Books of Hours* and tapestries such as the famous unicorn series on view at the Cloisters in New York. Early 16th-century masters profited from the direct study of nature, as evident in Albrecht Durer's famous "Great Piece of Earth" and Leonardo da Vinci's many botanical studies.

During the 16th and 17th centuries, artists still painted herbals. But their illustrations became increasingly decorative, less concerned with medicinal value and more concerned with the beauty of the plant. During this same period, botanical art was given a tremendous boost by the explorations that opened the world to the West and that brought back many new and exotic plants. The "bulbomania" that struck Holland in the 17th century is but one manifestation of this fascination with new plants. Plant collectors wanted detailed, accurate studies of the new introductions, and artists worked closely with scientists.

This close collaboration resulted in what has become recognized as the Golden Age of Botanical Art. It dates roughly from 1740, when the German Georg Dionysius Ehret was well established in his career, to 1840, with the deaths of two later stars, Pierre-Joseph Redouté and Franz Bauer. Artists such as Redouté, Bauer, and the latter's brother, Ferdinand, benefited from the supportive environment of key institutions, notably the Jardin des Plantes in Paris and the Royal Botanic Gardens at Kew. They also enjoyed the patronage of wealthy individuals. The Empress Josephine was Redouté's major patron, and his paintings of her roses at the fabulous garden at Malmaison are perhaps the most widely reproduced botanical images. Sir Joseph Banks supported a number of botanical artists as well as scientists and explorers, and was responsible for setting up a position for Franz Bauer at the Royal Botanic Gardens, with arrangements made to continue a comfortable level of support for the artist even following Banks's death.

Kate Nessler draws inspiration from nature in her home state of Arkansas. Above: "Transition."

Several reasons have been given for the decline in botanical art following the early 1800s. The small collectors' market for expensive botanical books had become saturated even as the broader market for sentimentalized flower pictures and books expanded. While botanical art had for centuries included both female and male artists, as the 19th century progressed "flower painting" became a pastime for well-bred young ladies. As such, it was a separate world from that of serious, "masculine" art.

Another reason may well be the decline in natural history itself. The collegial groups of male scientists, artists, and collectors who were interested in botany, biology, and geology lost status as science became professionalized. The biologists working in research laboratories and universities had use for artists only as scientific illustrators—as technicians rather than as colleagues.

The most common explanation for botanical art's wane is no doubt photography. Yet black-and-white scientific illustrations can be more clear and selective than photographs and are indeed still used today. Photography was important, but probably more for helping inspire Impressionism. This form of art was based on the understanding that reality is not a given, but subject to different impressions, which photographers capture using varying qualities of light, periods of exposure, and focal lengths.

Botanical art was kept alive in Britain through the black-and-white and full-color illustrations that continued to appear in *Curtis's Botanical Magazine,* published by the Royal Botanic Gardens. In America the art form all but disappeared, and the work of 18th- and 19-century botanical artists was largely forgotten.

The contemporary revival in botanical art, which began in the 1970s, owes much to the resurgence of a serious interest in horticulture. Many botanical artists begin by painting the plants growing in their own gardens and/or in the public gardens to

LEFT: COURTESY OF KATE NESSLER. RIGHT, TOP: HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION; BOTTOM: COURTESY OF MARTHA KEMP.

The contemporary revival in botanical art owes much to the resurgence of a serious interest in horticulture.

The work of Georg Ehret ushered in the Golden Age of Botanical Art in the mid-18th century. Left: Trumpet vine (Campsis radicans) *in gouache on vellum.*

which they have access. Certificate programs in botanical art and illustration are now offered by the New York Botanical Garden, the Denver Botanic Gardens, and the Morton Arboretum in Lisle, Illinois. All programs involve serious study in plant morphology as well as mastery of classical artistic techniques.

American Artists

While the botanical art revival began in Britain, it has gained such strength in the United States that American artists regularly compete in the most prestigious arena: the annual Royal Horticultural Society exhibit, held in London. Among Americans who have brought back gold medals from that exhibit is Carol Woodin, a petite New York State native who drove 40-foot tractor trailer rigs cross-country and loaded UPS vans before turning to art full-time. Now her days are spent hiking in the woods near her home in Cuba, New York, searching for wild orchids and painting them in her slow, careful watercolor technique. One painting can take her three to four weeks to finish.

Californian Martha Kemp is another RHS gold medal winner. Here, Rehmannia elata, *a gesneriad from China.*

Martha Kemp, of Piedmont, California, also took home a gold medal from the Royal Horticultural Society exhibit. Kemp does meticulous graphite drawings of camellias, poppies, cyclamen, and other garden plants. Like many botanical artists, she was originally turned off from a career in art by modernist art teachers who demanded that their students not be "so literal" and who believed that representational art was not really art.

Many botanical artists have a strong ecological consciousness, which is reflected in their work. Kate Nessler, who chairs the board of the American Society of Botanical Artists, completed a series of 38 prairie wildflowers for the Arkansas Heritage Commission. This exhibit, with informative labels and a visitor's guide, toured the state, reaching many different audiences and educating them in the need to protect the prairies and their flora. Katie Lee, of South Salem, New York, draws inspiration both from the plants and animals of New England and also from the endangered species of the Amazon and the Galapagos, to which she frequently returns. A book of her paintings, *A Visit to the Galapagos,* was published in 1994 by Harry N. Abrams, Inc.

While contemporary botanical artists each have their distinctive style, they approach their art much as did their 18-century counterparts. Most work directly from a specimen, which they depict against a plain white background. While a variety of media are used, including pen and ink, colored pencil, gouache (opaque watercolor), acrylics, and oil, the most common medium is transparent watercolor. This is applied in a slow layering of thin washes with careful attention to light and shadow, form and detail.

Botanical art shares much with other art forms. Each botanical artist makes decisions about composition, form, hue, contrast, negative space, and so on. While the desired result is an accurate image, there's no such thing as copying: The realistic image belies the artist's concern

Where botanical art differs from much of modern art is in the great emphasis placed on drawing.

with the abstract qualities of art.

Where botanical art differs from much of modern art is in the great emphasis placed on drawing. Precise, detailed drawings provide the foundation for all that follows. Then the layers of watercolor wash are applied, without letting this difficult medium get too wet or out of control. A green leaf may well be composed of discrete layers of blues and yellows and even reds, with perhaps some indigo or burgundy in the shadows. The best work uses the full range and complexity of color to create the impression of three dimensions.

All botanical work should be "readable." There must be no areas of ambiguity. A good botanical piece makes a statement from a distance: It is crisp and forceful. It must also stand up to close viewing, even with a magnifying glass. Edges must be clean rather than fuzzy, and each petal or stamen clearly delineated. While great botanical work shares all of these qualities, the work of the best artists also bears their distinctive signature, which is recognizable to the followers of this beautiful art form.

Diane Bouchier is founder and former president of the American Society of Botanical Artists.

Resources

THE HUNT INSTITUTE FOR BOTANICAL DOCUMENTATION at Carnegie Mellon University in Pittsburgh will hold its 9th International Exhibition of Botanical Art and Illustration this fall. The Hunt Institute is open Monday through Friday from 9 a.m. to noon and from 1 to 5 p.m. For more information, call (412) 268-2434.

Books

CONTEMPORARY BOTANICAL ARTISTS: THE SHIRLEY SHERWOOD COLLECTION, text written by Shirley Sherwood and edited by Victoria Matthews. A collection of work by contemporary artists throughout the world. AHS member price: $45. Book code: ABV 014.

HOW TO DRAW PLANTS by Keith West, 1983. Examines an artist's tools and how to use them to capture plant structures. AHS member price: $17.95. Book code: TIM 112.

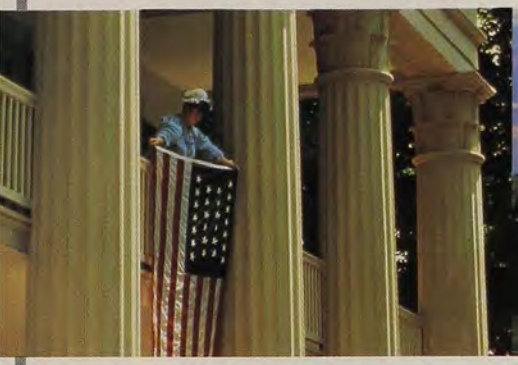
HOW TO DRAW AND PAINT WILDFLOWERS by Keith West, 1993. Treats 20 additional botanical subjects in the same manner as West's earlier painting book. AHS member price: $17.95. Book code: TIM 114.

To order books, see page 57.

A book of paintings by Katie Lee focuses on plants and animals of the Galapagos, but she also draws inspiration from American natives. Left: Magnolia grandiflora.

COURTESY OF KATIE LEE

The American Horticultural Society invites you to *Celebrate the American Garden*



History *and* Horticulture *with* a Tennessee Spirit



Nashville, Tennessee *April* 30 – *May* 2, *1998*

Join fellow gardeners at our conference headquarters at the Opryland Hotel, with more than four acres of indoor water gardens, 15 restaurants, and 22 retail shops under one roof.

AHS launches the 1998 Great American Gardener Lecture Series with informative lectures by outstanding horticulturists. Meet 1998 national award winners and honor the top garden books of the year.

FRIDAY MORNING

THE HERMITAGE

The Greek Revival mansion that was home to President Andrew Jackson is set amid 650 acres of woodlands and meadows. In addition to the house, we will tour the formal garden, original log cabins, Jackson's tomb, Tulip Grove, Old Hermitage Church, and confederate cemetery.

FRIDAY MORNING

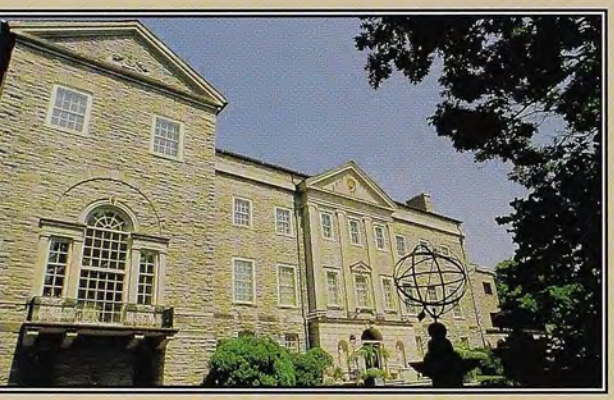
HOLTCAMP GREENHOUSES

Part of a horticultural empire that reaches around the world, the Nashville location ships more than 6 million African violets a year.

FRIDAY AFTERNOON

NASHVILLE'S GRACIOUS BELLE MEADE AREA

From intimate, detailed gardens to natural gardens on a grand scale, Nashville has it all. We'll visit gardens that make use of regional materials such as limestone, and take inspiration from breathtaking perennial borders and rose gardens.



SATURDAY AFTERNOON

CHEEKWOOD, NASHVILLE'S HOME OF ART AND GARDENS

Fifty-five acres of botanical gardens surround this opulent 1920s mansion. We will tour the greenhouses and gardens, including the wildflower, herb, and Japanese gardens, stroll the Dogwood Trail, and visit the Botanic Hall, where we'll receive a special welcome from Curator Bob Brackman.

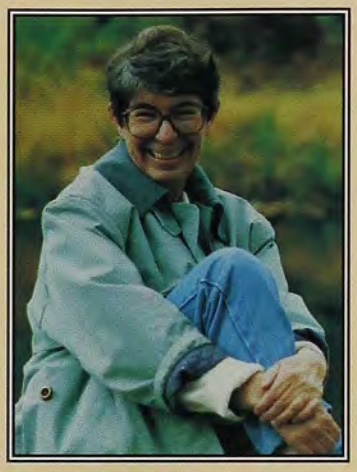
THURSDAY'S OPTIONAL TRIP

DON SHADOW'S NURSERY IN WINCHESTER

Shadow, who was profiled in the September/October 1996 issue of The American Gardener, *is a third-generation nurseryman dedicated not only to bringing American gardeners rugged and beautiful plants, but to preserving the past—from virgin woods to historic farm buildings to exotic animals. We'll also stop by the Jack Daniel's Distillery in Lynchburg, the oldest registered distillery in the United States.*

Thursday

Duncan Callicott is the principal in the Nashville landscape architecture firm of Callicott and Associates, which specializes in residential design and horticultural consultation. For 14 years, until March 1983, he was executive director of Cheekwood. He and his wife, Virginia, garden on a wooded knoll near Franklin, Tennessee, 18 miles outside of Nashville. Their garden has been featured in *Southern Living, Garden Design,* and the book *American Gardens* by Peter Loewer.

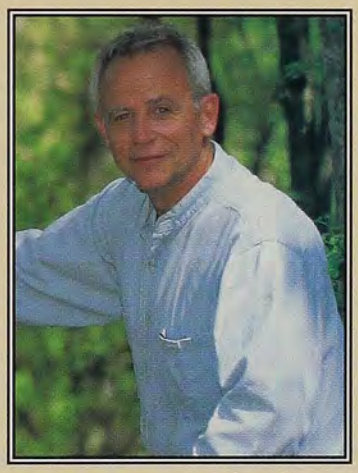


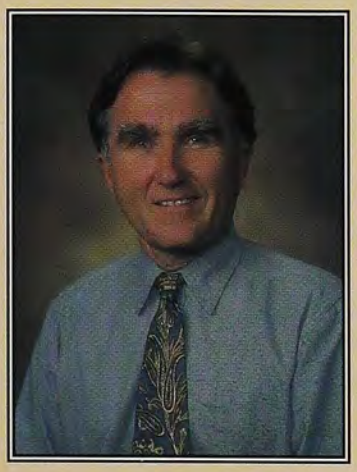
Saturday

Noah's Garden placed **Sara Stein** at the forefront of ecological gardening advocates and earned itself a place on the American Horticultural Society's list of "75 Great American Garden Books" from the past 75 years. Stein is the winner of this year's AHS Writing Award. Her most recent book, *Planting Noah's Garden,* which was excerpted in *The American Gardener,* tells how people throughout the country are redesigning their surroundings to encourage the return of wildlife driven away by inhospitable suburban landscapes. A writer for 25 years, primarily in the natural sciences, she and her husband, Marty, have restored a variety of natural ecosystems, from oak/hickory woodland to red maple swamp, to five acres of abandoned farmland in Pound Ridge, New York.

