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THE AMERICAN GARDENER

A Publication of the American Horticultural Society

March/April 1998 \$3.95



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Volume 77, Number 2

March/April 1998



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Benny Simpson was admired by fellow Texans both for his knowledge of the state's plants and his eagerness to share it.



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by Richard E. Bir

Native azaleas are adaptable, fragrant, colorful, graceful—and rarely seen in gardens.

On the cover: *Lilium regale*, a native of China, began appearing in our gardens after planthunter E.H. Wilson sent bulbs to Arnold Arboretum in 1908. Lilies were among the first non-native plants brought to our shores by settlers at least 350 years ago. Among the oldest species recorded is the Madonna lily, *L. candidum*, dating back to 1300 B.C. On page 40, Susan Davis Price begins a two-part series on the influence of immigrants on American gardens.

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members' forum



CENTURY PLANT

We had a big (literally) event in our cactus-planted front yard this summer. One of our century plants (*Agave* sp.) put up a tall stalk and flowered. The leaves at the bottom of the plant were taller than I (I am five-foot-eight) and above the leaves the flower spike rose 13 to 14 feet.

Apart from the excitement of such a happening on our property, we were fascinated by the fact that the conformation of the stalk is an exact replica of an asparagus spear. I find no botanical relationship between a century plant and asparagus!

Our garden includes several kinds of cacti—two or three types of prickly pear, including cow tongues, all of which are equipped with spines that, I swear, jump out and embed themselves in our arms and legs as we go by. Their flowers range in color from cream to bright yellow. We have a cholla that bears beautiful purple red flowers and is reminiscent of a monkey puzzle tree covered with particularly nasty spines. Birds like to nest in it.

Before we planted our front yard with cacti we thought they would be slow growing and trouble free. While they are easy on the water bill, they all need pruning several times a year, or we would have an impenetrable cactus forest.

Cacti are no respecters of gardening gloves, and have to be tackled with saw and

tongs—the latter to pick up pieces from the smaller cacti.

The leaves of the century plants have to be manhandled into the wheelbarrow, which becomes extremely heavy and is filled and emptied many times before we're done. The century plants are pruned from the bottom up, resulting in something resembling a giant pineapple. The tip of each leaf has a lethal spine, which can pierce the skin and leave behind a wound that aches unpleasantly. After the century plant bloomed and died, as they always do, it took two men with rope and a tractor to haul it away.

*Enid M. McClintock
Alamogordo, New Mexico*

Century plant and asparagus are in fact in the same order, Asparagales. Mrs. McClintock tells us she didn't really submit a favorite plant story as much as she "just felt the urge to write!" We're glad she did, and since she sent us a photograph of herself as well, she wins her choice of the 1997 AHS Book Award winners. Write us a short essay about your favorite plant, and be sure to include a photo of yourself in your garden.

HIDDEN TREASURES

How about a poll of members to assemble a treasure-trove of relatively unknown or underappreciated "neat things to see"?

Did you know that Rockford, Illinois, has Anderson Gardens, designed in Japanese style at huge expense? Where is mention of the Klehm Arboretum and Botanical Gardens in Rockford? It's outstanding, and certainly worth a stop if you're in the area.

Froellinger-Freimann Botanic Conservatory in Fort Wayne, Indiana? Even sources in our own state don't list it. And I found a neat little nursery in Warsaw, Indiana, through a Bonsai Club member.

You get the idea: a cornucopia of readers' favorite little out-of-the-way spots. Don't leave out the herb nursery in Shipshewanna, Indiana.

Roderick N. Schueler
Fort Wayne, Indiana

We like the idea! Members, give us details about why your public garden or nursery is special, and include a phone number so we can call them for more information.

Anderson Gardens were built by Rockford industrialist John Anderson beginning in 1978 after he visited Washington Park Gardens in Portland, Oregon, during a lay-over on a business trip. In 1988 the five-acre gardens received the American Association of Nurserymen National Landscape Award and the Associated Landscape Contractors of America Environmental Improvement Grand Award. The gardens began offering tours in 1984, and in 1997 opened to the public seven days a week. This year's season begins May 1. For more information contact Debra Lindley, tour coordinator, Anderson Gardens, 2214 Stoneridge Drive, Rockford, IL 61107, (815) 877-2525, or fax (815) 877-1525.

WE WERE ZONING

In "A Sensuous Delight" (November/December), about the Reed garden in Florida, surely the USDA Zone 10 plants that the Reeds saw in Beijing were not growing outdoors. At about 40 degrees north latitude, approximately that of Philadelphia, they were either in a greenhouse, which is unlikely, or seen in Hong Kong.

The trees and shrubs I saw in and around Beijing were of the Zone 5 or 6 category. The commonest street trees were *Sophora japonica* and *Robinia pseudoacacia*. What was interesting to me were the groves of *Diospyros kaki*, which I cannot grow here in Zone 6b Connecticut.

The article and photos by Ken Druse were awesome, as usual. I had the honor of having my garden photographed for his *Collectors Garden*. P.S. Your magazine gets better with each issue.

Nickolas Nickou
Branford, Connecticut

Jim Reed responds: *The comment that we admired the royal poinciana tree in Beijing was off the mark. It was at the Hong Kong Botanical Garden, where it is known as "flame of the forest"—also the common name of Butea monosperma. Thanks to your staff, I now know that the tree I purchased as B. monosperma is really an Erythrina, although we aren't sure which species.*

GALLE'S AZALEAS

In your article about Fred Galle ("The Gifted Mr. Galle," November/December)



'Choice Cream'

you mention that he has introduced two azaleas that are still available, 'Choice Cream' and 'Galle's Choice'. Do you know a source for them?
Sallee Ebersole
Alexandria, Virginia

You can order them from Greer Gardens, 1280 Goodpasture Island Road, Eugene, OR 97401-1794, (541) 686-8266. Their catalog is \$3.

STEELE, STILL

In your list of "75 Great American Garden Books" (September/October), you list *Fletcher Steele: Landscape Architect* by Robin Karson as being published by Abrams and being out of print. Both statements are incorrect.

The book was published by Sagapress, with distribution by Abrams to the trade only, and by Timber Press to the general public through their direct mail catalog. It has never been out of print. Abrams ceased to distribute it in 1996, at which point the full distribution of trade and retail sales was assumed by Timber. Ngaere Macray
Sagaponack, New York

Ms. Macray is publisher of Sagapress. AHS members can order *Fletcher Steele: Landscape Architect* at our discounted price of \$44.95. The book code is TIM 119. See page 64 for ordering information.

THE AMERICAN GARDENER

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A GRIPE AGAINST MUMS

It seems in October that chrysanthemums are starting to be used like plastic flags stuck in the ground on Flag Day, or removable prom decorations in a gym, or wreaths. Chrysanthemums are not like any of those disposable things. They're plants, perennial everywhere I've ever lived. Why, then, do they spring from the backs of trucks and stations wagons, perfectly uniformly flowered at a time coincident with the very first turning of the very first autumn leaf—and get stuck in places in ways in which they don't look like they've grown at all?

I've got nothing against the mums themselves, but I think people who want them in the fall should have to think ahead and plant them in the spring. Then, by October, mums would look the way other plants do, with differing shapes from differing angles of sun, and individual gardeners' pruning and pinchings-back. They might even wander a little, be leggy, imperfect. Not like the mums I see these days in pots and window boxes and jammed into shallow holes on the edges of lawns. These mums are items, not living things.

And why are mums so ghettoized? They're not the only plant that flowers in October. Today, on a walk up to the avenue for bagels, milk, Chapstick, and gum, I passed a standout garden where purple asters blossomed in profusion. These complemented a spreading clump of light mauve chrysanthemums, which had actually spent the summer there, beside the asters, getting ready together. There was purple salvia in this garden also, and nasturtiums, and a stand of staked-up dahlias far from past their prime. Sure, mums are nice, or can be, but they don't do much for me in isolation.

Where do all these mums end up? If all the mums I've seen in past Octobers really lived the lives of proper perennials, my neighborhood would now be chock-a-block with chrysanthemums year round. We'd have mum build-up. But I suspect people throw them in, then yank them out. Why shouldn't they? When fall comes around again, they can just buy more, like tortilla chips.

It's time we end this. Just treat your mums like my own "mum" treats hers. Last October, on Long Island, she pointed out a line of white, daisy-style mums standing up and lying down and toppling over in the sun that strikes the side of her garage all afternoon. Being real mums, hers were not yet in perfect, uniform bloom, but they were "showing." "Those are from my wedding," she said proudly. My mother's 73!

Nancy Anderson
 Philadelphia, Pennsylvania

SINGLE MUMS

I enjoyed "Remodeling the Mum" (September/October) about the efforts of the University of Minnesota mum breeding program. I love the mums shown in the photo on the first page of the article; I prefer single mums to the doubles shown later. Is there some way to discover the name of the mum in the photo?

Eric Bina
 Champaign, Illinois

Unfortunately, the mum in the photo was being field tested and was never named or released. You should be able to find some single pink mums on the market, however. Yoder Brothers distributes two that we've found to be quite tough as well as attractive: 'Felicia' is a light pink and very natural in form, and 'Crown Jewel' is slightly more purple. Ed Higgins, product marketing manager for Yoder brothers—who would be applauded by Nancy Anderson—says planting your mums early in the season instead of waiting till fall will help them winter over.

POSTAL EXCESS

It's obvious from some of the mail I've been receiving that AHS is selling my name. I really don't like having my mailbox cluttered with these things—and they use too many trees! What can I do about it?

A. Hubble
 Riverside, California

We occasionally rent our member list to mailers with products or services related to gardening. You can ask to have your name removed from such lists.

Members also sometimes tell us they do not wish to receive brochures for our travel/study program because they are not able to participate in the garden tours. We will also note this in our records.

Any time you have a question about membership, please write AHS, Member Services, 7931 East Boulevard Drive, Alexandria, VA 22308-1300, or call us at (800) 777-7931, ext. 10.

Correction

In the article on Prairie Moon Nursery in our September/October issue, Dave Egan's position at the University of Wisconsin-Madison Arboretum was listed incorrectly. Egan is associate editor of the journal *Restoration and Management Notes*. Also, Egan's use of plants from Prairie Moon Nursery is strictly on private landscaping contracts.

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April 17- May 31, 1998





news from ahs

INTERN APPEAL LAUNCHED

In February we mailed an appeal for contributions to support our Horticultural Intern Program, which allows young



professionals to work and train at our 25-acre River Farm headquarters. A successful appeal will enable us to add several new aspects to the existing program:

Junior Intern Program: A summer program allowing high school students to explore the horticultural field prior to making important college decisions.

Cost-of-Living Assistance: A program that will enable financially qualifying interns to meet the high cost of living expenses in the Washington, D.C. area.

Teacher Internship: A mission of our National Children's Gardening Symposia is to establish a summer internship open to teachers. These interns would research and write garden-related curricula in collaboration with the AHS staff.

Contributors receive quarterly newsletters updating the program's progress. For additional information, call Mary Ann Patterson at (800) 777-7931, extension 21.

LECTURES HIGHLIGHT HEAT MAP

Our Annual Meeting in Nashville, Tennessee, April 30 through May 2 launches the 1998 American Horticultural Society's Great American Gardener Lecture Series, which celebrates the AHS Plant Heat-Zone Map. H. Marc Cathey, president emeritus of AHS and creator of the Heat-Zone Map, will be a key speaker at the following dates and places:

May 28: Garden Club Federation of Massachusetts, Inc., Falmouth. For information call (781) 891-1360.

June 27-30: Seeley Conference, Cornell

University, Ithaca, New York. For information call (607) 255-1789.

July 12-16: Ohio Floral Short Course, Columbus, Ohio. For information call (614) 487-1117.

August 3: International Waterlily Society, Washington, DC. For information call (410) 798-0231.