Saturday

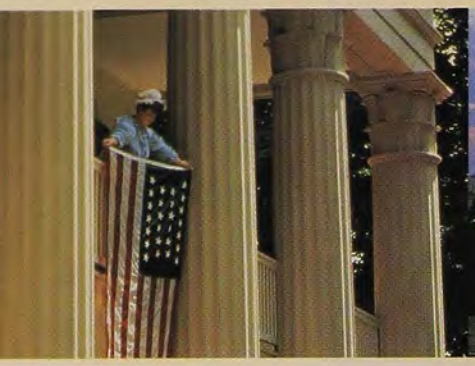
Darrel Morrison, professor of landscape architecture at the University of Georgia, is the winner of this year's AHS Teaching Award. In his current position and at the University of Wisconsin, he has influenced a generation of students to design in tune with the natural landscape of the region in which they are working. Each region's sense of place derives from many sources that are layered and interwoven over time into a unique tapestry, he says—its terrain and indigenous plants are shaped by human interventions from hunting and gathering to the planting of crops and gardens, by traditions, and by individual personalities. Morrison's recent and current projects include the National Wildflower Research Center in Texas, the Atlanta History Museum, the Santa Barbara (California) Botanic Garden, and historical battlefields in the mid-Atlantic and Southeast.





Saturday

Nashville landscape architect **Benjamin Page Jr.** says the goal in his residential projects is to create a relationship between the interior and the exterior, so the garden can be enjoyed indoors as well as out. He likes to work with plants native to the local community and with older plants, such as those popular in the early 20th century, that may have been pushed aside in favor of newer cultivars. One of his more recent projects was the vice presidential residence at the Naval Observatory in Washington, D.C., where he created outdoor rooms that provide privacy for the family while serving as beautiful settings for entertaining. He is also working on restoring gardens at Cheekwood, home of the Tennessee Botanical Gardens and Fine Arts Center in Nashville.



AHS Conference Registration Form

Register early! 10% discount for registrations postmarked before February 15.

NAME: _____ AHS MEMBER #: _____

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CITY/STATE/ZIP: _____ E-MAIL ADDRESS: _____

DAYTIME PHONE: (_____) _____ FAX: (_____) _____

SPOUSE/GUEST NAME: _____

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Full Registration	**Number of Participants**	**TOTAL**
Includes all *non-optional* events April 30 evening through May 2 .....$395	_____	$_____
or *Single Day Registration*		
❑ Thursday, April 30 (Reception and Keynote Speech) . . . .$ 35 per person	_____	$_____
❑ Friday, May 1 .....$155 per person	_____	$_____
❑ Saturday, May 2 (Awards Banquet) .....$225 per person	_____	$_____
Nonmembers must add annual dues of $35 per household		$_____
Optional: ❑ Thursday trip (Don Shadow's nursery) .....$80 per person	_____	$_____
❑ Friday Grand Ole Opry performance .....$25 per person *(does not conflict with other meeting events)*	_____	$_____
Subtotal		$_____
Minus discount (10%) prior to February 15, 1998		$_____
President's Council Membership ($1,000 or more per year)		$_____
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Return this form to: AHS Annual Meeting, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.
For more information, call the conference coordinator at (800) 777-7931 ext. 20.

For discounted airfares, call American Airlines at (800) 433-1790 and mention AN# S 5148UI.

Watch for program details in the Directory of Member Benefits mailed in January.

Love on the Rocks

He was mad about alpines. She was passionate about rock gardening. The earth is still moving.

by Marty Carlock

Gwen Kelaidis builds miniature mountains, a couple of feet high and a few yards long, in her backyard. Her husband, Panayoti Kelaidis, builds slightly bigger mountains at the Denver Botanic Gardens.

"I built these overlapping hills because driving through the West, you see that," Gwen explains. "Overlapping ridges subdivided by little drainages. I think, how am I going to get that in my garden?"

Mimicking high plains and rock-ribbed mountains is essential because the Kelaidises grow the flora of wild places. Talk to any horticulturist who specializes in alpine plants, and Panayoti's name will crop up. Talk to avid rock gardeners, and they'll quote Gwen.

Gwen and Panayoti Kelaidis are both legends in the rare-plant world. Gwen is editor of *Rock Garden Quarterly,* the bulletin of the North American Rock Garden Society. Panayoti, a self-taught plantsman who established the Rock Alpine Garden at Denver Botanic Gardens, is renowned as a consultant on growing rare plants. Until about a year ago they ran a mail-order seed business, Rocky Mountain Rare Plants, specializing in natives, but they decided they'd rather be growing a garden than growing a business.

"I'd be perfectly happy spending the rest of my life exploring the mountains of the West, but Panayoti likes to collect plants from the other side of the world," says Gwen.

Panayoti's current passion is the mountain flora of South Africa. Guiding a tour there in 1994, he collected seeds and cuttings from about 250 plants he had never seen before. "Out of those, I think there'll be 100 fantastic new horticultural plants," he says. "It's the biggest clump of new plant material since China right after the turn of the century."

Gwen defines their specialty as "plants that haven't been overly bred or selected much" by the nursery trade. While plants native to the East are becoming widely available in the trade, this isn't the case in the West, Gwen says. The Kelaidises collect seeds, bring them home, and see if they will tolerate cultivation.

MARTY CARLOCK

Gwen and Panayoti Kelaidis met when he came from Colorado to speak to the Illinois–Wisconsin Rock Garden Society. "She was the president, so she had to entertain me," he says.

The Kelaidis garden is a study in contrasting color and texture. Top: *Coreopsis auriculata* 'Nana'. Center: The pale foliage of *Artemisia stelleriana* sets off the red flowers of *Dianthus* 'Allwoodii' and the blue of *Campanula cochleariifolia.* Gwen ripped out the front lawn of their old house and replaced it with a rock garden, above.

Getting plants is basically Panayoti's job, and creating the garden for them is Gwen's. "He's the chief acquisitions officer—he's voracious," Gwen says. "He can talk anybody out of anything. He doesn't do this design thing. He wants to know what part of the new garden I'm going to give him. I'm not ready yet. I want to do the bones. Panayoti would have 25 species of iris, each in a different place, because he thinks of the needs of the plant first."

For the past three years, Gwen has been designing a landscape at their new home on a hillside half-acre with distant mountain views in Arapahoe County, Colorado, just outside the Denver city limits. "We looked for a house on a hill because you can shape the hill," Panayoti says. Gwen spent an entire season moving 15 tons of rock and an equal amount of earth and gravel to construct the artificial, small-scale ridges outside her home office door.

"Rock gardening is not for wimps," she says. "It's not for people who don't like to build. A lot of rock gardeners are couples, with the man doing the engineering and the woman knowing the plants." At their house it's clearly the opposite: She's the one who can't always come up with the right nomenclature. "Being married to a plant encyclopedia makes one lazy about Latin names," she admits.

Their previous garden sat on a 52-by-100-foot lot in Denver, where Gwen persuaded Panayoti to let her tear out the front lawn and replace it with a rock garden. A friend employed by a golf course came over with a sod stripper and ripped up the whole place one day while Panayoti was at work. He was shocked: "I knew it meant a lot of work."

Together they turned it into a rare-plant showplace. "It gave her a lot of grief," says Panayoti of Gwen's efforts there. "But it's a magnificent collection with over 100 rare species we don't have at DBG or here."

They still own the house—it's rented to tenants who are forbidden to touch the garden. Once a week Panayoti spends half an hour there, cutting the miniscule lawn, watering, and collecting seeds. Gradually, Gwen is transplanting favorite plants to the new garden, and he's replacing them with cacti and other drought-tolerant plants. "I'm letting it dry out more, become more of a xeriscape," he says.

Gwen describes their collaboration: "People envy us because we both garden—so many of my friends' spouses don't." But what happens is "we just argue about gardening. We don't have time to argue about what's for dinner."

Both say they've been gardening forever. Born in upstate New York, Gwen had a vegetable garden and grew grapes as a youngster. "I tested roses for Jackson & Perkins when I was in high school." She earned a degree in botany at the University of Wisconsin and stayed in the state to teach high school science and coach girls' track. At one time she was a marathoner, logging some 50 miles a week and qualifying for the Boston race.

After creating vegetable, annual, and perennial beds in Wisconsin, Gwen built her first rock garden. "A rock garden is the natural end point for a perennial gardener," she maintains. "You can collect more plants in a small space."

In 1984, when she was president of the Illinois–Wisconsin Rock Garden Society, the group invited Panayoti Kelaidis to speak. "She was the president, so she had to entertain me," he recounts. They were married the same year, and Gwen tackled the climate of the high plains.

Panayoti came to horticulture through the back door. "It's one of the few careers where you can still do that." Growing up in Boulder, Colorado, "I loved gardens from the time I was a child; I didn't realize anybody made a living at it." His three sib-

A Rocky Start

The summer 1996 issue of the *Rock Garden Quarterly* contained two lists of plants for beginning rock gardeners. One was excerpted from a list compiled by Geoffrey Charlesworth for his book *A Gardener Obsessed*. The other was taken from a list of 500 plants a foot or less in height developed by the Denver Botanic Gardens. To obtain a copy, send $6 to Jacques Mommens, North American Rock Garden Society Bookstore, P.O. Box 67, Millwood, NY 10546. That issue will be a bonus to new members joining at the regular rate of $25.

lings were all academics. He studied Chinese but dropped out of graduate school to live at home, do odd jobs, and devote quality time to his garden. By trial and error he learned so much that when Denver Botanic Gardens decided to install a rock garden, he was made a volunteer consultant. Then he was offered a paying job.

In the Rock Alpine Garden there, where he is plant evaluation coordinator, Panayoti has a full acre to experiment with, and he's created micro-habitats ranging from shade-and-acid to desert. "Rock gardens allow you to create many different environments," he notes, another reason they appeal to sophisticated gardeners. In his Mediterranean beds, old-world species flourish in Colorado's sun. Some of the plants the garden staff is concentrating on currently include *Townsendia* (a genus of native composites), iris, hardy succulents, and not surprisingly, South African bulbs.

Gwen notes that not only does Panayoti have twice as much space to garden as she does, but he doesn't have a house taking up valuable space in the middle of it. Still, "I've had to readjust" to having so much room, she says. At their old house she had 2,000 individual plants, "but they were all small plants," she laughs. "Now people say, 'I can't believe it! She planted a geranium.' I want to have a perennial garden again, and I have a huge vegetable garden. When one has small children, one must have sunflowers and pumpkins. They're so voluptuous, so rambunctious." The lot is 15 feet lower in back than in front; the pumpkins also help stabilize the slope.

There are other differences in the new garden. The soil in the old one was clay-loam over sand. Here, they have sand 80 feet straight down. "The drainage is perfect, and it's so easy to work it's almost embarrassing, but I'm growing my own topsoil" with leaves and commercial cow manure.

On her artificial stone ridge, Gwen contrasts dainty, finely cut foliage—Japanese painted ferns, for instance—with the rosettes of primroses, the leathery leaves of bergenia, and the hoplike bracts of *Origanum acutidens*. In mid-July, color is contributed by *Coreopsis auriculata* 'Nana' and a golden-flowered *Gazania linearis* that Panayoti grew from South African seed.

This one is definitely her garden. When he pushes a handful of gravel uphill, she admonishes, "Tuck it up under the leaves, honey."

"We need twice as much mulch," he replies. "Lucky we've used chunky gravel here, not roly-poly gravel."

"Panayoti hates to watch me plant," Gwen says. "He thinks I'm brutal. Rock garden plants like to be smushed up against the rock. That's where they germinate." She theorizes that the stone moderates temperatures and retains moisture. "And besides, it just looks better to me that way."

In two months, Gwen smushed in 1,500 plants. Most were gifts from a local nurseryman—"Panayoti had given him some seeds, so he gave me 1,300 plants." In addition, she bought 70 ferns. "In the old place I wanted a Persian carpet effect. Closely knit, a lot of colors, a lot of textures. Here, I have to loosen up a little."

Mixing it up in one area are fuchsia-flowered currant *(Ribes speciosum)*, Icelandic poppies *(Papaver nudicaule)*, and *Delphinium grandiflorum*. She pauses to

"Rock gardening is not for wimps. It's not for people who don't like to build."

Two species that Gwen has mixed in one area are fuchsia-flowered currant, left, and Icelandic poppy, above.

LEFT, TOP TO BOTTOM: BILL JOHNSON, MARTY CARLOCK, COURTESY OF PANAYOTI KELAIDIS. RIGHT: STEVE JUNAK; FAR RIGHT: MICHAEL S. THOMPSON.

At the Denver Botanic Gardens, top, where Panayoti is plant evaluation coordinator, he has an entire acre for creating different microclimates for alpines. At home the couple grow *Gazania linearis,* above, from seed he collected in South Africa.

rearrange the growth pattern of a *Daphne jasminea*—"See, this is planted to crawl down the rock."

Gwen frowns at a foamflower *(Tiarella cordifolia).* "It looks chlorotic—probably needs iron. I haven't mastered my soil yet." A limey pH of 7.8 didn't stop her from starting a woodland corner for rhododendrons, azaleas, and heaths. At their feet she has both species of the native twin-leaf, *Jeffersonia diphylla* and *J. dubia.* To acidify the soil she's dosed it with aluminum sulfate and mulched with pine needles. This corner is shaded by three Scots pines and a *Pinus flexilis;* she took out half a dozen trees that stood where she wanted her "mountains." Eventually she envisions other microclimates: a dryland piñon–juniper woodland and a bog.

Normally, Gwen would advise anyone creating a rock garden to use the same kind of stone throughout. But while she used granite for her first rock garden area, she's thinking of limestone for the dryland area since they'll be separated by the house. Do buy about 30 percent more rock than you think you need, she recommends. "I may not use rock at all in the dryland. I only have three tons and I need 15." It's also important, she stresses, to make sure you can get gravel mulch that matches the rock you use.

To test her ideas, Gwen took 40 cement troughs, arranged different kinds of rock in them, and planted them with varying plant specimens. That's her advice for beginners: "Do it small-scale in a box first. Creating a scale model is helpful for those of us who can't draw." As for hiring a landscape designer, "they're pretty hard on rock gardeners because they never want you to have more than 10 different plants."

She and Panayoti agree that first-time rock gardeners tend to think too small. "People can do things in pieces," Panayoti says, but they need to imagine the rock garden as an integral part of their finished landscape. "You have to have a lot of money to do your whole landscape at once," Gwen chimes in, "but you need to know where you're going." But don't be afraid to get started, either, she adds. "Just dive in and try it. A garden is supposed to make you happy. You can always change it."

Eleven years ago, when the Kelaidises started their mail-order native seed nursery, it was an unusual specialty. Gwen had grown plants from seed for years and was looking for a career to pursue from home. Panayoti was a fanatic seed gatherer. When he collected seed for the botanic garden's annual exchange, he "would collect 2,000 more than they wanted," Gwen remembers. At the time, Panayoti wasn't sure

TOP: COURTESY OF PANAYOTI KELAIDIS. BOTTOM: JESSIE M. HARRIS.

whether his job at the gardens would become a career. The seed business "was our parachute," he says.

They found an eager market, and soon, equally eager competitors. It was more than the couple had bargained for. "You have to keep bringing new stuff [into the catalog] to keep your customers interested," Panayoti says. They spent at least half their time packing and shipping.

In 1996 they sold Rocky Mountain Rare Plants to Rebecca Day-Skowron and Bob Skowron of Franktown, Colorado. "The new proprietors will accept faxes from Europe, e-mail, things we didn't have the energy for," Panayoti says. Now when the couple collect seed it's a labor of love.

"We don't take vacations," Panayoti says—they take seed-collecting trips, with time out at the end of the day to visit hot springs. A favorite is White Sulphur Springs in Montana. The seed-seekers may be in Texas in April, Idaho in September. "We get a month in the field, in general—maybe 40 days," Panayoti calculates.

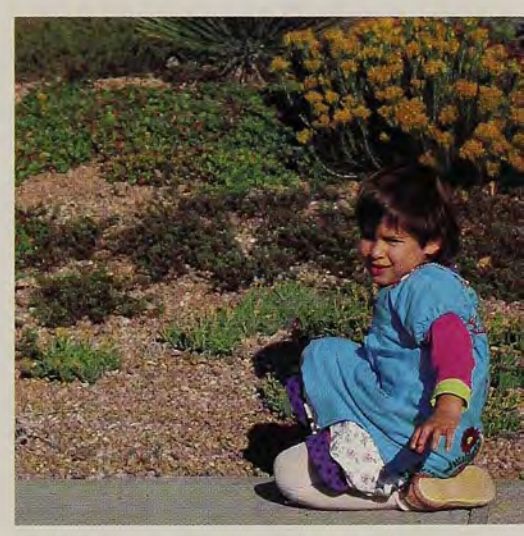
Their daughter, Eleni, now 10, started helping them collect when she was a year-and-a-half old. Gwen recalls, "I'd say, 'Get all those shiny ones,' or 'Get the ones with the little puffy seed heads.'" Five-year-old Jesse is an old hand at collecting now too.

If seeds should get mixed up, there's no problem. "If you had told me 10 years ago I'd recognize many of the plants of the West by their seeds, I wouldn't have believed it. I was cleaning the car the other day and said, 'Oh, how did that *Enceliopsis nudicaulis* get there?'" It had been six months since they had collected the desert sunflower.

When Panayoti brings seeds back from South Africa or elsewhere around the world, he tests the imports at the botanic garden to make sure they won't be invasive. "We don't grow weeds," Panayoti emphasizes. "Our test beds are carefully observed, and plants that show signs of being rapacious are eradicated right away." Though they have grown and sold many varieties of ice plant *(Delosperma),* for instance, the type that has become invasive in California isn't one of them. Gwen says she is an even "finer filter" at home. "He has a yellow *Ajuga* he just loves, but I won't have anything that self-sows."

"People are curious about what we're doing" in the new garden, Gwen says. "We had a 'before' party three years ago, with about 65 people." She pauses and looks around with a critical eye. "We'll have an 'after' party in about 20 years."

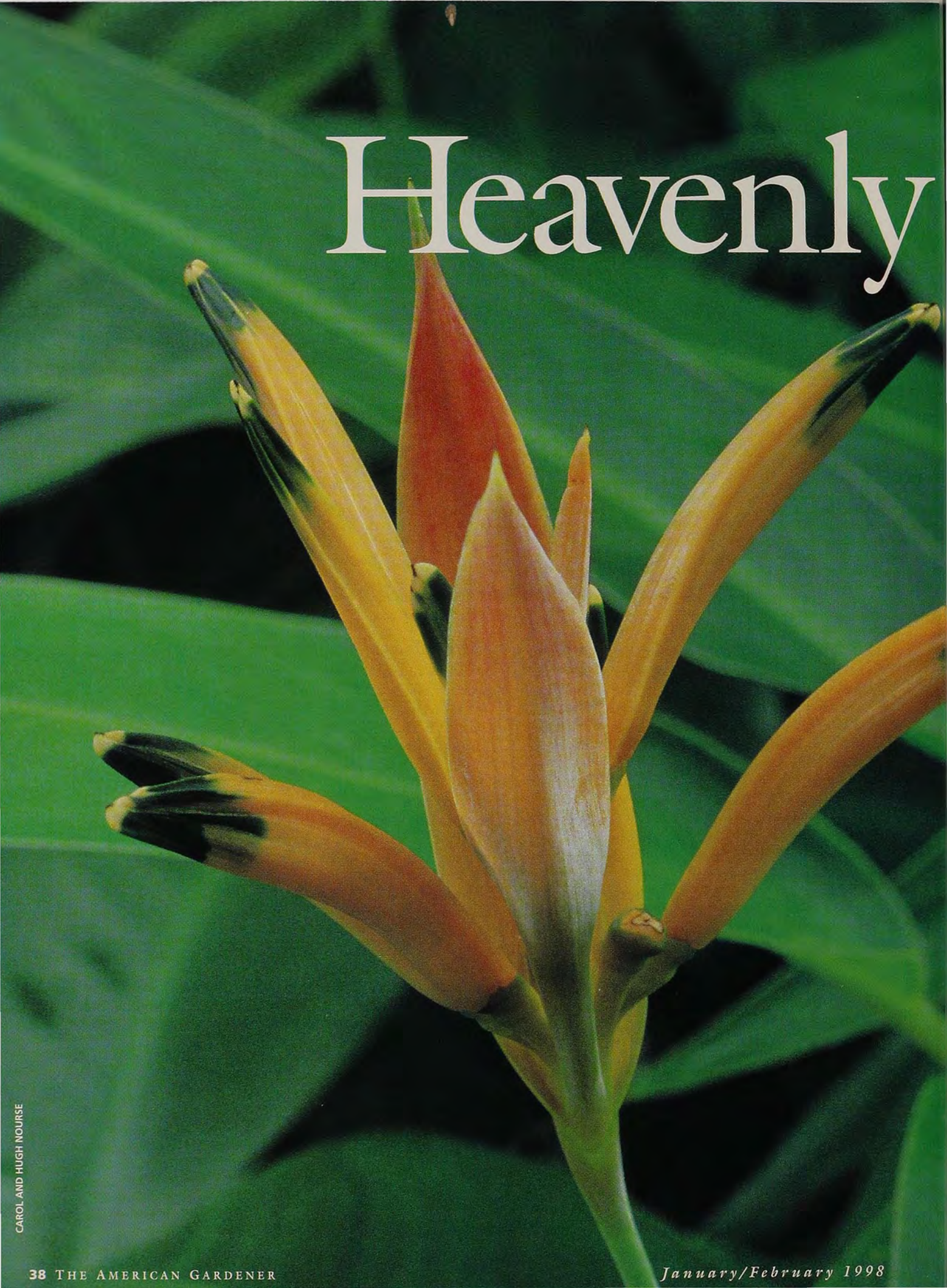
Marty Carlock is a free-lance writer living in Weston, Massachusetts.



Dwarf delphiniums, top, add strong color to a rock garden. Daughter Eleni, above, now 10, helped with seed collection before she was two.

TOP: DAVID CAVAGNARO. BOTTOM: COURTESY OF PANAYOTI KELAIDIS.

Heavenly



CAROL AND HUGH NOURSE

Heliconias

These banana relatives can give anyone a taste of the tropics.

by Donna S. Fernandez

Say "lobster claw" and most people picture the delectable crustacean with the stalked eyes and large orange pincers. But savvy gardeners will recognize lobster claw as one of several common names used to describe *Heliconia,* a large genus of tropical plants with handsome foliage and dramatic flowers. When plant collectors first brought heliconias to Europe in the 19th century, Victorian botanists and glasshouse owners eagerly sought out these exotic wonders for their conservatories and greenhouses. But until a few years ago, heliconias were relegated mainly to public garden conservatories and to those gargantuan floral arrangements you see in hotel and museum lobbies. Now, carried along by a renewed interest in tropical plants in general, they are enjoying something of a

The distended orange bracts of *Heliconia psittacorum* illustrate how the genus earned its common name "lobster claw."

renaissance in private homes and gardens. In the right setting, they are worth their weight in gold for the way their flowers and leaves epitomize the tropical look.

Heliconias are native primarily to the tropics of Central and South America and the Caribbean, but six species are dispersed among islands from central Indonesia east to the Samoa Islands of the South Pacific. Botanists are unsure how these disjunct species—distinguished by their mainly green bracts and flowers and by orange to red fruits—developed so far from their more diverse tropical American siblings.

Heliconia inflorescences come in a wide variety of shapes, sizes, and colors. Striking examples include *H. nutans*, above, and opposite, clockwise from top left, *H. rostrata*, *H. caribaea* 'Purpurea', *H. schiedeana*, and *H. collinsiana*.

Heliconias thrive in climates that receive daily rainfall and have average temperatures above 65 degrees Fahrenheit. The greatest diversity of species is found in tropical rain forests with elevations between 1,500 and 6,000 feet, but heliconias are also common to lowland areas, and some species inhabit areas that are subject to seasonal drought.

In their native habitats, heliconias are often found in the understory beneath a wide range of trees, but many species also colonize riverbanks, roadsides, and cleared areas. The ongoing destruction of tropical forests favors these colonizers at the expense of those restricted to the understory.

Botanists estimate that as many as 250 species exist, although so far only about 200 have been identified. Fred Berry and W. John Kress predict in their definitive book *Heliconia: An Identification Guide* that "many new taxa are yet to be discovered in their native tropical habitats." More than 150 cultivars have been named, and unidentified selections abound in the nursery trade.

Family History

Heliconias were once classified with the banana family (Musaceae) because of their similar appearance, but now claim their own single-genus family (Heliconiaceae). Both heliconias and bananas are members of the order Zingiberales, which also includes several other well-known families—ginger, bird-of-paradise, canna, and prayer plant—of ornamental tropical plants.

The genus and family name is derived from Elikón (Helicon), a mountain in central Greece. The mountain was the reputed home of the Muses of Greek legend, so the name is apparently a botanical pun intended to document the close relationship between heliconias and bananas *(Musa)*. In fact, the latter genus was probably named not for the Muses but to honor Antonius Musa, physician to the first emperor of Rome.

Ranging in height from two to 30 feet, heliconias are upright, perennial, herbaceous plants that grow from underground stems or rhizomes. Like those of cannas and bananas, the elongated leaves of heliconias have a prominent midrib from which evenly spaced lines radiate to the margin. Where heliconias are exposed to wind, their leaves can split along these lateral lines and become tattered. Below the slim petiole, or leaf stem, that holds them aloft, the leaves clasp the stem with overlapping sheaths that form a pseudostem.

These big leaves are so attractive you might be tempted to grow heliconias for their foliage alone. What captivates most people, however, are the boat-shaped bracts, which like the leaves alternate on the stem in a vertical row. The flowering stalks develop from a terminal stem, either held upright (erect) or dangling upside down (pendent), in vivid hues of red, yellow, orange, green, and even pastels.

Depending on the species, individual bracts can contain up to 50 flowers, although the flowers themselves are often insignificant or hidden from view by the bracts. Both sepals and petals are usually shades of yellow, but can also be white, green, pink, or multicolored. Small angular fruits that form in the bracts turn bright blue, orange, or red at maturity. Hummingbirds are the principal pollinator of tropical American heliconias and sometimes of their temperate cousins as well.

Crown Jewels of the Garden

Even though heliconias are beginning to appear in more subtropical gardens and greenhouses around the country and the world, Berry and Kress observe, "it is obvious that the art of growing and using heliconias as ornamentals is still in its initial stages of development."

Still, Randy Whitesell of Caribbean Exotics nursery in Delray Beach, Florida, says the number and variety of commercially available heliconias is increasing rapidly. "The sheer beauty of the heliconia is so addictive that I find myself getting excited every time they bloom," Whitesell rhapsodizes. He's not alone. Like new parents, excited "heliconiacs" call him when their

LEFT: W. JOHN KRESS. RIGHT, CLOCKWISE FROM TOP LEFT: STEPHEN INGRAM, W. JOHN KRESS, BILL JOHNSON, W. JOHN KRESS.

With fearful symmetry worthy of William Blake's "tyger," this scintillating form of *H. bihai* is a knockout, its orangy yellow bracts burning bright against a lattice of green stems.

plants come into bloom. "If you go to a house that has a blooming heliconia," Whitesell says, "be assured that the host or hostess will take you out—by force if necessary—to see it before you leave." According to Kress, in North America most heliconias flower during the summer, which is equivalent to the rainy season in the tropics. "They seem to be photoperiod dependent," notes Kress. One exception to this is *H. angusta* 'Holiday', which flowers between December and February.

Selecting which of these stunningly ornate species to grow is like choosing between multicolored precious stones. But there are several additional factors that require consideration, especially for gardeners in temperate and subtropical climates. Most heliconias are hardy only in USDA Zone 11, which limits their use as perennials outdoors in the United States to Hawaii and southern areas of Florida, California, and Texas. Most species also need a constant supply of moisture and prefer sites where humidity averages about 50 percent, so they are not good choices for dry areas. Gardeners in cooler regions need not despair, however. A few species have proven tolerant down to Zone 8, and many heliconias adapt well to container culture.

Heliconias are versatile enough to be used in many ways in the landscape. In groups, they provide a rich and varied tapestry against which other plants can be displayed. Yet they can also be used individually as a focal point in the landscape. Any gardener wishing to be dazzled by beautiful color and form should try cultivars of *H. wagneriana*, *H. caribaea*, *H. rostrata*, or *H. chartacea*. "The right heliconia in the right place will create a specimen plant that few other plants can equal," says Whitesell. In some subtropical areas they are used—much as cannas are in the Northeast—as annuals for mass plantings along roadways and in parks.

Clumpers vs. Spreaders

In tropical gardens, choosing heliconias comes down to three main factors: color, plant size, and available space. Heliconias can be compared to bamboos in that some tend to form rather confined clumps while others spread rapidly by way of rhizomes and can quickly take over a bed. In Hawaii, several species have escaped from gardens and naturalized in the wild.

"Best suited for a small garden or even the typical one-quarter-acre garden are those that don't have long rhizomes," says David Bar-Zvi, curator of flowering ornamentals at Fairchild Tropical Gardens in Miami. "*H. latispatha* is a rampant spreader, as is the smaller *H. psittacorum*, which is better held in check by container planting. Often a single, closely clumping species such as *H. caribaea*, *H.* ×*raulini-ana*, or *H.* ×*pabstsi* 'Dimitri Sucre' can be the best choice." He also recommends modest-size specimens such as *H. spissa*, *H. champneiana*, and *H. pendula*.

Several dwarf varieties now commonly available include *H. stricta* 'Dwarf Jamaican', an upright flowering plant with attractive pink to red bracts highlighted by a green edge; *H. nutans*, which has a pendent inflorescence composed of red bracts and prominent yellow sepals; and *H. angusta* 'Holiday', a red-bracted, upright plant with distinctive white sepals.