EDUCATION PANEL FORMED

The American Horticultural Society has established a National Education Panel of key leaders in the field of children's gardens and gardening in order to strengthen the focus of its future National Children's Gardening Symposia.

The group, headed by Katy Moss Warner, director of horticulture and environmental initiative at Disney World and first vice chair of the AHS Board of Directors, includes Robin Moore, a landscape architect on the faculty of North Carolina State University; Jane Taylor, curator of the 4-H Children's Garden at Michigan State University; Brian E. Holley, executive director of the Cleveland Botanical Garden; Lisa Glick, education director of the Lifelab Science Program; Arabella Dane, AHS Board member; David Els, president of the National Gardening Association; and Patty Hession, director of the Center for Environmental Education. Many of the panel's members will participate in the next national symposium, July 30 through August 2 in Washington, DC.

RAULSTON LEGACY

The arboretum of North Carolina State University, recently renamed the J.C. Raulston Arboretum for its late director, has joined with the state's nursery association to launch a program to promote the use of selected ornamental plants in the Southeast.

Twelve plants made the initial list for the J.C. Raulston Selections Program, and it's expected that at least one more will be added each year. Here are the first picks:

Ardisia japonica 'Chirimen'. This spreading shrub from Asia, commonly

called marlberry, is said to be non-aggressive and useful for shady places. It has star-shaped pink and white spring flowers and red winter fruit and is hardy to USDA Zone 7b.

Campsis grandiflora 'Morning Calm'. This selection from Korea is described as less aggressive than the native trumpet vine. The three-inch coral flowers have yellow throats and bright pink veins. Zone 6.

Eleutherococcus sieboldianus 'Variegatus'. This five-leaf aralia has white leaf margins and grows about eight feet high and wide. It bears thorns that discourage deer browsing but the palm-shaped foliage gives it an airy look. Small whitish flowers in spring and summer are followed by blue-black fruit. Tolerates dry shade. Zone 4.

Gardenia augusta 'Kleim's Hardy'. The flowers on this especially cold-hardy gardenia are most profuse in May and June but appear sporadically until fall. The evergreen leaves are glossy, and it does best with some shade. Zone 7b.

Hydrangea macrophylla 'Pia'. Another shade-lover, this selection of what is commonly called the French hydrangea grows only three feet tall and bears abundant pink flowers most of the summer. Zone 6.

Ilex 'Carolina Cardinal'. This deciduous holly is a heavy producer of bird-attracting red berries. It has a spreading



habit and grows about eight feet tall. Arboretum observations indicate that it tolerates both sun and shade and wet and dry soil. Zone 5.

Ilex 'Carolina Sentinel'. This holly also tolerates a wide range of conditions, but it's an evergreen with a narrow, upright shape

COURTESY OF KATHLEEN FISHER, J. C. RAULSTON ARBORETUM.

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A GUIDE TO THE REVOLUTIONARY NEW **HEAT-ZONE MAP** BY THE AMERICAN HORTICULTURAL SOCIETY

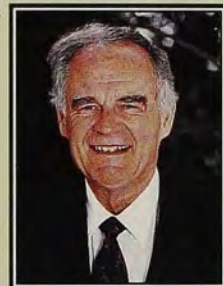
HEAT-ZONE Gardening

How to choose plants that thrive in your region's **warmest** weather

DR. H. MARC CATHEY
President Emeritus, American Horticultural Society

WITH LINDA BELLAMY

You've always known when it's too cold for a plant to survive. Now you'll know when it's too hot. The Heat-Zone Map, released just this season by the American Horticultural Society, marks a major breakthrough in U.S. gardening. And *Heat-Zone Gardening* from Time-Life Books is the only available gardener's guide that explains the map. It's packed with useful information like:



Dr. H. Marc Cathey,
President Emeritus of the
American Horticultural Society.

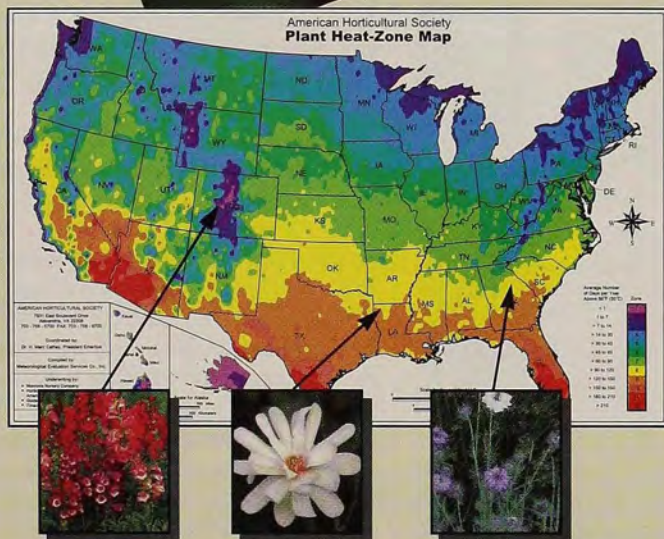
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and can reach 20 feet tall. Red berries add to its winter appeal. Zone 6.

Illicium parviflorum. The anise shrub, a native of our Southeast, has licorice-scented evergreen leaves that can grow up to 10 inches long and five inches wide if grown in sun and good soil. At maturity the shrub will range from eight to 14 feet tall. Zone 7.

Liquidambar styraciflua 'Rotundiloba'. This selection of our native sweet gum is named for its rounded leaves but celebrated because it doesn't develop the species' spiny balls. Fall color ranges from yellow to burgundy. Can grow to 60 feet tall. Zone 6.

Loropetalum chinense var. *rubrum* 'Burgundy'. The persistent foliage is wine-colored and the late spring flowers are pink. It grows 15 to 20 feet high and equally wide. Zone 7.

Viburnum awabuki 'Chindo'. Praised primarily for its glossy evergreen leaves, it grows quickly to 14 feet and tolerates sun and shade, wet and dry soils. Named for the Korean island on which it was found by Raulston. Zone 7.

TILLING MAY HARM SOIL "GLUE"

A USDA Agricultural Research Service scientist has found a fungal protein that binds soil particles together, and reports that there is less of this "glue" in tilled soils than in soil left untilled.

Sara E. Wright named the substance glomalin for Glomales, a group of fungi that secrete the protein through hairlike filaments, or hyphae. The fungi grow on the roots of plants around the world.

Wright first noticed the unusual properties of the glomalin when she put some of the fungi in an autoclave, and found that it took as much as an hour and a half to loosen the substance from the hyphae. Such tenacity had never before been observed by soil scientists, although it sometimes takes more than an hour to free proteins from yeasts.

When Wright compared soils from different parts of the country, she found that glomalin was higher in eastern soil aggregates—as much as 2 percent of the total weight—than in western and midwestern soils. This would bear out her belief that glomalin coats soil particles and binds them into aggregates, since eastern soils have more structural stability than soil elsewhere in the country.

Further research showed that soil from no-till plots had more glomalin and higher aggregate stability than soil from tilled plots, making a strong argument against tilling.

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focus march/april

natural born killers



DOZENS OF MAIL-ORDER COMPANIES SPECIALIZING IN THE SALE OF BENEFICIAL INSECTS and microbes have sprung up, seemingly overnight, to meet the demand of gardeners and farmers trying to wean themselves from chemical pesticides. These new weapons against plant pests strike a chord with gardeners because they let us outsmart insects at their own game and feel like we're helping nature take its course.

But as with other aspects of integrated pest management (IPM), using beneficials requires understanding insect life cycles—the right predator or parasite has to be applied at the right time. Some beneficials—lady beetles for example—have a spotty reputation because they are effective only under certain conditions. Here's advice from experts about some of the most commonly used beneficials. One thing they agree on is that encouraging beneficials to inhabit your garden voluntarily is far better than waiting for a pest problem to develop and then trying to control it with hired assassins. So we also offer tips on how to make your garden more attractive to the good bugs that will help keep the bad ones in check.

nematodes

by Deborah Ferber

Nematodes have been around about as long as any multicelled organism—some 500 million years. Also called roundworms and threadworms—*nema* is Greek for “thread”—they're found in both salt- and freshwater as well as throughout the planet's soils. Many people think of them primarily as damaging parasites on

our plants, in our pets, and even in humans. But some members of the phylum Nematoda, which parasitize insects, can be gardening allies. As scientists discover new species and application techniques, these microscopic denizens of the soil could play a big role in reducing the need for chemical pesticides. Options are already available to home gardeners who would like to put nematodes to work.

LIFE HISTORY

If we had a microbe's-eye-view of the nematode, we would find a translucent,

threadlike creature with well-developed nervous, digestive, muscular, and reproductive systems. Nematodes have three life phases: egg, juvenile, and adult. Juveniles may molt up to four times. In their third-stage molt, “dauer” (which means durability in German) juveniles are wrapped in the protective cuticle of their second molt and are actively seeking a host on which they can feed. Juveniles enter the host through a natural

Nematodes in their infective stage, right, are seen at left emerging from a disintegrating insect larvae.

LEFT: BIOLOGIC; RIGHT: MARYLAND COOPERATIVE EXTENSION

opening or wound. Once inside the insect, nematodes release bacteria that poison the host's blood. (Think of the nematode as a Trojan horse and the bacteria as the invading army.) Nematodes then feed on the bacteria and host tissue, molt, become adults, and reproduce within the dead host for two or three generations until the host is used up. (Not a nice way to treat a host). All commercial suppliers provide nematodes in the "dauer" or "infective" stage.

TWO KEY FAMILIES

Of the nine families within Nematoda that parasitize insects, two in particular are sought for their pest-controlling potential: Steinernematidae and Heterorhabditidae. Because of their mutually beneficial relationship with the bacteria that actually kill the host, these two families are called "entomopathogenic nematodes." Entomopathogenic nematodes have a broad range of potential hosts, kill their hosts quickly, can be cultured easily in a laboratory setting, and reproduce at a high rate. In the field they are easily applied and are safe to vertebrates, plants, earthworms, and other non-target species. Consequently, they are the focus of a great deal of new research in both laboratory and field.

Like gardeners who practice the strategy of "right plant, right place," entomologists are searching for the best nematode for each pest-control situation. Some nematodes are stalkers, for instance, and track pests by sensing their temperature, excrement, or carbon dioxide released through their breathing vents. Others lie in wait for victims to amble by.

In Washington State, researchers at the Yakima Agricultural Research Laboratory are comparing the efficacy of various nematode species against apple codling moth larvae. Lawrence Lacey, the lead scientist on the project, reports, "We didn't expect that *Steinernema carpocapsae*, a less mobile 'ambusher', would act as effectively as some of the 'cruising' species of nematodes. Hands down, *carpocapsae* is the winner in these tests."

S. carpocapsae has also proven effective against fleas, black vine beetles, fungus gnats, artichoke plume moths, cutworms, sod webworms, and root weevils. The only catch is that *S. carpocapsae* stops working when soil temperatures drop below 60 degrees.

Albert Pye, president of BioLogic, in Willow Hill, Pennsylvania, recommends *S. feltiae* for lower temperatures: "In cool conditions, *feltiae* is good to 50 degrees Fahrenheit. It is a better product for leatherjackets, which are a problem in the Northwest, and fungus gnats, which are

an indoor gardener's headache. They are also very good for flea larvae, which are found around the country." Pye says that both *S. feltiae* and *S. carpocapsae* function up to 90 degrees. In Southern regions, *S. feltiae* has successfully eliminated colonies of fire ants.

Scientists are just beginning to discover how many different nematodes there are, often native to a very limited area. Oregon State University's Entomology Department has tested 40 to 50 species collected from the Western United States. Ralph Berry and Jie Liu, entomologists at OSU's Agriculture Experimental Station, report that *Heterorhabditis marelatus*, from Seaside, Oregon, is proving effective against root weevils in strawberry, mint, and azalea, as well as against cranberry girdler, black vine beetle, and the Colorado potato beetle.