"If you have the space to fill, *H. rostrata*, *H. caribaea*, and *H. bihai* make good tall and dramatic screening plants," says Bar-Zvi, who also recommends *H. collinsiana* and 'Jacquinii', a hybrid between *H. bihai* and *H. caribaea*. "Few gardens are large enough to have more than a few of these flamboyant plants, but as a specialized collection, they can be rewarding."

Living on the Edge

For the subtropical gardener, growing heliconias successfully depends entirely on how tropical you can make their growing conditions. Even if you live in Zones 8 to 10, it pays to experiment with one or two of these beauties because there are always localized microclimates.

Heliconia growth and activity is retarded at temperatures below 60 degrees, but some heliconias will survive in areas where temperatures don't drop below 40 degrees for extended periods. Their foliage may suffer a temporary loss of digni-

Resources

HELICONIA: AN IDENTIFICATION GUIDE by Fred Berry and W. John Kress, Smithsonian Institution Press, Washington, D.C., 1991. AHS member price: $22.45. Book code: SMI 004.

HELICONIA SOCIETY INTERNATIONAL. Those interested in learning more about heliconias can join the Heliconia Society International. For membership information, contact David Bar-Zvi, vice president for membership, at Fairchild Tropical Gardens, 10901 Old Cutler Road, Miami, FL 33156-4296, (305) 667-1651 ext. 340.

Sources

THE BANANA TREE, INC., 715 Northampton Street, Easton, PA 18042, (610) 253-9589. Catalog on Web site: www.banana-tree.com.

CARIBBEAN EXOTICS, 3209 Lowson Boulevard, Delray Beach, FL 33445, (561) 498-5687. Plant list free.

EXCELSA GARDENS NURSERY, 12839 25th Street North, Loxahatchee, FL 33470, (561) 790-3789. excelsainc@aol.com. Plant list free.

THE PLUMERIA PEOPLE, 910 Leander Drive, Leander, TX 78641, (512) 259-0807. Catalog $3, deductible.

STOKES TROPICALS, P.O. Box 9868, New Iberia, LA 70562-9868, (800) 624-9706. www.stokestropicals.com. Catalog $4, deductible.

ty, but as long as there is no killing frost they should return to their majestic selves with the onset of warmer weather. If you want to grow heliconias in an area that sometimes gets frost, be prepared to bundle your plants in burlap once in a while.

Bar-Zvi says cool-weather-tolerant heliconias include *H. spissa, H. schiedeana, H. subulata,* and *H. nutans.* And Whitesell says that *H.* ×*nickeriensis* (sometimes listed as a species rather than a hybrid) is being grown outdoors in Gainesville, Florida, Zone 8.

***Heliconia* ×*nickeriensis*, above, has been known to survive outdoors in USDA Zone 8. Opposite, clockwise from top left: *H. angusta* 'Holiday' blooms between December and February; *H. latispatha* is a rampant spreader recommended for containers; 'Splash' is a red-spotted cultivar of *H. champneiana;* and *H. wagneriana* is a tall plant appropriate as a garden focal point.**

Heliconias in Handbaskets

Gardeners who live in apartments can still delight in the exotic look of heliconias by growing them as house plants. Small- to medium-size heliconias such as cultivars of *H. psittacorum, H. stricta, H. angusta,* and *H. zebrina,* as well as *H.* 'Golden Torch', are good choices for containers. Ideally they should be placed in a sunny room where temperatures stay between 65 and 80 degrees year round. Greenhouses, sunrooms, glass-enclosed porches, and south-facing windows are the best places for a potted heliconia, and protection from cold drafts is a must. Keep the soil moist but not soggy and feed with a slow-release granular fertilizer.

Their preference for humidity is the same indoors as out—50 percent or more. Heliconias wilt in a room where the air is substantially drier than that, which will be the case in most homes that are centrally heated and air-conditioned. To compensate, place a shallow tray of pebbles covered with water under or near your heliconia or keep a humidifier running in the room. Another important consideration is good airflow, which can be achieved by using a fan.

General Care and Propagation

Mark Friedrich of Excelsa Gardens Nursery in Loxahatchee, Florida, notes that heliconias do best in full sun to part shade, especially the dappled shade provided by palm trees. They benefit from a rich, slightly acidic, organic soil, so Friedrich advises amending existing soil with peat moss, perlite, and pine bark for in-ground planting. Keep heliconias moist but well aerated, and mulch heavily to conserve water and replenish the soil with nutrients. Even though some species can be grown as semiaquatics—*H. marginata,* for example—too much water can cause root rot in most heliconias, so water only when the ground dries out. Reduce watering even more in winter, when plants are less active. Because heliconias are heavy feeders—especially if grown in alkaline soils—you should apply a slow-release fertilizer every three months, along with supplemental magnesium sulfate and potassium.

In-ground heliconias are usually free of pests and diseases, but indoor specimens can be prone to spider mites and mealybugs. Both can be controlled by washing them off with a strong jet of water or by using an insecticidal soap.

The plants can get a little shabby if you don't groom them periodically to remove spent leaves, old stems, sheaths, and stalks. "Heliconias are landscape prima donnas," comments Bar-Zvi, "and need to be treated that way to look good."

Heliconias can be propagated by dividing older plants into several sections, each containing at least one rhizome. Cut the rhizomes apart with a sharp knife that has been sterilized in alcohol or bleach, leaving at least one stem per rhizome. Plant each section two to three inches deep in a container that is slightly larger than the rhizome. Place the pot in a sunny, warm location and keep the soil moist. A fresh stem should emerge in four to seven weeks.

Replicating their tropical habitat outdoors will be next to impossible for most gardeners, so trial and error is necessary to find the right balance. Half the fun of growing these tropical wonders lies in learning their likes and dislikes. It's common among heliconia growers to move them around in the garden, to try more of this and less of that.

No matter what zone you live in, take time to experiment with heliconias. Because so much heliconia habitat is being lost to tropical deforestation, botanists and collectors are under increased pressure to study and preserve the species that remain. As a result, more information on heliconias is available than ever before, and new species are being preserved and displayed in botanical gardens. Now you no longer have to travel to the tropics or even grow your own heliconias to appreciate their exotic beauty, but don't let that stop you from giving them a try.

Donna S. Fernandez is a free-lance writer in subtropical Wellington, Florida.

LEFT: W. JOHN KRESS. RIGHT, CLOCKWISE FROM TOP LEFT: ELEMENTAL IMAGES, W. JOHN KRESS, W. JOHN KRESS, W. JOHN KRESS.

The Mother of Balboa Park

Kate Sessions was the guiding spirit behind the greening of San Diego.

by Peggy Riccio

Above: Balboa Park today. Sessions showed that plants from a San Francisco conservatory could be grown outdoors in San Diego. Opposite: Sessions at the age of 75.

Kate Sessions considered all of San Diego's plants to be her children. It pained her to see a wilted perennial or a badly pruned shrub. If she passed a tree in need of water she would leave a note on one of its branches for the owner. If she saw someone digging a planting hole that was too small she would get out of her car and instruct the owner on the proper size. According to her longtime friend and employee, Alice Rainford, "She was brought up a lady but she could be a termagant. Her language was sometimes rather strong. I've known Miss Sessions to stand up to an aristocratic customer and refuse to sell him a plant because she didn't think he would treat it properly—and tell him so in no uncertain terms."

But anyone less assertive may not have matched her achievement—virtually transforming the city's dry and dusty landscape.

Katherine Olivia Sessions was born November 8, 1857, to a middle-class Unitarian family living on San Francisco's Nob Hill. When Kate was 10 and her brother, Frank, was four, the family moved to Oakland to farm and raise livestock. Sessions had loved picking flowers from the time she was two, and now that she had an entire countryside to roam on her pony, she began collecting plants systematically, pressing and labeling them.

At the University of California at Berkeley, Sessions was one of the first women to take agriculture classes; she also studied chemistry, botany, and horticulture. But in those days, there were only three careers open to women—teaching, nursing, and marriage. So, armed with a bachelor of philosophy in nature, Sessions began teaching high school in San Diego.

Then in 1885 some fruit-grower friends, the Blaisdells, bought an existing nursery to expand their sales and offered her a share in the business if she would manage the nursery's flower shop. Excited by the opportunity, Sessions left her teaching post for Asher's Floral Depot on the corner of Fifth and B.

The following year two developers, Elisha S. Babcock and H.L. Story, began work on what they promised would be the

The Hotel del Coronado, top, contracted with Sessions to manage its botanical garden and hire staff for the flower shop in its center court, seen above in an image reproduced from a 1910 postcard.

"Talk of the Western World," the Hotel del Coronado. After buying the entire Coronado peninsula, they lacked capital for the hotel, so they subdivided and auctioned off plots. Sessions, convinced that the bay conditions were perfect for growing plants, persuaded the Blaisdells to buy a plot near the ferry landing. "San Diego Country today is the best horticultural medium in the United States," she wrote. "In the different sections of this country there are possibilities in a horticultural way that no other part of the United States has."

Her partnership with the Blaisdells dissolved shortly afterwards, and Sessions was left with some 48,550 feet on Coronado Beach plus her floral shop in San Diego. Several times a week she commuted by ferry between the two, to keep an eye on her developing nursery.

To landscape their fabulous new hotel, Babcock and Story logically turned to their neighborhood nurseries. Sessions seized the opportunity to introduce specimens from San Francisco's famous Woodward Garden's Conservatory that would be hardy outdoors in San Diego: bougainvillea, queen palm *(Syagrus romanzoffiana)*, thatch-leaf palm *(Howea forsteriana)*, and dwarf palm *(Chamaedorea elegans)*. She also planted sabal palms *(Sabal* spp.), Madagascar jasmine *(Stephanotis floribunda)*, and bird-of-paradise *(Strelitzia reginae)*. Later, the hotel contracted with her business to manage its botanical garden, which supplied floral arrangements for the dining rooms, guest rooms, and lobby. Sessions hired Rainford to staff the bougainvillea-covered flower shop in the hotel's center court.

Today Hotel del Coronado is a National Historic Landmark known for its elegant Victorian architecture and lush gardens. A massive dragon tree *(Dracaena draco)* that Sessions planted there is still flourishing by the hotel's vista walk.

Sessions' contributions to this high visibility landscape weren't obvious to everyone, and she continued to work hard seven days a week to make her nursery a success. She advertised in the local newspaper, touting seasonal attractions. Most famous was her 150-variety chrysanthemum collection, which would cause jams on the ferry. In addition to growing trees, shrubs, perennials, and annuals, she also arranged flowers; sold cut flowers such as roses, carnations, and camellias; and exhibited at fairs and festivals.

She introduced San Diego gardeners to the Carolina yellow jessamine *(Gelsemium sempervirens)*, blue-flowering jacaranda tree *(Jacaranda mimosifolia)* from South America, and a fan palm *(Brahea brandegeei)* from Cape St. Lucas. She advocated vast public plantings of natives—California poppy *(Eschscholzia californica)*, Matilija poppy *(Romneya coulteri)*, golden yellow flannel bush *(Fremontodendron mexicanum)*, and San Diego ceanothus *(Ceanothus cyaneus)*.

Because San Diego had few native trees, Sessions was forever looking to other countries for drought-resistant species of tall-growing plants. "Our neighbor, Mexico, has given us a large variety of her native cacti, agaves, and succulents, besides many beautiful flowering shrubs," she wrote. "South Africa has been furnishing of late

years many very interesting and beautiful plants, for our local coast climate is a duplicate of South Africa's unique climate, although somewhat milder." A favorite from South America was the tipu tree or pride-of-Bolivia *(Tipuana tipu)*.

Avid plant collectors often show little regard for design, and even though Sessions landscaped gardens professionally, she had no use for drafting tables. After examining a client's property, she would dig her heel in the ground to indicate where a plant should go and spread her arms to show how big the hole should be. To her, a "good hole is the most necessary adjunct for successful planting. You can't have a big growing tree without a big supply of good food, which means a big hole full of good soil and a reasonable supply of water."

In spite of this unorthodox approach, within five years of launching her business Sessions was an unqualified success. According to Elizabeth C. MacPhail's *Kate Sessions: Pioneer Horticulturist*, no one in San Diego was born, married, or buried without a Kate Sessions flower arrangement. No one held a formal luncheon, tea, or dinner party without a bouquet from her shop, and nobody built a home without her plants and advice.

With so much demand for her services, Sessions wearied of commuting and decided to relocate from Coronado to San Diego. The city council agreed to let her lease 30 of City Park's 1,400 acres for a nursery and botanical garden. In return, so competing nurseries wouldn't accuse them of giving her preferential treatment, they asked her to serve as city gardener without salary, planting and maintaining 100 trees in the park each year and furnishing up to 300 trees for public plantings.

At the turn of the century the park was nothing but sagebrush, chaparral, and cactus, and visitors were less likely to see other humans than coyotes, bobcats, and rattlesnakes. There was no shade and no ponds. Sessions began populating the park with the toughest trees she could find: Monterey cypress, torrey pines, cork oaks, acacias, palms, and eucalyptus. But there was no master plan, and even Sessions recognized that a less random approach was called for.

At her suggestion the Chamber of Commerce contacted Samuel Parsons Jr., a well-known New York landscape architect, to survey the park. Parsons was unfamiliar with plants appropriate for California, however, so the two made a perfect team. Sessions even donated plants beyond her annual requirement when funds for the project dried up. It was renamed Balboa Park in honor of the first Spanish explorer to glimpse the Pacific Ocean, and in 1915—then on its way to becoming a lush and welcoming oasis—it would achieve worldwide fame as the site of the Panama–California Exposition, celebrating the opening of the Panama Canal.

As construction for the exposition got underway, Sessions had to relocate again. This time she set up shop in Mission Hills, a sparsely populated residential area that seemed far enough from the center of town—in actuality, only about two miles from the Town Hall—that she hoped not to be disturbed again by encroaching development. Sessions' brother, Frank,

A dragon tree that Sessions planted still stands on the hotel grounds, top. She relied heavily on palms, including queen palms, thatch-leaf palms, and sabal palms. Above, the landscape as depicted on another antique postcard.

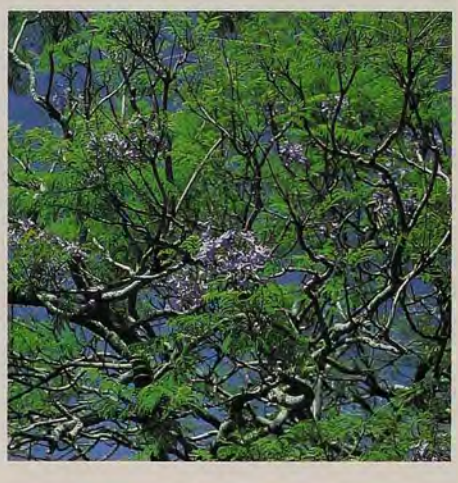
PHOTOS COURTESY OF THE HOTEL DEL CORONADO

The Balboa Park area was home only to sagebrush, chaparral, and cactus before Sessions led efforts to plant it. Above: Arbor Day, 1904. Below: *Jacaranda mimosifolia* was one of the many species Sessions introduced to the city.

helped with the business periodically, and he returned at this point to help his sister push poinsettias. They had been a popular landscape plant in Southern California for some years and were coming into demand across the country as holiday plants. Frank hired crews to grow, pack, and ship the poinsettias along the Pacific Coast and as far east as Chicago, while Kate handled the marketing end, enticing people to visit the nursery's fields of red bracts. By 1914, however, increasing property taxes forced a move to Pacific Beach, an area too humid for poinsettias.

Now 57, Sessions had begun to lose her hearing, but she didn't slacken her pace. She was appointed Supervisor of Agriculture for the San Diego schools, which meant that she was in charge both of landscaping them and of educating their students in horticulture and botany. Her correspondents included David Fairchild, head of the Bureau of Plant Introduction in Washington, D.C., and she happily tested specimens he sent to San Diego. She collaborated with Luther Burbank in Santa Rosa and with Emanuele Orazio Franceschi, a Santa Barbara nurseryman who introduced many plants, including the zucchini. Later she would landscape the La Valencia Hotel in La Jolla and advise George W. Marston as he planted Presidio Park, site of a military post that had been the area's first settlement.

Sessions had earned respect in a man's world and over the years concluded that she didn't need to put on feminine airs. Gone were the curls, lacy blouses, earrings, and high heels of her youth. In a society that demanded fair skin, Sessions had a tanned, leathery face and rough, dry hands. She was still proper enough to always wear a long skirt and blouses with long sleeves and high necks, but she was also willful enough to add long pockets for pruning shears and other tools. She wore men's boots and a man's felt hat. Once tall and striking, she had developed a hunch, and her deafness caused her to speak loudly, making her seem even more assertive.



Sessions had earned respect in a man's world and concluded she didn't need to put on feminine airs.

Sessions had always worked hard. A typical day lasted from 8 a.m. to 6 p.m., after which she would read nursery catalogs or horticultural journals, or work on one of her "Notes on Planting" columns for the *San Diego Union*. She also wrote prolifically for the *California Garden*, the magazine of the San Diego Floral Association, which she had founded.

It appears that Sessions was something of a micromanager who insisted on doing all the bookkeeping and supply-ordering herself. Nor was she always a patient person. If she disapproved of the way an employee was transplanting something, she would snatch the trowel from them. There were rumors that she swore at her workers. While the objective was the same—to express frustration—the words weren't Anglo-Saxon but Latin. "Botanical names,

TOP: SAN DIEGO HISTORICAL SOCIETY. BOTTOM: BILL JOHNSON.

The Panama–California Exposition of 1915, above, brought Balboa Park world fame but forced Sessions to move her nursery. Sessions found that African plants such as *Aloe arborescens*, below, were well suited to the Southern California climate.

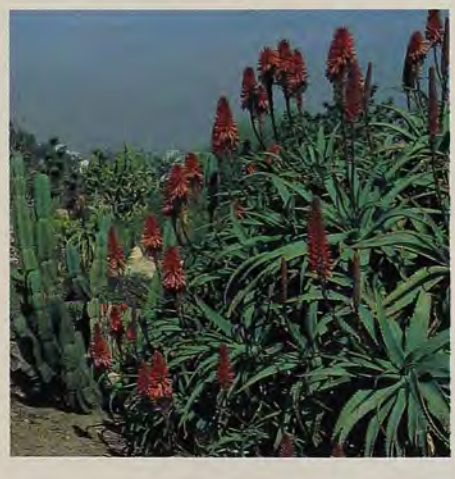
when spoken vehemently, can be very effective in overcoming obduracy," she said.

Still, her employment practices inspired loyalty. During the Depression she kept on as many workers as possible, and many of the young men she trained later went into the nursery business on their own. She was fond of youngsters, whom she hired to create violet bouquets at 10 cents each. She encouraged young women to become self-sufficient and get involved in political issues, particularly those that would make the city more beautiful.

She was 71 when she concluded that she had enough money to build her own home, an impressive two-story structure on Los Altos Drive in Pacific Beach.

In spite of her eccentricities, she was widely admired and respected. When Balboa Park was chosen for the California Pacific International Exposition of 1935-1936, the community designated September 24, 1935, as Kate O. Sessions Day and bestowed on her the title "Mother of Balboa Park." At a luncheon in her honor, she humbly responded that she "would rather be remembered for one beautiful tree than for all the marble in the world."

Sessions' greatest honor occurred in 1939, when she became the first woman to receive the American Genetic Association's Frank N. Meyer Medal for distinguished service in flower and plant introduction. The award was named for plant hunter Frank Meyer, who died while exploring China's Yangtze River in 1918. By then dependent on a wheelchair, she confided after the presentation that she couldn't hear anything that was said, "but I hope they were talking about the flowers and not about me."



"Botanical names, when spoken vehemently, can be very effective in overcoming obduracy."

Later that year, the Mother of Balboa Park slipped and broke her hip while watering her plants. She did not recover fully, developed pneumonia, and died on Easter Sunday, March 24, 1940, at the age of 83. She was buried in Mount Hope Cemetery with three twisted junipers planted over her grave. Named in her honor were an elementary school in Pacific Beach and a local park at the end of Lamont Street on Soledad Road.

It probably would have pleased her even more that her admirers also prevented a tipu tree she planted from being bulldozed and succeeded in protecting it as State Historical Landmark No. 764.

Peggy Riccio is a free-lance writer living in Catonsville, Maryland. In April, a statue of Kate Sessions will be dedicated in Balboa Park during its monthlong "Buds in Bloom" floral fiesta. The six-and-a-half-foot sculpture is surrounded by a garden of plants that she introduced to the city, and visitors can take a self-guided walk that will pass one of her former nurseries. During the fiesta, an exhibit about Sessions' life can be seen at the Museum of San Diego History on the park grounds. For more information, call the park at (619) 235-1100.

TOP: SAN DIEGO HISTORICAL SOCIETY. BOTTOM: MICHAEL S. THOMPSON.

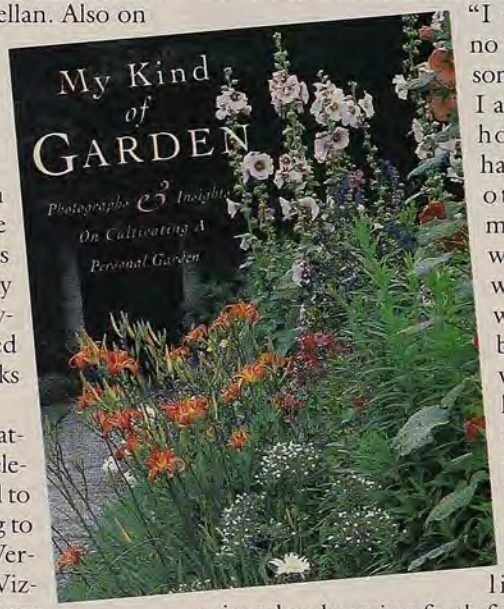
book reviews

- ***classic inspirations***
- ***G.S. Thomas essays***
- ***winter gardens***

MY KIND OF GARDEN: PHOTOGRAPHS & INSIGHTS ON CULTIVATING A PERSONAL GARDEN

Richard W. Brown. Houghton Mifflin Company, Boston, 1997. 160 pages. 8 5/8 × 10 3/4″. Publisher's price: hardcover, $40. AHS member price: $36. **HOU 016**

Even a quick look at *My Kind of Garden* proves that life is not fair. Already an acclaimed photographer, Richard Brown turns out to be a talented watercolorist and writer as well. All three skills are on exhibit in this book, handsomely designed by Susan McClellan. Also on exhibit is an interesting tension—a horticultural *Sense and Sensibility,* with Brown playing both Elinor and Marianne. His vision is romantic, formed in the grand gardens of the world, but his experience is rural Vermont, where rocky soil and a short, cold growing season are exacerbated by invasions of woodchucks and Holsteins.



Brown's account of creating a country garden is an elegant how-to book. Crucial to the process was his learning to translate the lessons of Versailles, Sissinghurst, Villa Vizcaya, and more to a northern New England location. A garden, he points out, should be "true in spirit to the culture and history of the surrounding region—one that at least has some echoes of what has come before and is not a haphazard pastiche of imported styles and clichés." And in Brown's garden-making experience, we see how to adapt classic design principles to our own gardens.

While Brown's discoveries aren't all unique—the importance of having a plan and the role of walls and water have been discussed often—they are described with disarming honesty. Fully aware, for example, of the visual effect of garden features such as properly placed benches, Brown is still at ease in claiming that few benches "are actually home to the human posterior. It's hard for gardeners to sit still.... They immediately spot something that needs attending to." Benches, he adds, perpetuate "the universally held illusion that gardens are for relaxation."

There's little sentimentalism or cant in Brown's prose. Rather than a nurturing spirit, Mother Nature is "a sadistic, spiteful old crone" who intervenes in his garden whenever things are going too well. His also has a knack for making us see familiar objects in a new light. Water plants, for instance, are divided into observers, waders, and swimmers. Observers, such as primulas, are "like the mothers of small toddlers who sit at the water's edge"; blue flags are waders, "raucous teenagers" who like to splash about "but don't like to get their hair wet"; swimmers, such as waterlilies, "are the serious water-sport types—plants that really like to get in the water and swim."

His own garden, he readily admits, will never equal those he has photographed: "I work under no delusion that someday all that I admire in the horticultural handiwork of others—the mellow brick walls dripping with lavender wisteria, the bright beds of vibrant lupines and flashing poppies, the limpid pools dotted with ivory water lilies—will miraculously spring forth from my meager efforts like Jack's wondrous beanstalk from a few paltry seeds. The true wonder is that the simple act of growing a handful of plants in a setting of my own creation can yield such deeply felt satisfaction. For I have discovered that given enough modest success, even gardening at my level of ineptitude fulfills this basic human desire."

The secret is "the simple joys of the endeavor." In describing his endeavor, Brown makes ours easier and helps ensure that we, too, will find these joys.

—Karan Davis Cutler

Formerly gardening editor of Harrowsmith Country Life *magazine, Karan Davis Cutler is a free-lance writer and editor in Essex Junction, Vermont. Her latest book is* The Complete Vegetable and Herb Gardener, *published by Macmillan.*

CUTTINGS FROM MY GARDEN NOTEBOOKS

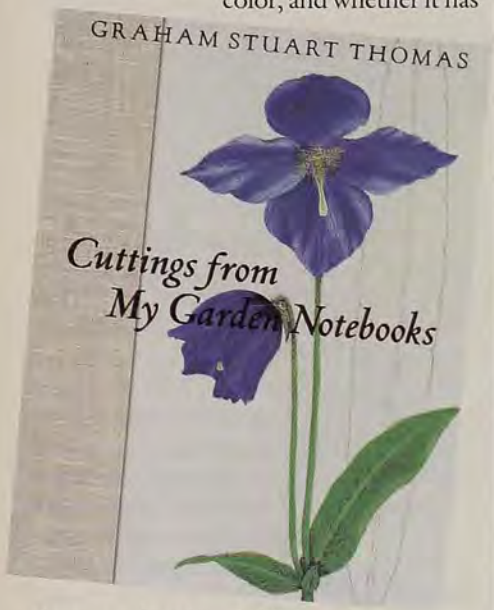
Graham Stuart Thomas. Sagapress, Inc., Sagaponack, New York, 1997. 384 pages. 7 1/4 × 9 5/8″. Publisher's price: hardcover, $39.95. AHS member price: $36. **SAG 012**

Graham Stuart Thomas is considered by many to be among the finest garden writers in the United Kingdom. For more than 40 years he has written and illustrated books covering all aspects of horticulture. Those who are familiar with his previous works will be delighted to learn that a new book of his writings is now available, and those who have yet to read him are in for a treat. As always, Thomas conveys his encyclopedic knowledge of plants, gardens, and gardeners with elegance and enthusiasm. He has opinions without being opinionated, and he entirely lacks the crankiness that is the hallmark of all too many writers on gardening.

As the title implies, *Cuttings* is a collection of 63 short essays—all but five of them previously unpublished. Some cover plants—jasmines, roses, phloxes, and ivies, for instance. Others focus on gardeners such as Gertrude Jekyll, George Rowland Jackman, and Gwendolyn Anley. Still others examine gardening styles or techniques ranging from knots and parterres to trough gardens and tufa. The chapters, or "cuttings," are grouped seasonally, but in fact they seldom bear a close relationship to the time of year or to each other. This doesn't detract from the book's value, however. Each essay is complete in itself and can be enjoyed at odd moments—while waiting for a phone call or taking a break from weeding—or savored at length on a rainy or wintry afternoon.

This edition, created with American

readers in mind, has one feature that should be the industry standard for books of this type. Thomas calls it a "check list of plants with USDA hardiness zones"; however, it is much more than that. It is an index to every plant mentioned in the essays, listed alphabetically by scientific name. The plant name is linked with seven columns of information that include hardiness zone, plant type, flower color, fall color, and whether it has



fruits or berries. Additionally, each plant is listed by page number so you can use the list as an index to discover what Thomas had to say about a particular plant. With this index, a delightful collection of essays becomes a useful reference book for gardeners.

There is also a subject index that does not include plants, and a short list of American nurseries that are likely to carry some of the more unusual species Thomas describes. The only thing missing is a cross-reference by common name; if you tend to forget that *Chimonanthus* is the botanical name of wintersweet, you will need to keep an index of common names handy. An extra bonus is the fine quality of the book itself—well printed on good paper and enlivened with the author's charming black-and-white illustrations.

The book was written, the author says, "with the idea of helping those who are setting out on the garden path." This shows what great respect Thomas has for us gardeners, even the least experienced among us. He supposes that we all have a love of plants and a thirst for knowledge equal to his own.

—Alice Bagwill

A resident of Alexandria, Virginia, Alice Bagwill is volunteer librarian for the American Horticultural Society.

THE WINTER GARDEN: PLANNING AND PLANTING FOR THE SOUTHEAST

Peter Loewer and Larry Mellichamp. Stackpole Books, Mechanicsburg, Pennsylvania, 1997. 208 pages. 8 3/4 × 11 1/4". Publisher's price: hardcover, $39.95. AHS member price: $36. **STA 008**

I have always thought that winter is the best time to evaluate the elements of a garden. On a cold February afternoon, when most sane gardeners have stored their tools for the season and sought refuge indoors, I can often be found wrapped in a well-worn woolen coat, surveying my garden. After reading *The Winter Garden: Planning and Planting for the Southeast,* I am happy to know I am not alone!