"*H. marelatus* is a more cool-temperature adapted species," says Berry, "which means it could be better for the control of root weevil larvae in the spring or fall when soil temperatures are low." Mass production techniques have to be developed before *H. marelatus* becomes available to home gardeners.

SUCCEEDING WITH NEMATODES

There are three important conditions for success in using nematodes: presence of the pest in the soil, moisture, and temperature.

Gardeners are usually most aware of pests in their adult stages, but nematodes parasitize insects in pupal or larval stages. Therefore you should learn the life stages of your enemy. If Japanese beetle is your target, for instance, give your soil a nematode treatment in the fall or spring during the grub stage, and not in the summer when the marauder is on the wing. As a general rule, it's best to apply nematodes in mid to late spring, when the soil has warmed and larvae are emerging.

In addition to warmth, nematodes like moist, dark conditions. Most references recommend watering well a day before application; keeping the soil wet after application is probably the most important requirement for success. When night temperatures are above the mid-50s, early evening applications are recommended, since ultraviolet light can kill nematodes. They're going to work best in loamy soils, which retain moisture and have space for them to move between particles.

Nematodes are packaged in sponges, gels, or a clay substrate. After being released into a bucket of water, they need to be applied within an hour (so they won't

drown) with any nozzle-type sprayer. As a general rule, they should be applied to the lawn or at the base of plants being treated. For borers in trees, you can spray the nematodes into the holes the borers create or, if you've bought the type that come on sponges, force the sponges into the holes. If they are sold packaged in peat or vermiculite, they can also be used as a mulch and lightly hoed into the ground. When planting root vegetables, try adding nematodes to the planting water.

You should see results in the form of dead pests in two or three weeks. Nematodes will persist in the soil for eight weeks and, with sufficient moisture and enough prey, many months. They generally won't winter over in sufficient numbers, so you'll want to think of applying nematodes—like spring cleaning—as an annual ritual.

Deborah Ferber is a free-lance writer living in Seattle who writes gardening, outdoor, and nature articles while it rains.

beneficials: what works and what doesn't

When it comes to which beneficial insects are useful for controlling pests in home gardens and greenhouses, opinions are mixed. Not surprisingly, the people who sell beneficials are

Sugar Rush

Some beneficial insect suppliers sell food supplements designed for lady bugs and lacewings. Usually a blend of pollen, proteins, and sugars, the mixtures provide food for these insects when nearby sources of nectar and pollen are not plentiful. According to Ken Miller, owner of The Bug Store in Argonne, Missouri, the nutrient mixes also act as a catalyst for egg-laying. "The interesting thing is that when you spray it on plants, lady bugs increase their egg-laying two to 10 times," says Miller. Supplements are available from most suppliers on the resource list (p. 16).



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generally pretty sanguine about their effectiveness. Entomologists and horticulturists unaffiliated with such companies are more critical, but even they disagree about which beneficials are most effective.

There is consensus on several points: **Purchase from a reputable company** that understands the life cycles of the beneficial insects it sells and will ship them to you at the correct time.

Buy a high-power (20X to 30X) hand lens so that you can learn to identify your pests and beneficials, many of which are almost invisible to the naked eye.

Don't think of beneficial organisms as magic bullets—most are only effective in the early stages of pest infestations.

Pesticides, even organic or less toxic types such as horticultural oils and insecticidal soaps, will kill beneficials as readily as they do pests. In cases of severe infestations of particular pests, however, experts suggest using low-toxicity pesticides to knock down pest populations enough for beneficials to be effective.

Some companies that sell beneficial insects offer packages that include several different beneficials shipped at different times of the year. Ken Miller, owner of The Bug Store in Argonne, Missouri, says his company developed its programs of timed releases after six years of research at a local estate garden. "The results were phenomenal. We have quit using pesticides there," says Miller, who is a firm believer that the best way to use beneficials is for prevention. The Bug Store's packages range in cost from \$95 to \$175 and include combinations of lacewings, *Trichogramma* wasps, nematodes, whitefly parasites, and spider mite predators.

Such programs may help properties that need restoration of beneficials because they have been subjected to heavy pesticide use over a long period, but some experts are skeptical about their general efficacy. "I don't think beneficials will do you any good until you have a pest problem," says Steven Zien, who runs an organic horticultural consulting firm in Citrus Heights, California. "They will either fly away or die if you release



Convergent ladybird beetles need careful handling. Here, one dines on aphids.

them before there are enough pests around."

Entomologists often divide beneficials into three broad groups based on how they feed on, or affect, their hosts: *predators* are species that hunt down and eat their prey—this can happen in either adult or immature stages of the organism; *parasites* complete one or more stages of their growth and

development within the body of the host, killing or consuming it in the process; *pathogens* are agents that cause disease in pests. These include what are often called beneficial microbes or microbials—bacteria, viruses, and fungi. In this article we cover predacious and parasitic beneficial arthropods—insects and arachnids—such as ladybird beetles, lacewings, and predatory mites. They are divided into "generalists," which prey on a fairly wide variety of pests, and "specialists," which prey on fairly specific host organisms.

GENERALIST PREDATORS

LADYBIRD BEETLES

Prey: Aphids, chinch bugs, many beetle larvae, thrips, whitefly, mites

Shipped: As adults, but their flightless, segmented, spotted larvae are also voracious predators. Most effective when temperatures are 61 to 82 degrees

Release: 1,000 per 300 square feet. Often shipped by volume

Use: Greenhouse or outdoors

Cost: \$4-\$6 per 1,000

The convergent ladybird beetle (*Hippodamia convergens*) is the most frequently sold variety. Commonly known as ladybugs, these predators of aphids are the most familiar and easily obtainable beneficials, and also the ones with the most checkered reputation. They need to be released at the proper stage of their life cycle and under appropriate conditions to prevent their flying away. "I wouldn't recommend anyone buy lady beetles. It's hard to get them to do what you want," says Tanya Drlik, an IPM specialist with the Bio-Integral Resource Center in Berkeley, California.

"Most people, even IPM practitioners, give ladybugs a bad name," says Zien, who claims a 90 to 95 percent success rate

using lady beetles against aphids on ornamental plants. "I swear by them," he says, "but you have to release them in the right way." Zien's technique is to place ventilated containers of lady beetles in the shade of the infested plant for three days, misting them down as needed. On the evening of the third day he mists them down again, sometimes adding a soft drink or sugar to the misting water. "It glues their wings together so they can't fly away," he says. He then opens the container and stuffs aphid-infested branches inside for the lady beetles to crawl onto. He leaves the container that way

overnight and then mists the entire plant with water before sunrise the next morning. If any lady beetles remain in the box, they are applied to another infested plant. "You have to remember ladybugs won't fly if they're wet and they won't fly at night," he says. "If you can get them to stay around for 48 hours they will begin to mate and lay eggs."

Other experts recommend releasing lady beetles in small batches at night or early in the morning, and echo Zien's advice about moisture. Lady beetles can be stored for up to three weeks in the refrigerator for such incremental release.

Attracting Beneficials

Wooing beneficials to your garden is a superior strategy to buying them. You know that all the pieces are in place, with predators at the appropriate life cycle for the season and a food supply that they find appealing. You not only have to lure them initially, however, but keep them feeling at home. If they settle down and raise a family, it's likely to be their young offspring that provide the best pest control. And studies have shown that they will lay more eggs if they are well fed.

Don't use chemicals. You already knew this, right? If you must apply pesticides, stick with less toxic ones such as *Bacillus thuringiensis*, neem, horticultural oils (preferably dormant season types), and insecticidal soaps. Synthetic fertilizers discourage insects that spend part of their life cycle in soil and can kill beneficial microbes. Fungicides are especially lethal.

Provide water. Although morning dew is often enough to keep beneficials content, consider setting out a shallow pan of water filled with rocks or pebbles to give them a safe place to drink.

Provide a haven. Beneficial beetles such as tiger, rove, and ground beetles need turf, thick mulch, stone paths, or rocks in which to hide.

Keep dust down. Beneficials are more sensitive than pests to dust in the air. In addition to making sure you don't have a lot of bare earth for the dogs and kids to kick up, consider planting a windbreak.

Be diverse and be messy. If you want a garden where nature's in balance, you don't want a tidy lawn with a couple of shrub species smashed up against the foundation. Cram in a lot of flowering plants.

Choose their favorite plants. That windbreak will serve double duty if it's composed of plants that offer beneficials nectar and pollen over a long season. As a general rule, these tiny creatures like tiny flowers—not ones that require them to crawl inside for supper. Here are some of the more effective categories:

- **Umbels.** These little flowers form umbrellalike clusters. They include dill, Queen-Anne's-lace, angelica, fennel, and yarrow.
- **Composites.** These have a center of tiny true flowers surrounded by rays, and include sunflowers, coneflowers, daisies, cosmos, and asters.
- **Spikes.** Look for plants with flowers similar to lavender, goldenrod, and hyssop.
- **Cups.** The small insects won't get trapped in the almost flat cups of evening primrose or wine cups.
- **Shrubs.** It's not just herbaceous plants that offer these little flowers. Consider clethra, caryopteris, baccharis, ceanothus, and willows.

Let vegetables and biennials flower. If you can spare a couple plants, the flowers of broccoli and radishes are particularly attractive to beneficial wasps. Carrots, parsnips, and parsley are all biennials that you can leave to overwinter and produce predator-preferred flowers early next season.

Be ready for spring. Beneficials' appetites may peak before your garden does. Try to have an early bloomer such as sweet alyssum (*Lobularia maritima*) or even pansies laid out for them, or consider buying some commercial food to tide them over.

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In a study published in the September 1994 *Journal of Arboriculture*, University of Maryland entomologists found that ladybugs released on aphid-infested thorny elaeagnus (*Elaeagnus pungens* 'Fruitlandii') reduced the pest population nearly 80 percent in two weeks.

Mark Hardin, an entomologist who coordinates integrated pest management for the Smithsonian Institution in Washington, D.C., says multicolored Asian ladybird beetles (*Harmonia axyridis*) "have taken care of every major aphid problem we have had in the last few years." The ladybugs are released wherever there are aphid problems.

LACEWINGS

Prey: Aphids, mealybugs, spider mites, scales, thrips

Shipped: As eggs, larvae, or adults, but it is the larvae that eat pests

Release rate: Normally 1,000 per 200 square feet

Use: Best in greenhouses, but also outdoors

Cost: \$6–\$12 per 1,000

Green lacewings (*Chrysoperla* spp.) are the most commonly sold. *C. rufilabris* is often recommended for aphid infestations on woody plants. Like ladybugs, they are predators mainly of aphids but have a better reputation, in part because it is their flightless larvae that do the majority of damage to aphid populations. "The advan-



Adult lacewings, above, are easier to spot, but their larvae are the real predators.

"We found lacewings were able to knock the lace bug population down significantly," she says. Although the study was con-

tage of lacewing larvae is they can't fly away immediately," says Everett Dietrick of Rincon-Vitova insectary in Ventura, California.

Lacewings also showed promise as predators of azalea lace bugs—a sucking insect that causes yellowing of azalea leaves—in a recent study conducted by Paula Shrewsbury, an entomologist at Rutgers University.

Resources

Biological Control of Insect and Mite Pests of Woody Landscape Plants.

Michael J. Raupp, Roy G. Van Driesche, and John A. Davidson. University of Maryland Cooperative Extension Service, College Park. 1993. To order, send a \$10 check or money order, payable to the University of Maryland, to Agricultural Duplicating Service, 6200 Sheridan Street, Riverdale, MD 20737. Include the name of the publication with your order.

1998 Directory of Least-Toxic Pest Control Products. This useful listing of pest control products and suppliers is published annually in the November/December edition of The IPM Practitioner, a publication of the Bio-Integral Resource Center (BIRC). To order, send \$12 payable to BIRC, P.O. Box 7414, Berkeley, CA 94707, or call (510) 524-2567 to order by credit card. California residents need to include an additional 83¢ tax.