Garden writer Peter Loewer and Larry Mellichamp, director of the botanical gardens at the University of North Carolina at Charlotte, have combined their talents to inspire both novice and veteran gardeners with the beauty and magic a garden in winter can offer. This doesn't just happen of course—it takes planning. Since the elements of a winter garden are often obscured by the vigorous foliage and vibrant colors of spring and summer, the best time to start evaluating and planning is late autumn.

Loewer and Mellichamp define winter as the season from Thanksgiving to April Fool's Day, about 120 days. Although they focus primarily on the Southeast, many of the 450 plants they describe are hardy to the warmer side of USDA Zone 6 and thus can be considered in many other areas of the country.

The plants selected for discussion are divided into five categories based on winter attributes—texture, fruits, flowers, fragrance, and evergreen foliage. Under each category, plants are listed alphabetically by botanical name and briefly but concisely described. Most plant descriptions include cultural advice and suggestions for unusual cultivars or companions. Large-format photographs of dramatic winter plants are generously scattered throughout the book; unfortunately a few are injudiciously enlarged to the point of appearing "fuzzy." Several blank pages also suggest more attention could have been paid to design.

After reading the first chapter, "Planning Your Winter Garden," you may be immediately inspired to put on your gloves, arm yourself with pen and paper, and head to the garden to investigate. Following the book's advice, you will take into account "anything both living and artificial that would be part of your winter landscape." These include garden ornaments; living sculptures such as trees with interesting gnarled branches; night lighting; the use of water—both flowing and frozen; and, of course, the plants.

When you return to the house, curl up in a favorite chair and read the second chapter, "Walks in Winter Gardens." These chatty transcripts of winter walks in the gardens of Loewer and other southeastern gardeners offer vivid examples of the potential glory of a winter garden.

This book should find a space on your bookshelf between Elizabeth Lawrence's *Gardens in Winter* and Graham Stuart Thomas's *Colour in the Winter Garden.*

—Pam Stenger

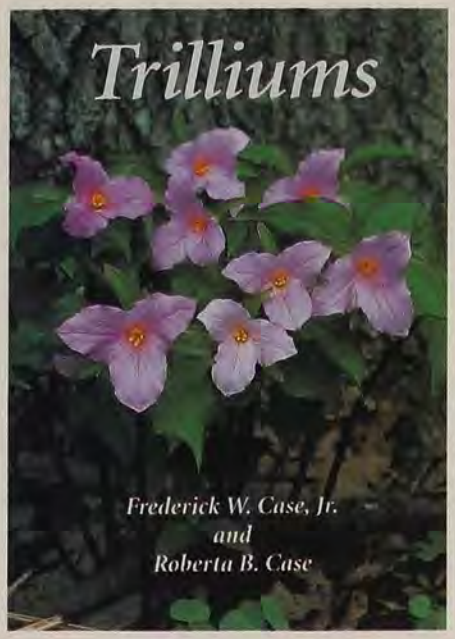
Pam Stenger is a horticulturist at Brookside Gardens in Wheaton, Maryland.

TRILLIUMS

Frederick W. Case Jr. and Roberta B. Case. Timber Press, Inc., Portland, Oregon, 1997. 285 pages. 6 1/4 × 9 1/4". Publisher's price: hardcover, $29.95. AHS member price: $26.95. **TIM 101**

Among those who love woodland plants, trilliums are often regarded as the holy grail. Whether seen in the wild or in a garden, there is something magical about the bright green foliage bursting through the duff and the delicate flowers unfolding in perfect three-part symmetry above the leaves.

With the publication of Frederick and Roberta Case's book, trillium junkies and wannabes should be ecstatic. The Cases have put together a book that somehow manages to be at the same time an exhaustive reference, field guide, and photographic tour de force.



Having said that, it is even more impressive that the book is written so that both amateur and professional gardeners and botanists can use it. Technical terms are used in some sections, but a glossary at the end of the book defines any terminology that might be unfamiliar.

The first part of the book addresses the botanical history and habitat of trilliums and their relatives, along with their structure, biology, growth, culture, propagation, and hybridization. The Cases also address conservation, noting that commercial propagation of trilliums is still too slow to be cost effective so that most of those sold by nurseries are wild collected. While development, grazing by animals, and timber harvesting are greater threats to wild trilliums than collection, they say, improvements in tissue-culture propagation techniques would reduce its incidence.

The second section of the book includes a taxonomic key to North American trilliums, illustrated to show detail, and comprehensive descriptions of 38 American and five Asian species. Each description includes common names, blooming period, comments on habitat ecology, a map showing native habitat, and a listing of varieties, forms, and cultivars. Appendices include a glossary, bibliography, and index.

The photographs, most taken by Frederick Case, are of consistently fine quality and are sure to cause acquisitive itchings in both gardeners and botanists. The book itself is well bound and small enough to fit in a backpack or large coat pocket when hiking in the woods.

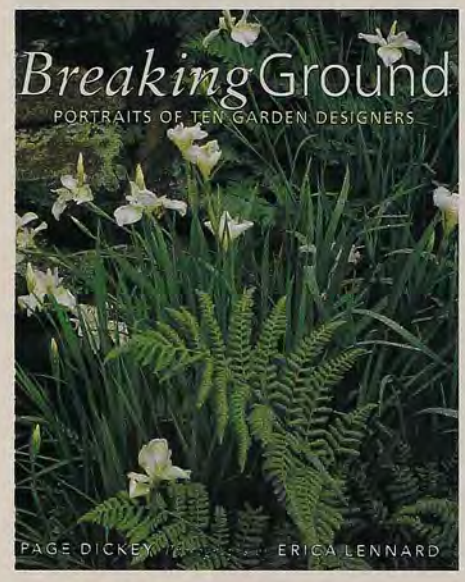
—**David J. Ellis**

David J. Ellis is assistant editor of The American Gardener.

gardeners' books

Books are chosen for the AHS Horticultural Book Service based on perceived reader interest, unusual subject matter, or substantive content. The following descriptions are not intended to be critical reviews, but are written to give an overview of the books' contents. For further information about these or other gardening books—or to order books—please call (800) 777-7931 ext. 36.

WINTER READING



BREAKING GROUND: PORTRAITS OF TEN GARDEN DESIGNERS

Page Dickey. Artisan Publishing, New York, 1997. 208 pages. Publisher's price: hardcover, $45. AHS member price: $40.50. **WOR 003**

This is a handsome and significant book that focuses attention on some of the top contemporary garden designers in America and Europe. Dickey, who has written about her own garden at Duck Hill, New York, profiles 10 landscape designers and the gardens, big and small, wet and dry, that reflect their work. Illustrated with more than 200 gorgeous color photographs, this book offers the reader a diverse perspective on new garden design techniques.

WEATHERING WINTER: A GARDENER'S DAYBOOK

Carl H. Klaus. University of Iowa Press, Iowa City, 1997. 184 pages. Publisher's price: hardcover, $19.95. AHS member price: $17.95. **UIP 001**

Author of the acclaimed *My Vegetable Love*, Klaus is the former director of the University of Iowa's nonfiction writing program. His journal of one winter season is a chronicle of life and growth discovered even through deep snow and icy gales. From his observations of El Niño's effects on the weather in the winter of 1994 to 1995 to his reflections on the soup made from last season's harvest, he lends his skilled pen to a gardener's view of the world in winter. Includes black-and-white illustrations.

SOME BRANCH AGAINST THE SKY: THE PRACTICE AND PRINCIPLES OF MARGINAL GARDENING

Geoffrey F. Dutton. Timber Press, Inc., Portland, Oregon, 1997. 207 pages. Publisher's price: hardcover, $29.95. AHS member price: $26.95. **TIM 112**

From the poor soil and harsh climate of the Scottish highlands comes this intriguing and poetic book. The author, a biologist, climber, poet, swimmer, and gardener, has gently carved nine acres of garden from the stark landscape, attempting to keep the difference between the cultivated and the wild minimal. The result is an excellent chronicle of the process of shaping a garden to the natural contours and microclimates of the landscape. With 12 black-and-white illustrations.

THE RANDOM HOUSE BOOK OF INDOOR AND GREENHOUSE PLANTS, VOLUMES I AND II

Roger Phillips and Martyn Rix. Random House, New York, 1997. Publisher's price: softcover, $29.95 each. AHS member price: $26.95 each. **RAN 026 (Vol. I) RAN 027 (Vol. II)**

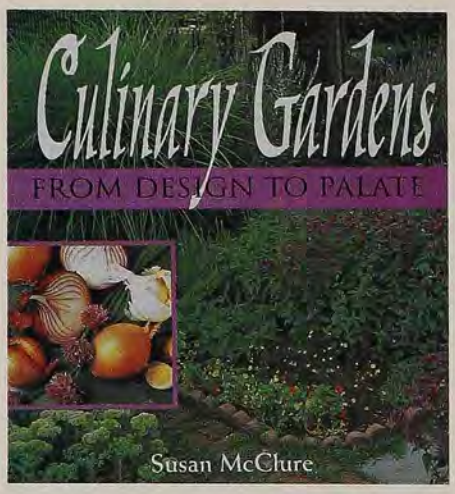
A new addition to Phillips and Rix's popular series on plants, this two-volume set is a superb photographic guide to plants that grow outdoors in subtropical climates (Volume I) and indoors in areas that have frost (Volume II). Each of the more than 2,000 plants featured is accompanied by a color photograph and concise cultivation notes.

CULINARY GARDENS

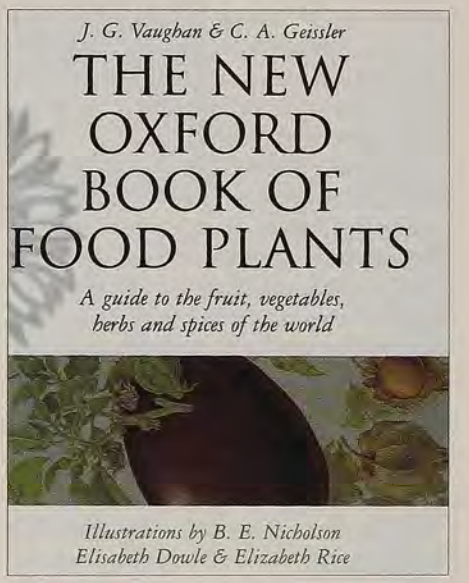
CULINARY GARDENS: FROM DESIGN TO PALATE

Susan McClure. Fulcrum Publishing, Golden, Colorado, 1997. 224 pages. Publisher's price: hardcover, $37.95. AHS member price: $34.15. **FUL 006**

With 11 designs for all types of theme gardens, from American heirloom and Mexican sun gardens to Elizabethan knot and



Italian villa styles, the author explains how to create each type of garden while retaining "highly livable" space. Plant portraits, recipes, and 80 color photographs round out this step-by-step guide to healthy food from your garden.



THE NEW OXFORD BOOK OF FOOD PLANTS: A GUIDE TO THE FRUIT, VEGETABLES, HERBS AND SPICES OF THE WORLD

Elisabeth Dowle & Elizabeth Rice. Oxford University Press, New York, 1997. 256 pages. Publisher's price: hardcover, $37.50. AHS member price: $33.75. **OXF 004**

Fully revised and updated, this volume brings together a wealth of information along with more than 100 beautiful, hand-painted illustrations of the world's food plants. In this oversize format, readers will find a feast of facts on grains, sugar crops, oil seeds, nuts, legumes, fruits, vegetables, spices, herbs, seaweeds, mushrooms, wild-food plants, and more. Contains nutrition information and a list of recommended readings.

WHAT HERB IS THAT: HOW TO GROW AND USE THE CULINARY HERBS

John and Rosemary Hemphill. Stackpole Books, Mechanicsburg, Pennsylvania, 1997. 288 pages. Publisher's price: hardcover, $32.95. AHS member price: $29.65.

STA 008

This reference book is at once an encyclopedia, a cookbook, and a how-to gardening guide. It covers more than 60 herbs from their history through the full range of their uses—culinary, medicinal, and cosmetic—as well as appropriate companion plants. Contains more than 300 color photographs and numerous recipes.

DESERT GARDENS

IN A DESERT GARDEN: LOVE AND DEATH AMONG THE INSECTS

John Alcock. W.W. Norton and Company, New York, 1997. 186 pages. Publisher's price: hardcover, $27.50. AHS member price: $24.75. **NOR 002**

Alcock, a zoologist and specialist in the ecology of the Southwest, describes with wit and insight the fascinating interaction between plants and insects that he observes in the desert garden he reclaimed—much to the surprise of his neighbors—from suburban lawn. The book is an amusing meditation on the joys of planting, weeding, pruning, and bug-watching. Includes color photographs and black-and-white drawings.

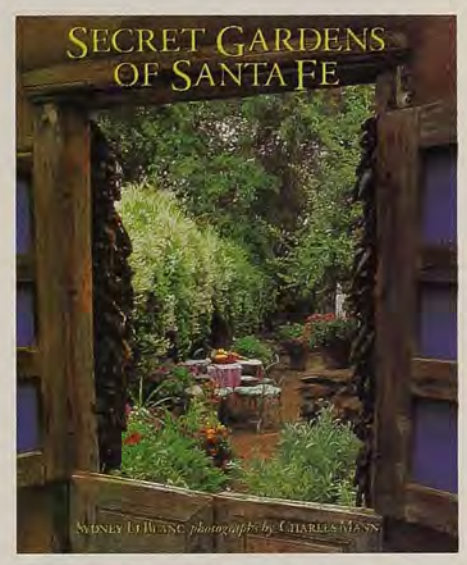
CACTI: THE ILLUSTRATED DICTIONARY

Rod and Ken Preston-Mafham. Timber Press, Inc., Portland, Oregon, 1991. 224 pages. Publisher's price: softcover, $24.95. AHS member price: $22.45. **TIM 114**

SUCCULENTS: THE ILLUSTRATED DICTIONARY

Maurizio Sajeva. Timber Press, Inc., Portland, Oregon, 1994. 240 pages. Publisher's price: hardcover, $39.95; softcover, $29.95. AHS member price: hardcover, $35.95; softcover, $26.95. **TIM 072**

Both cacti and succulents are of increasing interest to gardeners, plant collectors, and botanically minded tourists. These two fully illustrated volumes are important additions to a complete garden library. Each contains more than 1,000 color photographs.