The Gardener's Guide to Common-Sense Pest Control.

William Olkowski, Sheila Daar, and Helga Olkowski. 1996. The Taunton Press, Newtown, Connecticut. AHS member price: softcover, \$17.95. Book code: TAU 002.

Good Bugs for Your Garden. Allison Mia Starcher. 1995. Algonquin Books, Chapel Hill, North Carolina. AHS price: hardcover, \$9.85. Book code: ALG 001.

Rebugging Your Home & Garden. Ruth Troetschler et al. PTF Press, Los Altos, California. 1996. AHS member price: softcover, \$17.95. Book code: PTF 001

Suppliers of Beneficial Insects in North America. This booklet, listing more than 100 commercial sources of biological controls for garden and farm pests, is available free from the California Department of Pesticide Regulation, Environmental Monitoring and Pest Management Branch, Attn: Beneficial Organisms, 1020 N Street, Room 161, Sacramento, CA 95814. Also available electronically at www.cdpr.ca.gov.

Web Sites

Association of Natural BioControl Producers, ipm www.ncsu.edu/biocontrol/anbp/homepage.html. This site provides a list of insectaries that produce beneficial insects.

Biological Control: A Guide to Natural Enemies in North America www.nysaes.cornell.edu/ent/biocontrol. This Cornell University site offers information about beneficial insects and predators of pests.

Sources

Arbico, Inc., P.O. Box 4247, Tucson, AZ 85738-1247; (800) 827-2847. Web site: www.usit.net/BICONET. Catalog free.

BioLogic Company, P.O. Box 177, Willow Hill, PA 17271-0177; (717) 349-2789. E-mail: pyealber@epix.net. Catalog business SASE. Product: Scanmask (*Steinernema feltiae*), *S. carpocapsae*, and other species available upon request.

The Bug Store, 113 Argonne, St. Louis, MO 63122;

800-455-BUGS. Web site: www.bug-store.com. Catalog free. Product: *Heterorhabditis* and *Steinernema* species

Gardens Alive!, 5100 Schenley Place, Lawrenceburg, IN 47025; (812) 537-8650. E-mail: gardener@gardens-alive.com. Catalog free.

Harmony Farm Supply, P.O. Box 460, Graton, CA 95444-0460; (707) 823-9125. Web site: www.harmonyfarm.com. Catalog \$2, deductible.

Peaceful Valley Farm Supply, P.O. Box 2209, Grass Valley, CA 95945-2209; (916) 272-4769. Web site: www.groworganic.com. Catalog \$2, deductible.

Rincon-Vitova Insectaries, Inc., P.O. Box 1555, Ventura, CA 93002; (800) 248-2847. Web site: bugnet@west.net. Price list free.

Sun Pacific Biologicals Inc. P.O. Box 2109, Watsonville, CA 95077, (408) 426-2059. Product: *Steinernema feltiae*, *Steinernema carpocapsae*.

Worm's Way, Inc., 7850 North State Road 37, Bloomington, IN 47404-9477; (800) 274-9676. Web site: www.wormsway.com. Catalog free.

ducted at a nursery, she believes lacewings are likely to be useful controls for azalea lace bugs in the home landscape as well.

PRAYING MANTIDS

Prey: Many pest, benign, and beneficial insects and mites

Shipped: Egg cases (each case contains 150–200 mantids)

Release rate: 1 case per 1,500 square feet

Use: Outdoors

Cost: \$2–\$6 per egg case

Most vendors of beneficials sell praying mantids, but they are generally regarded as novelty items rather than effective predators. “Basically, using anything like praying mantids is just really hare-brained in my opinion,” says Eric Grissell, an entomologist with the USDA’s Agricultural Research Service in Beltsville, Maryland. “They kill as many good insects as they do bad.” But they are fun to hatch and release onto outdoor plants, especially if you have youngsters, and there is no argument against encouraging their natural occurrence in the garden.

GENERALIST PARASITES

PARASITIC WASPS

(*Trichogramma* spp.)

Prey: Eggs of more than 200 species of moths whose larval stages are borers, webworms, loopers, cutworms, bollworms

Shipped: As pupae in parasitized moth eggs attached to a card divided into squares. Between 3,000–6,000 eggs per square

Release rate: 24,000 per 1,000 square feet

Use: Mostly outdoors

Cost: \$6–\$14 per 24,000

Parasitic wasps are becoming an important part of integrated pest management at farms and orchards, but are not yet widely used in the home landscape, in part because the timing of their release—based on monitoring the life cycle of their prey—is critical to effectiveness. “Parasitic wasps work very well when you know what you are doing,” says USDA’s Grissell.

There are several types of parasitic wasps used to control pests, but *Trichogramma* wasps are the most widely available. These tiny wasps lay their eggs in the eggs of pests, on which their larvae feed when they hatch. Choose the appropriate species for specific pests. *T. minutum* is often recommended for fruit and ornamental trees east of the Rockies; *T. platneri* for fruit and ornamental trees west of the Rockies.

SPECIALIST PREDATORS

PREDATORY MITES

Prey: Spider mites, thrips, scales, whitefly

Shipped: As adults, often packed in bran or vermiculite, for immediate release

Controlling Ants

One key to successfully controlling aphids is to make sure they are not being protected by ants. Ants often “farm” aphids for the sweet honeydew they excrete. In the same way that shepherds protect their flock from wolves and other predators, ants ward off the attacks of aphid predators such as lacewings and ladybugs. Ants “kill lacewings as fast as you can put them out,” says Everett Dietrick of Rincon-Vitova insectary in Ventura, California. “You



Ants often guard pests. Here, Argentine ants tend woolly whitefly.

have to control the ants first, then release lacewings.” Ants can be excluded from trees by putting sticky barriers such as Tanglefoot around the trunk and pruning any branches that touch other plants or structures to prevent ants from taking another route. Dietrick also suggests putting down ground covers or mulches to discourage ants from nesting near pest-plagued plants. Where nests already exist he suggests covering them with soil or running water into them. “Just generally make life miserable for them,” he says. “I know if I can get rid of the ants, the natural enemies will get rid of the pests.”

Release rate: 2–4 per square feet, or 1–2 per plant

Use: Mainly greenhouse or atrium, but also outdoors

Cost: \$8–\$40 per 1,000

These nearly invisible, flightless arachnids are most commonly used for controlling spider mites and thrips in greenhouses or atriums. They have proven effective when released in the early stages of pest infestations, but are not recommended when the problem is well advanced. Most predatory mites do best in a humid environment, so moisten the soil and mist plants with water before releasing mites directly onto the foliage. Many mites are predators of specific pests, so it is important to make sure you buy the correct mite for your pest. *Phytoseiulus persimilis*, one of the most commonly sold mites, is used to control two-spotted red spider mites, which often plague vegetables, roses, and house plants. “I’ve had outstanding success with them in our conifer collection,” says

Scott Aker, IPM specialist at the U.S. National Arboretum in Washington, D.C. The Smithsonian’s Hardin says he uses several different species—including *P. persimilis*, *Galenromus occidentalis*, and *Neoseiulus californicus*—for control of spider mites in the Smithsonian’s indoor plant collections and propagation houses. “Each has its own preferred temperature regime, so what we use depends on the time of year and type of plants we are growing,” he notes.

MEALYBUG DESTROYER

(*Cryptolaemus montrouzieri*)

Prey: Mealybugs, scales, and aphids

Shipped: As adults
Release rate: 5–10 per plant; 100–500 per 1,000 square feet

Use: Mainly indoors, but sometimes outdoors on citrus trees

Cost: \$25–\$35 per 100

Known colloquially as “crypts,” these black and orange lady beetles—closely related to ladybugs—are most effective against moderate to ad-



A mealybug destroyer, or a “crypt,” goes about its instinctive business.

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Insect Myths

As reported in *Butterfly Gardeners' Quarterly*, an entomologist at Pennsylvania State University in State College says that there is little evidence that butterflies "need or use" the hibernation boxes that are sold to provide winter refuges for the popular insects. The boxes are more likely to be adopted by spiders, wasps, and other creatures.

Japanese beetle traps, a staple item in gardens in the 1980s, are likely to bring far more beetles into gardens than can be caught in the traps. Gardeners may get satisfaction from being able to destroy pouches full of beetles, but meanwhile other beetles, drawn in from afar by the pheromone scent, will make a meal of prized ornamentals. A better strategy, some experts say, is to place Japanese beetle traps near a sacrificial plant located well away from plants you are trying to protect.

Electronic bug zappers, another popular "instant gratification" bug control device, have been shown to kill very few mosquitoes or other pests. Rather, they kill mostly beneficial or benign insects such as lady beetles, honeybees, and lacewings. One study found that fewer than 5 percent of insects killed by bug zappers are female mosquitoes. It is only adult female mosquitoes that feed on human blood.

Advanced infestations. Both larvae and adults consume prey; be aware that crypt larvae are covered with a white, waxy coating much like that of their prey. Mealybug destroyers do best at around 70 to 80 degrees with high humidity. Because they tend to fly toward light, they should be released at night. Create a tent of muslin or plastic to contain crypts when treating individual plants. They can be stored in a cool place—but not refrigerated—for two to three days if gradual release is planned.

SPECIALIST PARASITES

WHITEFLY PARASITE

(*Encarsia formosa*)

Prey: Whitefly

Shipped: As parasitized whitefly scale on cards

Release rate: 1-5 per plant

Use: Mainly indoors

Cost: \$15-\$25 per 1,000

These tiny parasitic wasps are used to control whitefly in the early stages of indoor infestations. As with *Trichogramma* wasps, parasitized prey are shipped on cards that can be hung on plants. Release one to five wasps per plant, depending on level of infestation and type of plants. *Encarsia* wasps do best at temperatures above 70 degrees and with long days. Start releases at first signs of infestation, or at the time of year infestations nor-

mally occur. Repeat releases weekly until prey is reduced to tolerable levels. Parasitized whitefly will turn black. Yellow sticky traps are recommended for whitefly detection and monitoring.

ARMORED SCALE PARASITE

(*Aphytis melinus*)

Prey: Armored scales, including California red scale, yellow scale, oleander scale

Shipped: As adults

Release rate: 1-2 per square foot

Use: Mainly indoors, but sometimes outdoors on citrus trees

Cost: \$20-\$60 per 10,000

Ken Miller, owner of The Bug Store in Argonne, Missouri, says that in many cases, by the time people seek remedies for scale problems, the infestation is too far advanced for biological controls to be cost effective. "We don't really have affordable solutions for small infestations," Miller admits.

A genus of tiny parasitic wasps, *Aphytis* species, lay eggs in scales, which their larvae consume. The adults also feed on scales. Plan

on three releases spaced a week to two weeks apart. *Aphytis* wasps perform best at temperatures of 75 to 85 degrees and moderate humidity.

Another commonly sold scale parasite is *Metaphycus helvolus*, used for soft scales such as citrus black and brown scales. These wasps are expensive—\$80 to \$100 per 1,000—and do best in hot, humid conditions.



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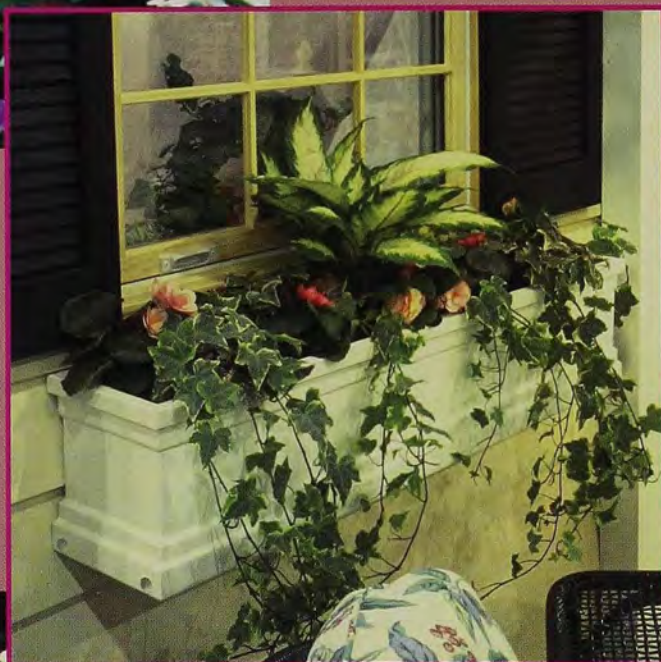


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IN THE PINK

by Ester Bentz

I spent the winter in a different planting zone, having migrated south just before Christmas from that pale blue swath across the top of the seed-packet map (plant after May 15, or when all danger of frost is past) to the pastel pink of the California coast, where you can grow anything, anytime, with the possible exception of peanuts and sweet potatoes.

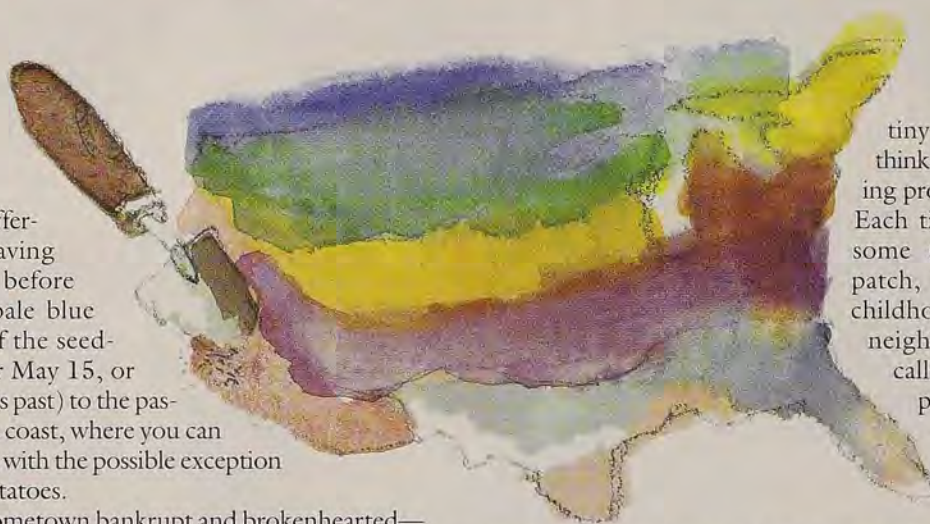
I hit my California hometown bankrupt and brokenhearted—a pattern I seem to repeat every seven years or so. During past such sojourns, I've relied on agencies like Skyscraper Slave Traders to recoup my assets. But after years in the freewheeling frostbelt, the very thought of encasing my pilose limbs in pantyhose and eschewing fresh air for an air-conditioned cubicle filled me with fear and loathing.

After a fearfully loathsome afternoon of schlepping my soggy resume around various rent-a-receptionist bureaus, I received a phone call from a high-school friend now heading up his own landscaping business. One of his clients was selling her Oakland Hills house and needed a few tons of unsightly pine needles raked from lawn, shrubs, decks, and walkways. Was I interested? "Ten dollars an hour," he said. "Start at 8:30, be done by 1." Desperate for Christmas cash, I said I'd be there with bells on.

In the ensuing weeks, my boss/buddy brokered me an endless array of physically taxing, mentally numbing tasks, not unlike the work one associates with mules. In early winter, we followed a frenzied pruning schedule, he lopping limbs from the tops of towering trees, me sawing, chopping, and chewing them into segments to stuff into trash barrels. Then we'd drive to the dump, empty the barrels, and start over again at a different address.

My muscles cried out constantly during those early weeks: Rest! Ice! Compress! Elevate! But then the endorphins kicked in. I noticed new muscles; the old ones were getting strong and supple. I dreaded the rainy days when we didn't work.

By mid-February the deciduous trees were waking up, so we turned to conifers, blowdowns, and Maintenance Accounts from Hell—the latter consisting of professors' wives who took perverse pleasure in delegating demeaning details. There was Mrs. Z., who reminded us weekly that retrieving her retriever's droppings was a collective responsibility. And Mrs. K., whose penchant for pesticides was only outdone by Mrs. T.'s gopher phobia, and Mrs. C.'s zeal to rid the world of *Oxalis* in its myriad and sinister forms. And their cries of "Not in my backyard!" when confronted with the itchy evidence of poison oak.



Those cursed with tiny bladders should think twice before becoming professional gardeners. Each time I seek relief in some suburban bramble patch, I quake from the childhood memory of our neighbor, Mrs. Coulter, calling the cops on her poor Mexican gardener for indecent exposure. Apparently, it's too complicated to

consider the bodily needs of one's turf-serf; much less stressful to treat them as solar-powered androids. It's no wonder so many of us opt for *al fresco* facilities: When one does finally summon the courage to request restroom privileges, the response is likely one of horror, shock, and disgust—mitigated only slightly if one offers to remove one's muddy shoes.

NORTH AND SOUTH, RICH AND NOT-SO

In the pale, blue North, May 1 finds a few tulips boldly poking up through the snow, only to be promptly punished for their hubris. Meanwhile down in the Pink Zone, the ubiquitous beds of impatiens are already hooked up to their IV drips. Aside from these vast gaps in temperature and rainfall, the most significant interzonal difference is represented by yet another color-code—this time, a small swath of green, as in the kind you put in a pocket.

To wit, Mrs. C. did not bat an eye at my quote of \$10 an hour to rid her back forty of *Oxalis*. In the hard-scrabble North, youngsters pull weeds at a penny apiece, for popsicle money. There, strapping ranch lads ride their mowers into town Saturday morning, and ride out Saturday evening, all set for a date to Dairy Queen and the drive-in. By contrast, in the suburbs of New Sodom, the mow 'n' blow boys are landscape designers, if you please; your computerized invoice is in the mail.

In the trim trailer parks of the North, gaily painted *trompe l'oeil* derrieres serve as surrogate gardeners for the snowbirds, whose backs can't keep up with their intentions. In the affluent 'burbs of Babylon, the lady of the manor dons spotless sunbonnet and gardening gloves, and with the tip of her Smith & Hawken trowel delineates duties from the veranda. Blessedly, she soon excuses herself, as the door chimes herald the arrival of the window washer, the pool cleaner, the exterminator, the scullery maid, and any number of fellow subordinates.

Anyone who would have you believe the gap between rich and poor in this country is shrinking has never spent a season as a servant. The care and feeding of the rich is surely the fastest-growing busi-

BILL FIRESTONE

ness in America. So it was with relief that I greeted the request of yet another high-school chum, the resident of a humble bungalow, to whip its backyard into shape for her son's first Holy Communion.

Relieved of several cubic meters of *Oxalis* and crabgrass, it was really not such a bad space, except for the constant car noise from the freeway that ran behind its back fence. The rose bushes, lemon tree, lantana, and bougainvillea benefited mightily from a ruthless pruning. A few flats of annuals provided quick color and a break from the ubiquitous ivy.

A shady brick planter housed calla lilies, a sword fern, a jade plant, and a driftwood log that sheltered, to my astonishment, a family of salamanders. On first encounter, I mistook the red, whip-like creatures for giant centipedes or baby snakes. I wondered where the amphibious tribe migrated in high summer, when rainfall is virtually nil. The closest creek—once a thriving salmon stream, now a concrete culvert—was a few miles away. Did they depart en masse under a solstice moon? I supplied a serene St. Francis, another sword fern, and violets purloined from a prosperous client. The final effect was almost grottolike, freeway noise notwithstanding.

Enroute to the neighborhood nursery with my friend and her 10-year-old daughter we drove past a lovely open field, glowing with wild mustard, graced by a few voluminous oaks, encircled by a cyclone fence. "What do they plan to put in there?" I asked. "Another shopping center, I think," sighed my friend. "They should plant trees," said her daughter, "cherry trees." "Out of the mouths of babes," I thought. For this entire valley was once filled with fruit orchards; and before that, it was the fertile hunting grounds of the Ohlone Indians. Now there is hardly a square foot that has not been built upon.

A HAND FROM MOM

"You know they're not going to keep this up," says my mother. "They're computer people, video people, inside people. There's nothing wrong with that; just don't be disappointed if it doesn't look like this next time you visit."

My mother has offered to assist me in the final push. She's planting the side yard in vinca appropriated from Mrs. C.'s back forty. The party is next Sunday, and my friends are away for the weekend. I'm trying to transform one last patch of crabgrass into a rock garden. My mother comes from Italian peasant stock. Her own garden is delightfully diverse in color, form, and texture, full of humor and surprise. It provides the perfect counterpart to her other love, which is cooking

I, too, have earned my living as a cook. But that common interest never brought us together as gardening has. We compare notes on this brand of pruning shears, that make of gardening gloves. She suggests cheap, hardy shrubs and ground covers to meet my friend's limited budget and inter-

ests. She prepares a planter of coral bells and forget-me-nots to place among the rose bushes. In the evenings, after supper, we stroll through adjacent neighborhoods and critique the landscaping. Her standards here, as elsewhere, are extremely high.

The party is a success. The roses and bougainvillea are blooming to beat the band. The violets and alyssum are filling in. The hummingbirds are in a frenzy over the new fuchsia. (The vinca, sadly, has not survived. It seems my friends forgot it was there, and temperatures climbed to the 90s last week. My mother does not say, "I told you so," but I can tell she wants to.) St. Francis plays no favorites; he smiles upon the snails as well as the salamanders. "This place looks like a park or something," says my friend's daughter. It's the only compliment I need.

Ester Bentz is a free-lance writer living in Hayward, California.

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gardeners information service

Last fall for the first time, I mulched with chopped-up leaves because my soil needs the organic matter. Some people advise doing this to help protect plants, and even suggest leaving the skeletons of perennials' stems to trap snow cover. But others say that in the fall it's important to cut down and remove all dead plants, leaves, and other debris from the beds to prevent harboring insects and diseases for the following year. So which is it?

Part of me lives in dread of possibly devastating consequences if the second group is right!

—M.O., Wilmington, Vermont

There's no clear cut answer to this. You're doing the right thing by recycling all the organic matter your garden gives you for free. While debris might harbor harmful insects, it's also home to next season's butterflies and other beneficial creatures. In areas where there are cycles of freezing and thawing throughout the winter, mulch helps keep perennials from heaving out of the ground. This probably is

not so much of a concern for you in Vermont; your ground is likely to stay frozen and most years you probably have all the snow cover you can use. Many gardeners, however, leave the stalks of some flowers because they have shapes or seedheads that provide winter interest. And, of course, that's one of the chief charms of ornamental grasses.

What you need to be concerned about is debris around plants that have had particular pest or disease problems. Diseased foliage should always be removed and destroyed, not composted. Some leaves, like oak leaves, tend to mat up and keep moisture from reaching plants, so you're right to shred them. Overall, if your garden is healthy, we vote for mulch.

We know this is a fall question, but we'd like to hear from readers: What did you do last fall, and what were the results?

A friend whose husband died recently has moved to a smaller place, but would like to recreate some of his garden as a memorial to him. His name was Frazier Draper. Do you know of any plants with the name

"Frazier" in either the common or scientific name that she could include?

—M.W., Charlottesville, Virginia

You don't say how small the smaller garden is. An obvious possibility is the Fraser fir (*Abies fraseri*), but it can get 70 feet tall and spread to 25 feet. Somewhat smaller is the ear-leaved umbrella tree (*Magnolia fraseri*), at 30 to 60 feet. It's native to the southern Appalachians, including Virginia. Plants in the green gentian genus (*Frasera*) are primarily native to our West Coast, but *F. carolinensis* is found from Ontario to Georgia and Arkansas and might do well if your friend can provide moist, well-aerated soil. There's a shrub, Fraser's boronia (*Boronia fraseri*), but it's from southeastern Australia and only hardy to USDA Zone 9. Readers, have we missed any?