SECRET GARDENS OF SANTA FE

Sydney LeBlanc. Rizzoli International Publications, New York, 1997. 192 pages. Publisher's price: hardcover, $45. AHS member price: $40.50. **RIZ 003**

Going behind garden walls, this book provides an intimate peek at the most beautiful public and private gardens in New Mexico's capital. It captures horticultural and architectural details with stunning photographs, while the author highlights the creative and adventurous spirit of gardeners in this multicultural desert environment. Sumptuously illustrated with 162 color photographs by Charles Mann.

GARDEN CD-ROM

MICHAEL A. DIRR'S PHOTO-LIBRARY OF WOODY LANDSCAPE PLANTS

Michael A. Dirr. PlantAmerica, 1997. Publisher's price: four-CD set, $149.95. AHS member price: $134.95. **PAM 001**

For Dirr fans, this is the ultimate companion to the University of Georgia horticulture professor's epic *Manual of Woody Landscape Plants*—four CD-ROMS packed with 7,600 color images of Dirr's favorite woody plants. This photographic masterpiece is a must-have for garden designers, horticulture students, and anyone who likes to grow a wide variety of trees and shrubs. The perfect gift for the plant-lover in your life. Minimum system requirements: IBM-compatible 386DX/2, 66 MHz, with at least 8MB RAM. Microsoft Windows 3.1. VGA graphics with 1MB video RAM, 256 colors, and 640X480 resolution. Double-spin CD-ROM drive.

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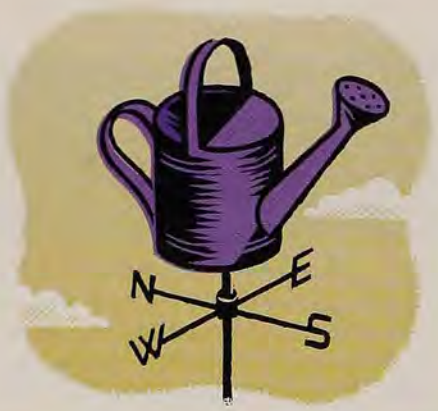

regional happenings

a look at what's happening around the nation

Great Plants for the Great Plains

The Nebraska Statewide Arboretum is celebrating its 20th anniversary this year with a new program intended to publicize and introduce plants that will stand up to the rigors of gardening in the Great Plains. The GreatPlants program, in cooperation with the Nebraska Nursery and Landscape Association, will annually recognize tough and attractive plants that participants consider underused.

Plants of the Year for 1998 are: Tree of the Year, the hybrid serviceberry *(Amelanchier ×grandiflora)*, which is said to flower more heavily than either of its native parent species; Shrub of the Year, black chokeberry *(Aronia melanocarpa)*, which can tolerate both wet and dry soil, turning burgundy in fall with purple-black berries; and Perennial of the Year, little bluestem *(Schizachyrium scoparium)*, a prairie grass that becomes delicate shades of orange in winter.

COURTESY OF NEBRASKA STATEWIDE ARBORETUM

Clematis fremontii **is a bushy species perfect for Plains gardeners.**

Another goal of GreatPlants is to introduce plants into commercial production, and to select and name ornamental cultivars. Two plants to be introduced in the next

MID-ATLANTIC

JAN. 12-16 ■ Landscape Integrated Pest Management Short Course. Plant Sciences Building, University of Maryland, College Park, Maryland. (301) 405-3913.
FEB. 19-22 ■ Maymont Flower and Garden Show. Richmond Centre, Richmond, Virginia. (804) 358-7166.
MAR. 6-8 ■ Maryland Home and Flower Show. Maryland State Fairgrounds, Timonium, Maryland. (410) 863-1180.

NORTH CENTRAL

THROUGH FEB. 15 ■ Perugino's Italianate Garden. Floral exhibition. Frederik Meijer Gardens, Grand Rapids, Michigan. (616) 957-1580.
JAN. 16-18 ■ St. Louis Flower Show. America's Center, St. Louis, Missouri. (314) 569-3117.
JAN. 18 ■ Shrubs for Your Mixed Border. Lecture. Chicago Botanic Garden, Glencoe, Illinois. (847) 835-8264.
JAN. 21 ■ Tropical Forests: What Do We Have to Lose? Lecture. Olbrich Botanical Gardens, Madison, Wisconsin. (608) 246-4551.
JAN. 28 ■ Landscape and Home: A Sense of Place in Wisconsin. Lecture. Olbrich Botanical Gardens, Madison, Wisconsin. (608) 246-4551.
JAN. 29-FEB. 1 ■ Spring Home and Garden Show. Novi Expo Center, Novi, Michigan. (248) 737-4478.
FEB. 7-15 ■ National Home and Garden Show. International Exposition Center, Cleveland, Ohio. (800) 600-0307.
FEB. 15 ■ A Year of Roses. Lecture. Chicago Botanic Garden, Glencoe, Illinois. (847) 835-8264.
MAR. 1-3 ■ Tree City USA National Conference. Lied Conference Center, Nebraska City, Nebraska. (402) 474-5655.

NORTHEAST

JAN. 7 & 8 ■ Finding Your Niche: Creating and Marketing Natural Landscapes. Symposium. Villanova University, Villanova, Pennsylvania. (215) 247-5777 ext. 156.
JAN. 10 & 11 ■ Finding Your Niche: Creating and Marketing Natural Landscapes. Symposium. Connecticut College, New London, Connecticut. (215) 247-5777 ext. 156.
JAN. 12 & 13 ■ Design of Greenhouse Systems and Environmental Control. Class. Cook College, New Brunswick, New Jersey. (732) 932-8451.
JAN. 20-FEB. 3 ■ Two-Week Intensive Course for Landscape Contractors. New York Botanical Garden, Bronx, New York. (718) 817-8747.
JAN. 24-APR. 3 ■ Welcome Spring Display. Longwood Gardens, Kennett Square, Pennsylvania. (610) 388-1000.
JAN. 27 ■ Demystifying Botanical Latin. Class. The Horticultural Society of New York, New York City. (212) 757-0915.
FEB. 7 ■ Winter Walk With Weber. Rhode Island Wild Plant Society. Coventry, Rhode Island. (401) 783-5895.
FEB. 10, 17, & 24 ■ Designs of the Times. Floral design workshop. Brooklyn Botanic Garden, Brooklyn, New York. (718) 622-4433 ext. 276 or 216.
FEB. 10-22 ■ The Dutch Connection: George Eastman's Conservatory in Winter Bloom. Exhibit. George Eastman House, Rochester, New York. (716) 271-3361.
FEB. 21 ■ Fragrant Pelargoniums. Lecture. The Horticultural Society of New York, New York City. (212) 757-0915.
FEB. 21 ■ Information Session. Conway School of Landscape Design, Conway, Massachusetts. (413) 369-4044.
FEB. 28, MAR. 7, & 21 ■ Landscaping a Brownstone Garden. Class. Brooklyn Botanic Garden, Brooklyn, New York. (718) 622-4433 ext. 276 or 216.
MAR. 1-8 ■ Philadelphia Flower Show. Pennsylvania Convention Center, Philadelphia, Pennsylvania. (215) 988-8899 or www.libertynet.org/~phs.

NORTHWEST

JAN. 22 ■ Garden Paths, Woods. Lectures. Northwest Horticultural Society,

year or two include Fremont's clematis *(Clematis fremontii)*, a bushy species native to north central Kansas and a small area in south central Nebraska, and dwarf chinquapin oak *(Quercus prinoides)*, a 12-foot-tall species native from Kansas and Nebraska to New York. In addition, GreatPlants is developing a selection of Fendler's aster *(Aster fendleri)* with white flowers and glossy green foliage.

Morton Director Heads AABGA

For Morton Arboretum in Lisle, Illinois, which celebrated its 75th anniversary in 1997, the year brought bad news and good news. In July, a severe storm destroyed about 200 trees and damaged 150 others. The arboretum lost 28 oaks, including some that were 250 years old. Employees were working weekends and 10-hour days to prune damaged trees and to relandscape some areas, such as a shade garden that the storm opened to full sun. The cleanup was expected to continue until early 1998, but all areas of the arboretum remained open to the public.

This fall Morton's executive director, Gerard T. Donnelly, moved up from vice president to assume the presidency of the American Association of Botanical Gardens and Arboreta. The AABGA is a 2,000-member national organization that represents some 420 North American public gardens. Presidents serve two-year terms.

Donnelly was formerly curator of the W.J. Beal Botanical Garden and of campus woody plants at Michigan State University, where he was also an assistant professor in the Department of Botany and Plant Pathology.

Seattle, Washington. (206) 325-4510.
FEB. 4-8 ■ Northwest Flower and Garden Show. Washington State Convention and Trade Center, Seattle, Washington. (206) 789-5333.
FEB. 24 ■ Building With Trees: Saving Trees at Construction Sites. Workshop. National Arbor Day Foundation. Portland, Oregon. (402) 474-5655.

SOUTH CENTRAL

JAN. 14 ■ Gardening in the South. Nancy Stallworth Thomas Horticulture Lecture. Houston Museum of Natural Science, Houston, Texas. (713) 626-7908.
JAN. 15 ■ Building With Trees: Saving Trees at Construction Sites. Workshop. National Arbor Day Foundation. Dallas, Texas. (402) 474-5655.
MAR. 5-8 ■ Wichita Lawn, Flower, and Garden Show. Century II, Wichita, Kansas. (316) 721-8740.

SOUTHEAST

JAN. 10 ■ Tampa Bay Area Camellia Society Show and Plant Sale. Florida State Fair Grounds, Horticulture Building, Tampa, Florida. (813) 681-2139.
JAN. 24 & 25 ■ Camellia Promenade and Plant Sale. Garden Club, Lakeland, Florida. (941) 644-5652.
JAN. 29 ■ Alston Lecture Series, featuring Stephen Lacey. Atlanta Botanical Garden, Atlanta, Georgia. (404) 876-5859.
FEB. 5-16 ■ Florida State Fair, including a judged camellia show on Feb. 7. Florida State Fair Grounds, Tampa, Florida. (813) 681-2139.
FEB. 7 ■ 12th Annual Perennial Symposium. Atlanta Botanical Garden, Atlanta, Georgia. (404) 876-5859 ext. 226.
FEB. 18-22 ■ Southeastern Flower Show. City Hall East Exhibition Center, Atlanta, Georgia. (404) 888-5638
FEB. 20-22 ■ Palm Beach Tropical Flower and Garden Show. Flagler Drive, West Palm Beach, Florida. (561) 655-5522.
FEB. 27-MAR. 1 ■ African Violet Society of America Judged Show and Sale. Eastlake Square Mall, Tampa, Florida. (813) 681-1910.
MAR. 3 & 4 ■ Pushing the Boundaries: Expanding Our Design and Plant Palette. Horticultural symposium. Davidson College, Davidson, North Carolina. (704) 892-3665.
MAR. 5-8 ■ Nashville Lawn and Garden Show. Tennessee State Fairgrounds, Nashville, Tennessee. (615) 352-3863.
MAR. 7 ■ Sixth Annual Hellebore Day. Piccadilly Farm, Bishop, Georgia. (706) 769-6516.

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I certify that all information furnished above is true and complete.
—Kathleen Fisher, Editor

Lobelia Struggles Back on Kauai

An extremely rare Hawaiian lobelia, *Cyanea kuhihewa,* has fought its way back from an environmental upset that occurred as a result of Hurricane Iniki in 1992. The hurricane paved the way for the rampant spread of *Clidemia hirta,* a noxious alien weed known as Koster's curse, which threatened to smother the only known colony of the lobelia at the Limahuli Preserve on Kauai.

This summer, National Tropical Botanical Garden (NTBG) staff found two of the plants with immature fruit—one with more than 100 flowers—in the remote upper reaches of the preserve. Fruit from these plants was sent to Lyon Arboretum in Honolulu, where the species will be propagated using state-of-the-art embryo culture techniques.

The Limahuli Garden, which is adjacent to the preserve, received the AHS Natural Botanical Garden Award last year. It is one of five gardens—four in Hawaii and one in Florida—operated by the NTBG.

This month Paul Alan Cox, formerly dean and professor of botany at Brigham Young University, became NTBG's director and chief executive officer. Cox was the subject of a documentary film for his work in saving tropical rain forests in Samoa and has traveled throughout Polynesia researching medicinal uses of plants. He succeeds William Klein Jr., who died last February.

SOUTHWEST

FEB. 14-22 ■ Colorado Garden and Home Show. Colorado Convention Center, Denver, Colorado. (800) 786-7469 or www.gardeningcolorado.com.

WEST COAST

JAN. 16-MAR. 6 ■ Ikebana Workshop. The Arboretum of Los Angeles County, Arcadia, California. (626) 447-8207.

JAN. 17 ■ Secrets for Starting Plants. Workshop. Lake House, Descanso Gardens, La Cañada Flintridge, California. (818) 952-4401.

Fire Damages Callaway

The Sibley Horticultural Center at Callaway Gardens in Pine Mountain, Georgia, was severely damaged September 23 by a fire that raced through the center's business offices, production workshop, storage areas, and lobby.

While no horticultural display areas were affected, the gardens lost horticultural books, bloom records from the 1960s, original records pertaining to their famous azalea display, Wildflower Trail planting notes from co-founder Virginia Callaway, and garden maps from the 1950s. Callaway's first priority is to re-open the production areas.

JAN. 21-24 ■ Ecological Farming Conference. Asilomar Conference Center, Pacific Grove, California. (408) 763-2111.

JAN. 24 ■ Tree-Pruning Workshop. Mendocino Coast Botanical Gardens, Fort Bragg, California. (707) 964-4352.

JAN. 31 & FEB. 1 ■ Camellia Show. Van de Kamp Hall, Descanso Gardens, La Cañada Flintridge, California. (818) 952-4401.

FEB. 5 ■ Camellias Around the World: Their Use and Culture. Lecture. The Huntington, San Marino, California. (626) 405-2140.

FEB. 14 & 15 ■ 26th Annual Camellia Show. The Huntington, San Marino, California. (626) 405-2141.

FEB. 18-20 OR FEB. 23-25 ■ University of California at Davis Weed Science School. University of California at Davis, California. (916) 752-0612.

FEB. 20 ■ Fifty Years of Plants and People. Dinner to celebrate the 50th anniversary of the California Arboretum Foundation. Arcadia, California. (626) 447-8207.

MAR. 6-8 ■ Biointensive Sustainable Mini-Farming Workshop. Ecology Action. Willits, California. (707) 459-0150.

CANADA

FEB. 6 & 7 ■ Niagara Parks Commission School of Horticulture Educational Conference. White Oaks Inn and Racquet Club, Niagara Falls, Ontario. (905) 562-0244.