A new book on memorial gardens, *Cultivating Sacred Space: Gardening for the Soul* by Elizabeth Murray, is available through the AHS Horticultural Book Service.

I'm obsessed with sweetfern. It grows all over the Northeast, especially in coniferous forests in places like the White Mountains of New Hampshire, and has a strong pleasant odor that gives it the first part of its common name. It looks like a fern because it has long, thin, serrated leaves, but it's really a low-growing shrub. I would like to know its botanical name and anything else you can tell me about it. I have tried numerous times to transplant it from New Hampshire to my yard in Connecticut, with limited success. Can you point me in the right direction?

—B.W., via e-mail

Sweetfern (*Comptonia peregrina*) is a deciduous, suckering shrub that grows two to four feet high. It's native from New Brunswick south through the New England states to the northern tip of Georgia and west through northern Illinois, Indiana, and the Great Lakes states to eastern Saskatchewan and North Dakota. The plant thrives in well-drained, slightly acidic soils (pH 5.5 to 6.5) in full sun. It is difficult to propagate and to transplant. Your best bet would be to buy it from a native-plant specialist, rather than dig it in the wild. When you dig a wild plant, you don't get as much of the root system as you would with a nursery-grown plant, and wild plants may be narrowly adapted to the conditions where they were found—a specific pH, amount of rainfall, or associated fungi in the soil—that can be hard to replicate once you bring it home. On private property, you need the permission of the landowner to remove plants, and removing plants is illegal on public lands.

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—Sara Epp, Editorial Assistant

ILLUSTRATION BY RON FLEMINGS

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HIGH DESERT DELIGHTS: PLANTS OF THE SOUTHWEST

by David J. Ellis

At some nurseries, plants are just plants. They exist in isolation except as they complement one another aesthetically or appeal to individual tastes. To Gail Haggard, who runs Plants of the Southwest nursery in Santa Fe, New Mexico, plants have practical value—they provide protection from the heat, improve poor soil, offer shelter from wind, create habitat for wildlife, supply food, and much more.

Haggard, a transplanted New Yorker who has lived in the Southwest for 30 years, celebrated the 20th anniversary of the nursery last year. She bubbles with enthusiasm and energy, her words tumbling over one another like ripples in a fast-flowing stream. Her enthusiasm spills into the nursery's catalog: "Our goal is good homes, good food, sweet leisure... Shade trees are worth many air conditioners; windbreaks are worth many heaters."

Haggard did not intend to start a nursery; it developed out of conversations with other members of the Native Plant Society of New Mexico about the need for a nursery that would sell plants native to the region. "I just got madder and madder when it seemed no one was going to start up with native plants in this area," she says. So she decided to do it herself. "It was one of the dumber things that ever occurred to me," she adds, laughing.

Haggard has a degree in botany but learned quickly that personal experience and collective wisdom were more essential in starting a nursery. "I'm a seat-of-the-pants person—I learned everything from other people." Now she has eight full-time employees and needs an additional 12 to help with the spring and summer rush. In addition to the nursery, Haggard operates retail stores in Santa Fe and Albuquerque.

In an industry moving ever more heavily into trademarks and patents, Haggard is a throwback. She likes to offer plants new to the trade or with natural variations, but does not hybridize or acquire rights to plants. "I'm on the other side—it all belongs to nature," she says.

CRITICALLY ACCLAIMED CATALOG

The nursery's biennial catalog is crammed with cultural information and colorful photographs—most of which were taken by talented southwestern photographer Charles Mann—that showcase many of the annuals, perennials, vines, shrubs, trees, and vegetables Haggard offers. "I've always been quite amazed by the quality of their little catalog," says Dennis Swartzell, director of the University of Las Vegas Arboretum in Nevada. "It's really an art piece of its own."

With the exception of a few exotics adapted to the nursery's high desert climate, all the plants in the catalog are native to the Southwest. The vegetables and grasses—with the exception of buffalo grass, which can be bought as plugs—are available only as seeds, but many of the perennials and woodies can be purchased either as plants or seeds. All the plants Haggard sells are propagated at the nursery, except in early spring when she has to fill in with extra stock from local growers because her greenhouses are unheated. Seeds are obtained from regional gatherers.

Lest you think these plants are suitable only for southwestern gardens, Haggard is quick to point out that she has "lots and lots" of customers east of the Rockies. One of these is Arnette Heidcamp of Saugerties, New York. Besides being an avid gardener, Heidcamp is a licensed wildlife rehabilitator and has written books on hummingbirds and bluebirds. Heidcamp says many southwestern plants are great for attracting hummingbirds. "Penstemons do very well and *Ipomopsis rubra* is a great hummingbird plant. It blooms until frost and looks great massed. It's also care-free and self-seeds," she says.

Penstemons don't have a reputation for doing well in damp Eastern winters, but Heidcamp gives them the highest, sunniest

spots in her garden, which fortunately already possesses sandy, well-aerated soil. "Penstemons are not a long-lived plant, so when I get one to live for a few years I consider it a success," she says. "*P. cardinalis* is one the hummingbirds really love, also *P. barbatus*. *P. spectabilis* did well here for several years."

Penstemons are among the most requested plants in Haggard's catalog. "We offer 18 penstemons out of the 35 in the flora of New Mexico," she says. "It's a very exciting genus—the



Chamisa and blue grama are two Plants of the Southwest offerings.

COURTESY OF GAIL HAGGARD

main show is in June but you get repeat blooming in many species. Among the most coveted is pine-leaf penstemon [*P. pinifolius*]. It forms a compact clump that looks somewhat like a mugo pine."

Molly McGinnis, at one time an adjunct faculty member in botany at California State University at Hayward, has ordered "lots of everything they have," from *Plants of the Southwest*. "Some of my very best gardening books and cookbooks are from there," she says. In addition, McGinnis has grown many of Haggard's shrubs, including golden currant (*Ribes aureum*), three-leaved sumac (*Rhus trilobata*), and chamisa or rabbit brush (*Chrysothamnus nauseosus*) in the course of "revising" her 20-acre property "in the direction of a riparian shrubbery." Says McGinnis, "Rabbit brush was a real surprise to me. Out here it is a wasteland plant that you

don't really think about that much. That is one of the things Gail does—she opens your eyes to what happens if you grow some of these things on purpose."

She has also ordered several of the plant collections in the catalog, including a mixture of native grasses. "It's been fun getting patches of her grasses started where I don't want lawn anymore, which is nearly everywhere now."

Haggard champions using native grasses in place of water- and fertilizer-demanding conventional lawns. "I

think the biggest impact our catalog could make in the next 10 years is with grasses. People need to break the lawn mold, but if they do want to have a little patch of green to roll on, they can use native grasses." One of the grass seed mixes she sells is a combination of buffalograss (*Buchloe dactyloides*) and blue grama (*Bouteloua gracilis*). "They look very pretty together and have similar modes of growth," she says.

A LEARNING EXPERIENCE

When they opened Casa de San Pedro in Hereford, Arizona, in January of 1996, Judy and Chuck Wetzel knew little about gardening with desert plants. Their landscape designer recommended *Plants of the Southwest*. "We were a new bed and breakfast and we built the house ourselves, so we had quite a landscaping challenge," says Judy. The Wetzels are restoring two acres of riparian habitat along the San Pedro River that were damaged when their septic system was installed. "Since we are on an environmentally sensitive property, we really don't want to introduce anything that's not native to this area." The Wetzels planted a mixture of grasses and wildflowers in a meadow, including blue grama, sideoats grama (*B. curtipendula*), blue flax (*Linum perenne* subsp. *lewisii*), and Arizona poppy (*Kallstroemia grandiflora*).

"I very much like their vegetables because they are traditional things that have been grown in this area," says Princess D'Or, an artist who lives in Mountainair, New Mexico. "The big problem being at this elevation is that the sun is very strong but the nights are cold. There's a temperature difference of sometimes 30 to 40 degrees. The plants that these people have are all adapted to this type of situation."

Although Haggard is reluctant to take any credit, it's obvious she has had an effect on the way some of her customers garden. McGinnis's 20-acre project is a case in point. "I don't think I'd be anywhere like where I am today—which I am generally pretty pleased with—if I hadn't gotten that first catalog," she says.

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



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natural connections

ALGAE: IT GROWS ON YOU

by Richard E. Norris

Whether you realize it or not, you are probably growing algae in your garden. Algae are common wherever there are enough moisture and nutrients, especially in ponds, bird baths, and other water features. Many gardeners fight the “green water” battle, but in the process eliminate some fascinating plants.

It's hard to think of algae as plants since they are so tiny and lack both vascular systems—obvious stems, roots, and leaves—and the complex reproductive organs we call flowers. Despite this, there is more diversity in form, shape, and size among algae than in any other plant group. The term usually includes nonvascular plants—from single-cell microscopic forms to giant kelps up to 240 feet long—that perform photosynthesis. Most—but not all—are aquatic, found from surface waters to more than 900 feet down in the ocean. Others are terrestrial, found on trees, rocks, soil, and even buildings or walkways.

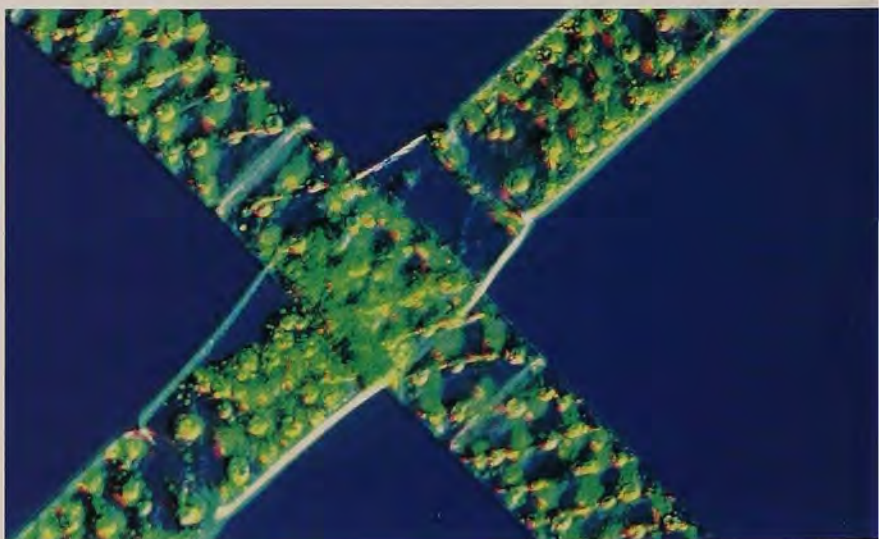
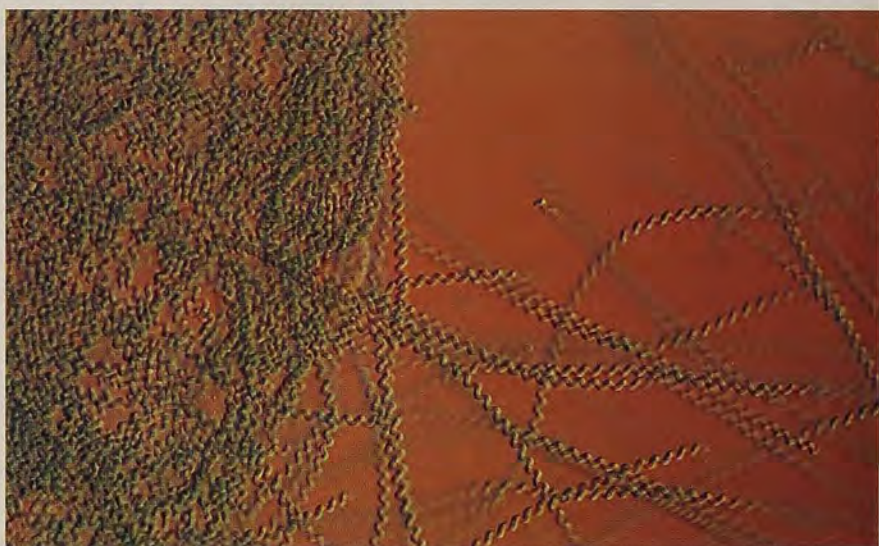
Algae come in nearly all colors of the spectrum, although most appear to our eyes in shades of green, yellow, and brown. In freshwater, the most obvious ones are green; a microscope will take us into a world of myriad colors and forms. Red or brown pigments sometimes mask the green chlorophyll of photosynthesizing algae, much as the chlorophyll in leaves masks the red, brown, and yellow pigments that are uncovered in fall.