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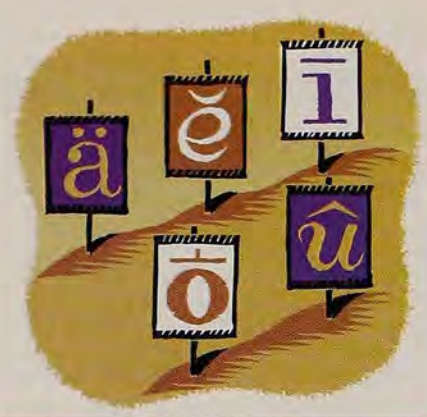


pronunciations

a simple speaking guide to plants found in this issue

×Amarcrinum memoria–corsii
×am-ar-CRY-num
mem-or-ree-uh–KOR-see-eye
Amelanchier ×grandiflora
am-eh-LANG-kyer
×gran-dih-FLOR-uh
Amsonia tabernaemontana
am-SO-nee-uh
tab-ur-nee-mon-TAN-uh
Andropogon ternarius
an-dro-PO-gon tur-NAR-ee-us
Aronia melanocarpa
uh-RO-nee-uh mel-an-o-KAR-puh
Artemisia stelleriana
ar-teh-MEEZ-yuh steh-leh-ree-AN-uh
Brahea brandegeei
BRAY-hee-uh bran-DEE-gee-eye
Carpinus caroliniana
kar-PIE-nus kar-o-lin-ee-AY-nuh
Chamaedorea elegans
kam-ee-DOR-ee-uh EL-ih-ganz
Chrysogonum virginianum
kry-SOG-on-um
vur-jin-ee-AN-um
Cladrastis kentukea
kla-DRAS-tis ken-TUK-ee-uh
Coreopsis auriculata
kor-ee-OP-sis aw-rik-yew-LAY-tuh
Corylus avellana
KOR-ih-lus ah-vel-LAN-uh
Cyanea kuhihewa
sigh-AN-ee-uh koo-hee-HAY-wah
Dioscorea batatas
dy-os-KOR-ee-uh buh-TAH-tus
Dracaena draco
druh-SEE-nuh DRAY-ko
Eragrostis spectabilis
air-uh-GROS-tiss
spek-TAH-bih-liss
Erigeron pulchellus
ee-RIJ-ur-on pul-KEL-us
Gazania linearis
guh-ZAY-nee-uh lin-ee-YAR-iss
Gelsemium sempervirens
jel-SEE-me-um sem-pur-VY-renz
Heliconia angusta
hel-ih-KOHN-yuh ang-GUS-tuh
H. bihai
H. BEE-high
H. caribaea
H. kar-ih-BEE-uh
H. champneiana
H. champ-nee-AN-uh
H. latispatha
H. lat-is-PATH-uh
H. ×nickeriensis
H. × nick-ur-ee-EN-siss
H. ×pabstsi
H. × PABST-zy
H. psittacorum
H. sit-uh-KOR-um
H. ×rauliniana
H. × row-lin-ee-AN-uh
H. schiedeana
H. shee-dee-AN-uh
H. spissa
H. SPIH-suh
H. subulata
H. sub-yew-LAY-tuh
H. wagneriana
H. wag-nur-ee-AN-uh
Hieracium venosum
hi-ur-AY-see-um veh-NO-sum
Howea forsteriana
HOW-ee-uh for-stur-ee-AN-uh
Hymenocallis caroliniana
hy-men-o-CAL-lis kair-o-lin-ee-AN-uh
H. liriosome
H. leer-ee-O-so-me
Iris dichotoma
EYE-ris dy-KOT-o-muh
Jacaranda mimosifolia
jak-uh-RAN-duh
mih-mo-sih-FO-lee-uh
Jeffersonia diphylla
jef-ur-SO-nee-uh dy-FIL-uh
J. dubia
J. DOO-be-uh
Lathyrus odoratus
LATH-ih-rus o-doh-RAY-tus
Nectaroscordum siculum
nek-tar-o-SKOR-dum SIK-yew-lum
Neomarica longifolia
nee-o-MAR-ih-kuh lon-jih-FO-lee-uh
Nicandra physalodes
nih-KAN-druh fy-suh-LO-deez
Nicotiana suaveolens
nih-ko-SHEE-an-uh swa-vee-O-lenz
Papaver nudicaule
puh-PAH-vur noo-dih-KAW-lee
Quercus prinoides
KWER-kus prih-NOY-deez
Rhynchospora latifolia
rin-KOS-por-uh lat-ih-FO-lee-uh
Romneya coulteri
rom-NEE-yuh KOOL-tur-eye
Sarracenia flava
sah-ruh-SEEN-yuh FLAY-vuh
S. psittacina
S. sit-uh-SEEN-uh
Schisandra chinensis
skih-SAN-druh chy-NEN-siss
Schizachyrium scoparium
skits-ah-KEER-ee-um sko-PAR-ee-um
Strelitzia reginae
streh-LIT-zee-uh reh-JEE-nay
Syagrus romanzoffiana
sigh-AY-grus rom-an-zof-ee-AN-uh
Tipuana tipu
tip-yew-AN-uh TIP-yew
Trillium catesbaei
TRIL-ee-um kayts-BEE-eye
T. cuneatum
T. koo-nee-AY-tum
Zephyranthes candida
zef-ih-RAN-theez KAN-dih-duh
Z. flavissima
Z. fluh-VISS-ih-muh

What's in a Name: *Erigeron pulchellus*

Commonly known as Robin's-plantain, *Erigeron pulchellus* is one of about 200 members of a genus of herbaceous plants with daisylike flowers. The genus—part of Compositae, or the daisy family—is native to North America, but many species are naturalized in temperate areas around the world. Some members of the genus are called fleabanes, apparently because they were once burned to repel pests such as flies, gnats, and fleas.

The genus name is derived from the Greek words for "early" and "old man," either because the early spring flowers resemble a gray-haired old man, if you believe Dioscorides, or more likely because the plants bear fluffy white seed heads. The specific epithet—*pulchellus*—of Robin's-plantain is the diminutive form of the Latin word for "pretty."

Native to much of the eastern and central United States, *E. pulchellus* is a biennial or short-lived perennial with prominent hairs on its stems and predominantly basal foliage. It grows to about two feet and has pale blue, white, or pink flowers.

hardiness and heat zones

a guide to USDA and AHS zones for plants found in this issue

Plants featured in this edition of the magazine are listed with their USDA Plant Hardiness Zones and AHS Heat Zones. Tropical plants that require minimum temperatures warmer than 40 degrees Fahrenheit—the minimum temperature in USDA Zone 11—are listed by minimum average temperature rather than a zone number.

A–C

Alcea rosea USDA 3–9, AHS 9–1
×Amarcrinum memoria-corsii 8–11, 12–8
Amelanchier ×grandiflora 4–9, 8–4
Amsonia tabernaemontana 3–9, 9–5
Andropogon ternarius 4–9, 9–2
A. virginicus 5–9, 9–3
Aronia melanocarpa 4–9, 8–3
Artemesia stelleriana 3–7, 7–1
Aster fendleri 5–8, 8–3
Baptisia australis var. *minor* 3–9, 9–2
Brahea brandegeei 41°–59°, 12–9
Campanula cochleariifolia 5–7, 9–2
Campsis radicans 5–9, 9–2
Carpinus caroliniana 3–9, 9–1
Ceanothus cyaneus 8–9, 9–2
Cedrus deodara 5–9, 9–2
Chamaedorea elegans 61°, 12–10
Chasmanthium latifolium 5–9, 9–2
Chrysogonum virginianum 5–8, 8–3
Cladrastis kentukea 4–9, 9–2
Clematis fremontii 4–8, 8–3
Coreopsis auriculata 'Nana' 4–9, 9–2
Cornus florida 5–8, 10–3
C. kousa 5–8, 10–3
Corylus americana 4–9, 9–1
C. avellana 3–9, 9–1
Crinum 'Ellen Bosanquet' 8–11, 12–9
C. 'Milk and Wine' 8–11, 12–9

D–G

Daphne jasminea 7–9, 9–3
Delphinium grandiflorum 4–7, 7–1
Dianthus 'Allwoodii' 5–8, 8–1
Dioscorea batatas 6–11, 12–9
Disa uniflora 41°, 4–1
Dracaena draco 55°, 12–9
Eragrostis spectabilis 9–11, 12–9
Erigeron pulchellus 4–8, 8–3
Eschscholzia californica 6–9, 9–2
Euonymus americanus 4–10, 10–4
Fremontodendron mexicanum 9–11, 12–8
Gelsemium sempervirens 7–9, 9–3
Gazania linearis 8–11, 12–7

H–J

Habranthus robustus 9–11, 12–9
Heliconia spp. 45°–60°, 12–11
Most heliconias will only grow happily in areas where temperatures rarely drop below 60 degrees Fahrenheit. A few species, such as H. ×nickeriensis, H. nutans, H. schiedeana, H. spissa, *and* H. subulata, *may tolerate brief periods at around 40 degrees, or even grow back from their roots after a frost if well mulched.*

Hieracium venosum 3–8, 9–3
Howea forsteriana 59°, 12–10
Humulus japonicus 'Variegatus' 4–8, 8–3
Hymenocallis caroliniana 6–9, 9–7
H. liriosome 8–11, 12–7
Ipomoea alba 45°, 12–4
Iris cristata 4–8, 8–1
I. dichotoma 3–9, 9–1
Koelreuteria paniculata 6–8, 8–5
Jacaranda mimosifolia 41°–45°, 12–9
Jeffersonia diphylla 5–7, 8–4
J. dubia 5–8, 8–3

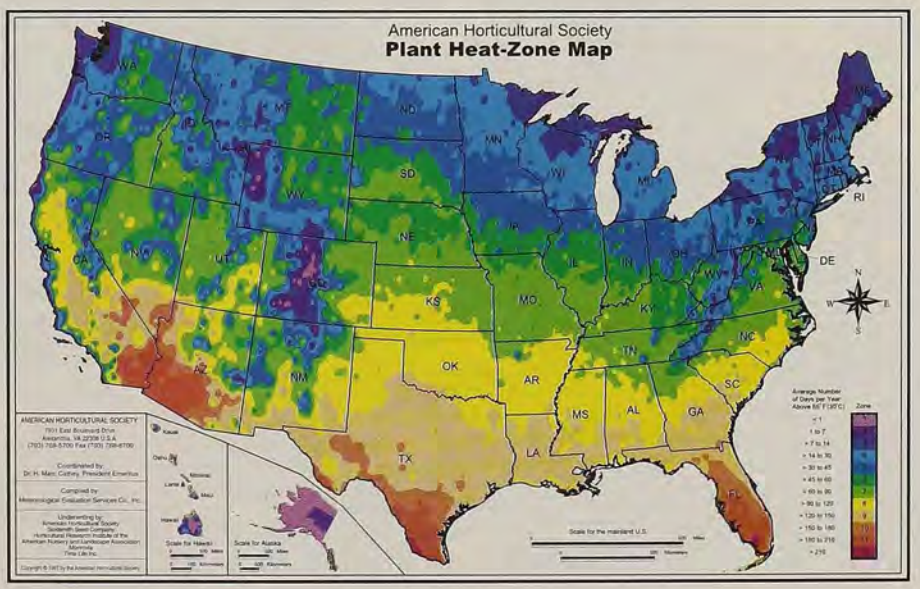
L–O

Lathyrus odoratus 11, 7–1
Matricaria matricarioides 4–9, 9–1
Nectaroscordum siculum 6–11, 12–7
Neomarica longifolia 50°, 12–10
Nicandra physalodes 11, 12–7
Nicotiana alata 10–11, 12–2
N. suaveolens 10–11, 12–2
N. sylvestris 10–11, 12–2
Origanum acutidens 7–9, 9–4

P–Z

Papaver nudicaule 2–8, 8–4
Prunus angustifolia 5–9, 9–1
Quercus georgiana 6–8, 8–4
Q. prinoides 7–9, 9–1
Rehmannia elata 9–11, 12–9
Rhododendron canescens 7–9, 9–4
Rhynchospora latifolia 8–11, 12–7
Ribes speciosum 7–9, 9–1
Romneya coulteri 7–8, 7–2
Rosa xanthina 5–9, 9–3
Sarracenia flava 7–11, 12–7
S. psittacina 8–11, 12–8
S.purpurea 2–8, 8–2
Schisandra chinensis 5–9, 9–3
Schizachyrium scoparium 5–9, 9–3
Senecio aureus 4–8, 12–7
Stephanotis floribunda 59°, 12–9
Strelitzia reginae 50°, 12–10
Syagrus romanzoffiana 55°, 12–10
Tiarella cordifolia 3–7, 8–4
Tipuana tipu 45°–50°, 12–10
Trillium catesbaei 7–8, 9–7
T. cuneatum 6–9, 9–5
Vaccinium arboreum 6–8, 8–3
Zephyranthes candida 8–11, 12–9
Z. flavissima 9–11, 12–10

The codes above are based on a number of commonly available references. Individual gardeners' experiences will vary, and we welcome input in regard to the codes' accuracy. To purchase a durable, two-by-three-foot poster of the AHS Heat-Zone Map, call (800) 777-7931 ext. 45.



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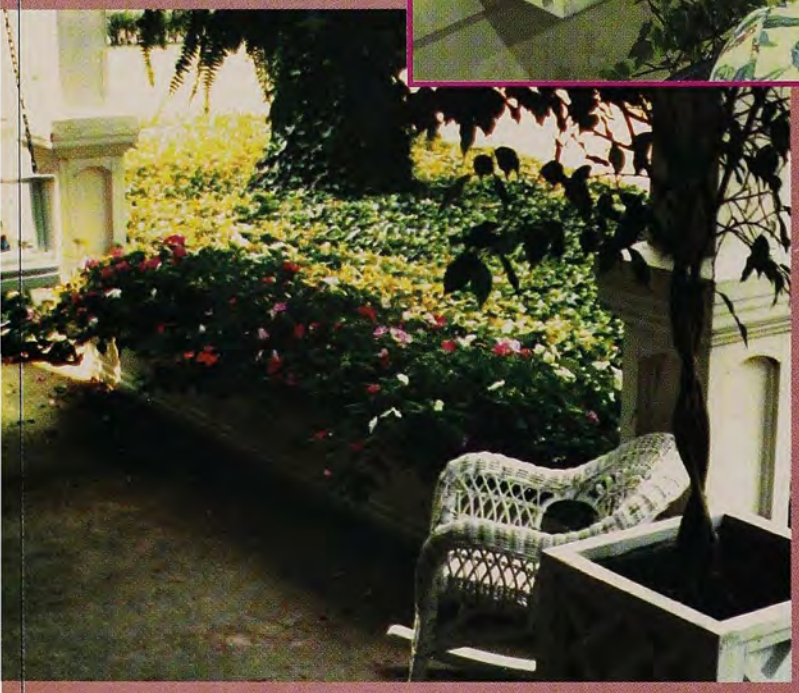

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