PLANKTONIC RELATIONSHIPS

The algae that turn ponds green are planktonic—they remain suspended in water. These are often minute compared with other types, but have strikingly beautiful threadlike swimming appendages—flagella—that can be seen under a microscope. Planktonic pond algae are often almost a monoculture and—when exposed to plenty of sunlight, warmth, and nutrients—may become so dense that the competition begins to kill them. Vascular plants hardly have a chance to grow in such water bodies because light will not penetrate more than a few inches below the water surface. Animals

in these habitats may also be suffocated because the oxygen is depleted. The resulting anaerobic decay accounts in part for the distinctly unpleasant odor we associate with stagnant water bodies. Nitrogen-rich runoff from lawns is one of the primary causes of destructive algal bloom. This can be avoided by using balanced organic or slow-release fertilizers and by landscaping the edges of the ponds with plants that will control erosion and slow runoff.

The algal population of a pond changes with the seasons. In autumn and winter, dieback and foliage drop of vascular plants exposes the pond surface to more light, but algae growth is restricted by cooler temperatures. Cooler weather also tends to promote



COUNTERCLOCKWISE FROM TOP LEFT: M. ABBEY/VISUALS UNLIMITED (VU); A&E MORRISVU; CABISCOVU; JACK M. BOSTRACKVU.

species with a more yellow or golden color. This is the time of year I look forward to growth of filamentous algae in my pond, usually a beautiful silky green mass of *Spirogyra* coiling along the bottom. Like other filamentous algae, *Spirogyra* is made up of long strings of attached cells that cling to pond bottoms and objects in the water. Yes, it feels slimy and many people consider it undesirable, but the presence of this alga tells me that the balance of nature is working quite well in this confined water mass. If growth becomes excessive, it is easy to scoop up masses of the filaments in a net and compost them.

BIRD BATH ALGAE

Some gardeners also despair of the reddish color that often accumulates on the bottoms of bird baths. This most interesting one-celled alga, named *Haematococcus*, will grow only in shallow bodies of water such as bird baths, pools in rock crevices, and rooftop puddles. It's not difficult to guess that birds are responsible for distributing it. When birds bathe where this alga is growing, some of the thick-walled *Haematococcus* spores stick to their feathers. At the next bathing site, the spores wash off to form a new algal colony.

Not all algae require an aquatic environment. Many forms grow in moist soil, in crevices of bricks, or on other moist, solid surfaces. Even in deserts it is not unusual to find algal growths; a greenish film often collects on the undersides of quartz rocks, where water con-

denses in the cool early morning hours. But don't blame algae for the way brick pathways become slippery in moist areas of the garden. This is usually evidence of the early stages of moss plants.

Practically all soil surfaces contain microscopic algae, usually single-celled types that sometimes cluster to form colonies. Areas subject to flooding are often home to gelatinous colonies of blue-green algae—or more correctly, cyanobacteria—up to several inches in diameter. The loamlike appearance of these amorphous algal masses can render them almost invisible, but they're quite conspicuous in light-colored soils. Similar large balls of cyanobacteria, called “mare's eggs,” occur in some freshwater pools. Springs near Crater Lake National Park in Oregon are famous for these algae.

Even if you don't have algae in your garden, you probably eat or drink something every day that contains an ingredient derived from algae. Carrageenan, used commonly as a clarifier in beverages and in packaged and frozen foods, is produced from various red marine algae. Algin, a product of giant kelp, is also used as a stabilizer or emulsifier in processed foods. In recent years, some cyanobacteria, such as *Spirulina*, have become popular in health

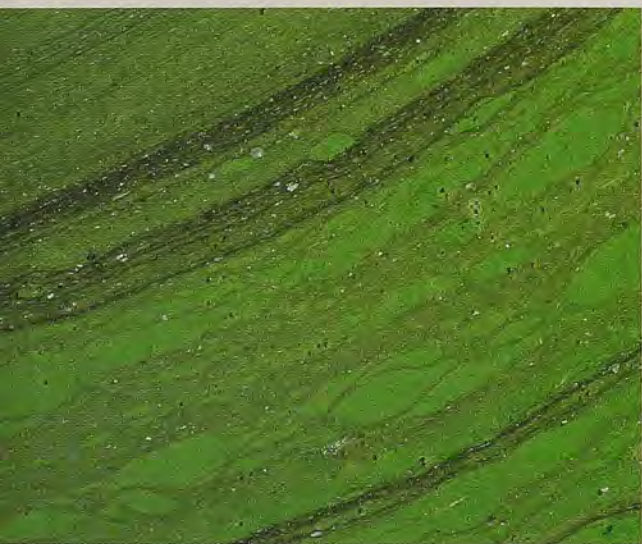
food stores; reportedly they are rich in protein and vitamins, stimulate the immune system, and aid in the removal of toxins from the body. *Spirogyra* algae are sold in markets in India, where they are added to a variety of dishes.

CONTROLLING ALGAE

Undesirable algal growth in garden ponds may be frustrating, but some chemicals commonly sold to control it can create their own problems. Fortunately, there are many natural means of control, including the use of circulating pumps, biological filters, and scavengers such as snails, herbivorous fish, and tadpoles. You can also buy products such as Bacta-Pur and Kleer, which contain microorganisms that prevent buildup of algae. The best prevention is to keep your pond in ecological balance. Don't keep too many fish and feed them with reasonable discretion. Add both submerged and floating vascular plants and fertilize them moderately. Following these steps should keep even a pond in full sun relatively clear without resorting to chemical warfare.


Observed closely, algae and related organisms are beautiful, fascinating plants that can enhance the biodiversity of your pool or pond. Invest in a microscope and take a closer look at the diverse forms that are likely to occur in your garden.

Formerly a botany professor and researcher, specializing in algae, Dr. Richard E. Norris is now enjoying retirement in Fort Worth, Texas.



Under a microscope, some algae can have a delicate beauty or deserve a spot in a modern art gallery. *Spirulina*, opposite top, is sold as a dietary supplement by health food stores. *Spirogyra*, opposite bottom, is a filamentous alga that forms long, silky green strands on pool bottoms. Gardeners generally take a dim view of algae when they appear on the surface of their water features, but as seen in the two photos at left, they can form interesting patterns that even the naked eye can appreciate.





planting the future

BUDDING EXHIBITORS

by John B. Calsin Jr.

Three years ago the sprawling Pennsylvania suburban area of Chester County—in the shadow of the Philadelphia Flower Show and a stone's throw from the mammoth du Pont gardens of the Delaware Valley—had the chutzpah to launch its own flower show.

The volunteers and sponsors weren't hoping to compete for the attention of the horticultural world, but to help out a community institution. A 50-year-old private, nonprofit social service agency, Family Service of Chester County, was suffering from cutbacks in government funding and needed new ways to bring in money.

The show was considered a success by its second year, when it brought in 7,000 people—twice as many as the first year—and praise from those in the know about such events. "We received horticultural acclaim from qualified regional and national judges, who felt that the quality of the show was that of a fourth- or fifth-year show," says director Robert Montgomery. The owner of a nursery in Chester Springs, he is a six-time winner of the Best in Show in commercial aesthetics at the Philadelphia show. "My goal was to only take on what we could do in a highly professional manner."

A big reason that the community so rapidly embraced this show was that it is a reflection of the community, including its children. A volunteer committee headed by artist and school teacher Linda Glaum contacted not only all the public, private, and parochial

schools in the area, but also home-school associations.

One day of the show is set aside for students and teachers to visit. This year, 2,500 visitors from first through twelfth grade are expected. "Going to a flower show is probably the last thing a youngster of any age would like to do," says Montgomery, "but they're always willing to miss a math class. Once they get here, they see it's different from what they expected." Agendas are available to teachers to help them spot displays that might be of special interest to their classes, and they can also ask for a guided tour by a horticultural expert.

But youngsters don't merely visit; they also exhibit. The first year the children's display was "the little orphan child at the end of a tent," says Glaum, but the second year "we were given a main section in the downstairs area that was well trafficked." The first year, 100 children participated; last year, it was nearly 300, ranging in age from five to 14.

Children can enter either the artistic design or horticulture competition, and every child who participates receives a ribbon. "The ribbon is something they can take home and put on their wall," says Glaum. "But I think what they're really winning is an awareness and love of the earth, of gardening, and of everything that is around them."

First-grade teacher Connie Nesbitt didn't have much gardening experience, but when Glaum asked her to participate, "I just jumped on the idea. We started back in February by planting seeds and really made a science of it." Each student planted beans—"I knew that would be successful," Nesbitt says—and either nasturtiums, sweet peas, or coleus.



The Chester County show has a day open only to students, right. A Monet wallhanging was the backdrop for the 1997 children's exhibit area, above.



COURTESY OF FAMILY SERVICE OF CHESTER COUNTY

Her class had hatched chicks in January, she says. "But do you know that the boys were more excited when we got our first little bean, the actual bean where it grew out of the blossom. I was really amazed."

Nesbitt wasn't completely right about the beans: One child's did not come up. "But that's also an important part of it," she reasons. And she was wrong about something else: She had assumed that her boys wouldn't be interested in the artistic side of gardening, but all of them entered the artistic design competition.

There were six categories. They chose one based on Dr. Seuss books, and the hunt was on for "stuff." "We were looking for contraptions," Nesbitt says. "The boys discovered that there were a lot of springs in Dr. Seuss's contraptions, and they really got into old springs. I used old hair curlers."

"What they're really winning is an awareness and love of the earth, of gardening, and of everything around them."

As an artist, Glaum wanted an extra special background display for the children's room at the flower show—one created by the children—and Nesbitt agreed to help with this, too. "We launched into a study of Monet, Impressionism, and what it meant to be an Impressionist painter," she says. "Here again, I was really amazed that a group of boys—and I had the real testosterone group—had fun studying Monet."

After scrutinizing a photo of Monet's garden, Giverny, and his water lily paintings, they built a bridge that they hung on a woven backdrop, and suspended cut-out lilies around the bridge. "Some of the boys would do six or seven trial runs on how to paint the water lilies to look right," Nesbitt recalls. They called their display "Monet's Favorite Place" and one of the local newspapers photographed them in front of it. So many people came up and to say they'd seen the photo that one of the boys told Nesbitt, "It's exhausting being famous."

Two brothers who attend another school—Alex Mustico, 11, and Tony, 6—took home blue ribbons from the artistic competition. Alex, entering a category that called for creating an animal from vegetables or fruits, made a monkey from a tropical root, using olives and an apple slice for facial features. Tony went the Dr. Seuss route, using redbud, daffodils, and an ash branch that his mother climbed a ladder to retrieve. The first grader explained his prize-winning strategy: "I took flowers and toys and the little toy fish and hanged it up in a tea pot."

John B. Calsin Jr. is a free-lance writer living in West Chester, Pennsylvania.

The 1998 Chester County Flower Show will be April 24-26 at the East Senior High School in West Chester. Tickets are \$3 for children and \$7 for adults. This year's overall theme is "Garden Artistry," and children will enter displays relating to the books *Stuart Little*, *Where the Sidewalk Ends*, *Curious George*, *James and the Giant Peach*, or the artist Georgia O'Keeffe. For more information, call the show office at (610) 696-1309.

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L.A. STORY

Story and photographs by Mary Cook

The first time I saw the little clapboard house it was bathed in light. About four decades old—close to my own age—it had a humble peasant look, with blue and white peeling paint that reminded me of a eucalyptus tree shedding its bark. It was a transitional time of my life, and I felt as if I were shedding old skin, too.

In front of the house was a section of lawn, a concrete patio, a plum tree surrounded with bark mulch, a bed of freeway daisies (*Osteospermum fruticosum*), and dead and neglected shrubs. None of them appeared to have any relationship to the other features. Their borders created a series of depressing rectangular shapes that fragmented the entire yard.

Over the past seven years my goal has been to transform this barren, stiffly formal space in a Los Angeles suburb into a unified, diverse, and cheerful cottage garden. Early mornings, when only bird song breaks the silence, are my favorite time to go to work with shovel, pruning shears, and bare hands. I'm often still in my nightshirt (all of mine have rose-thorn rips), and on more than one occasion, I've gardened from dawn to darkness, blindly watering from memory.

Now all that's left of the lawn in this 53-by-32-foot space is an emerald walkway. It swirls between some of the six beds and borders that nestle comfortably in front of the house. Their irregular shapes are defined with carefully chosen stones. Rock paths meander through them, and small stone seats suggest places to unwind.

I've created vignettes showcasing favorite flowers and colors. The *Duranta erecta* tree drips with strands of vanilla-scented, orchidlike purple flowers that form an umbrella for yellow yarrow and daylilies, purple bellflowers and heliotrope, orange crocosmias and exuberant yellow goldenrod. That's a bright, merry corner.

Elsewhere are pink hydrangeas that remind me of the Hostess Snoballs I ate when I was a teenager. They're mixed with white camellias, purple streptocarpus, bleeding heart (*Dicentra spectabilis*), a large lace fern (*Microlepia strigosa*), and sky-blue forget-me-nots (*Myosotis scorpioides*). These plants are mulched with pine needles and sheltered by a white-flowered hibiscus.

Above a grouping of pineapple sage (*Salvia elegans*), bright blue pansies, and red dianthus is *Senna splendida* (formerly *Cassia splendida*), a tree with large gold buttercups that sparkle in the softer light of fall and winter.

Since my garden is organic, I choose hardy roses. Favorites include 'Tournament of Roses' for its long-lasting, shapely salmon blooms, the trademarked Abraham Darby for power-packed peach petals and fruity per-

fume, and 'Sally Holmes' for vigorous canes and apricot buds that mature to white.

This front-yard bounty of flora, planted in containers as well as in the ground, creates a rich tapestry of welcome. Also greeting guests just outside the front door is a Norfolk Island pine (*Araucaria heterophylla*). These conifers, from a pastoral little island near Australia, can be grown outside here and do well in containers for several years if staked. Mine was my first Christmas tree at this house, and I still decorate its drooping branches every holiday.

A focal point for the garden is a statue I've named Rebecca. She stands at the front of my island bed, surrounded by the white mothlike flowers of *Gaura lindheimeri*, pink and lavender *Buddleia davidii*, red daylilies, purple salvia, and red roses.

Butterflies flock to the *Buddleia*, of course, and my coneflowers, while hummingbirds prefer salvias, crocosmias, and the flow-



ers of the *Duranta erecta*. Hoping to snap a close-up photograph of the hummingbirds, I once tried to simulate a flower by wearing hot pink shorts and a scarlet shirt, but they weren't fooled. Maybe after a morning of gardening I didn't smell much like a flower.

There's always a variety of food for other birds and three baths where they can bathe, drink, or sometimes squabble for space. One, made of pottery, contains a floating wooden shark that sparrows use for a raft, competing to see how many of them can fit on it at once. Crows like to wash food in the larger bath. This seems to necessitate heavy scrubbing, and I've been less than charmed to find pizza and small animal parts left floating in it.

The diversity of my garden keeps it healthy. Birds and lizards

Sometimes I collect rocks based on function—to walk or sit on—and sometimes for beauty of form.

reduce unwanted insects, and possums devour slugs and snails. On early spring mornings I squish aphids off dewy rosebuds, and I promptly remove any diseased or infested plant parts and entire plants if they're chronically plagued. One advantage of having a small garden is being better able to tend it carefully and regularly.

Folk wisdom influences the supplemental feeding of my plants. I save hair and dig it into the soil to provide nitrogen, and feed roses rotted banana peels for potassium. Decayed fruit and veg-

etable matter and washed seaweed from the beach are incorporated into the soil. Acid-loving plants get doses of pine needles, coffee, and tea.

On nature hikes I collect broken twigs and branches with interesting shapes to stake plants and edge beds and borders. Sometimes I collect rocks based on function—to walk or sit on—and sometimes for beauty of form. I especially enjoy smooth egg-shaped rocks, which remind me of the miracle of birth, treasure hunts, and magic!

For all the work I put into the garden, I get back more. Every day offers treasures, from seedlings pushing out of the ground to trees reaching up for more sky. As I take inspiration from the boundless possibilities of growth, I realize how much my garden has been growing me.

Mary Cook is a psychology professor living in Lomita, California.



A frontdoor container garden is punctuated by a Norfolk Island pine, opposite. The author, top, inhales the vanilla scent of *Duranta erecta*. From the front walkway, above, the statue the author named "Rebecca" is the focal point for an island bed.

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The Irresistible Epimediums

Exquisite flowers, delicate foliage, and easy dispositions make them perennials to pant for.

by C. Colston Burrell

Friends have accused me of trying to mulch my garden with epimediums, and it's not far from the truth. At last count I had 72 species, cultivars, or clones—a good start.

I don't know why I'm so captivated by these ephemeral beauties. Conceivably it may be my weakness for woodland plants. It could also be the exquisite shape of the flowers, or their seemingly endless variety of color and texture, or the fact that they're so undemanding. Whatever the reason, I like these East European and Asian natives so much I call them honorary natives, a designation reserved for only a few irresistible imports.

The singular flowers are made up of three layers. The outer layer of sepals usually falls as the flowers open, leaving inner sepals that in most species are colorful and petallike. The true petals, sometimes sporting long clawlike spurs, form the innermost ring. This characteristic form gave rise to the common name bishop's hat, for the flowers' resemblance to the papal miter. Most epimediums bloom in early spring, before the new leaves emerge or along with them. A few rebloom sporadically through the season, but it is the foliage that is so exceptional in summer and autumn.

The leathery leaves are dissected into three parts (botanists say they're ternately compound) and some are twice or even thrice divided again, making as many as 27 leaflets. Nine or even three leaflets is more common. Often the early spring leaves are more dissected than the leaves produced after flowering. The later-emerging leaves are also taller, sometimes twice the height of the early leaves. They are carried on thin, wiry stems, with a shape varying from arrows to ovals or broad hearts. In general, the larger the leaflets, the fewer the leaf divisions. The foliage can be deciduous, semi-evergreen, or fully evergreen.

Epimediums grow from dense rootstocks with many slowly creeping rhizomes that radiate from the center of the clumps, although a few species have trailing rhizomes and form fast-spreading, irregularly shaped mounds. The roots are coarsely branched and somewhat wiry.

Epimedium expert W. T. Stearn in his 1938 monograph *Epimedium and Vancouveria* recognized only 21 species in this genus. Since its publication, that number has been increased to 48 by avid botanists and horticulturists. Epimediums are native from eastern Europe through Asia and North Africa but the motherlode of species—at least 30—is found in Japan and China. New ones are still being discovered, primarily in the mountains of central China. Members of Berberidaceae, or the barberry family, they are most closely related to *Vancouveria*, American West Coast natives with charms of their



Epimediums share a delicate beauty, yet vary enough to make collecting them addictive. *E. acuminatum*, above, has bicolored flowers and distinctive prickled-edged foliage. *E. ×youngianum* 'Niveum', opposite, carries its conspicuously spurred blooms above neat clumps.



own. In the wild, epimediums are found in rich woodlands and on moist rock outcroppings. Many of the Chinese species are found on limestone or serpentine. Common names such as barrenwort attest to the medicinal uses long attributed to these plants in Asia.

Epimediums are delightfully easy to grow. You really don't have to pay a bit of attention to them once they are established; just stand back and admire them. I get the best growth in humus-rich, evenly moist

turbed for years. I have clumps more than 10 years old that have never been divided. An autumn top dressing with rich compost or well-rotted manure is helpful.

Although conservative references list most of them as cold hardy only to USDA Zone 5, most species are hardy to Zone 4 with a protective winter mulch or consistent snow cover. The Chinese species are the least hardy, and some of the newer introductions may only be suitable for Zone 6 and warmer. Time and regional trials will

Use and Propagation

The slow-spreading clumps are wider than tall, so they make an effective and distinctive groundcover. Several plants set out together will soon fill in to make a solid carpet. Even if you collect as I do, resist the temptation to relegate them to epimedium ghettos. Site them with other plants where their unique form and beauty can be appreciated by contrast. Place them under shrubs and flowering trees, or around rocks in the company of ferns, primroses, pulmonarias,



soil in light to partial shade. Although most Chinese species are native to limestone regions, *E. grandiflorum* from Japan dislikes alkaline soil. All of mine thrive in my relatively neutral soil at pH 6.8. As a rule, most will adapt to soil conditions other than extreme acidity. They'll tolerate a great deal of abuse, including low fertility, drought, and dense shade with few complaints, although such adverse conditions can slow vigor and spread. Epimediums are extremely long-lived, and can remain undis-

tell. The real danger to epimediums is spring frost. They are painfully vulnerable because they start growing so early in the season. There's been many a spring when I've covered plants in full bloom with bushel baskets and straw to protect them from a sudden dip below freezing, or to keep them from being crushed by wet snow. On two occasions, temperatures have dropped to single digits in mid-April, with devastating effects on a few plants, especially the Chinese species.

anemones, sedges, and ephemeral wildflowers. They bloom with the miniature daffodils and many other bulbs too, so countless combinations are possible. Be sure to cut away last season's foliage in early spring, or you'll wind up with a tangled mess of winter-burned leaves and new flowers.

Epimediums are easily propagated by division. Dick Weaver, former co-owner of We-Du Nurseries in Marion, North Carolina, recommends lifting the clumps as soon as the new foliage hardens in early

LYNNE HARRISON; KEN DRUSE.

Most epimediums bloom in early spring. A few rebloom sporadically throughout the season, but it is the foliage that is so exceptional in summer and autumn.



E. xversicolor 'Neosulphureum', opposite, has pale yellow flowers and new foliage with a distinctly coppery hue. With its tiny, high-flying flowers, *E. xcantabrigiense*, above, may be more quaint than gorgeous.

summer. Use a sharp knife to cut the rootstock into small divisions with at least two to three eyes each. Early division allows plenty of time for new root and shoot regeneration, but I have divided them throughout the growing season.

Starting epimediums from seed is fun and challenging; you can sow fresh seeds outdoors or indoors in flats. Be aware, however, that seedlings take several years to muster the size and strength to flower. While most of the hybrids available today are the result of deliberate, controlled crosses, Collector's Nursery in Battle Ground, Washington, is trialing a number of seedlings found in its gardens, as well as some from crosses. I am starting to get a few seedlings in my own garden, and am hoping for some smashing hybrids.

Garden Center Varieties

Only a few species and cultivars are widely available from garden centers and mail-order nurseries. This is due in part to the plant's slow increase. The most widely offered species are imported from Holland, where they are mass produced. Although much of this stock is exceptional, there are a few problems with these imports, the main one being mislabeled plants. The most common mistake is selling *E. xcantabrigiense* as *E. xyoungianum* 'Niveum', but I have seen *E. xversicolor* 'Sulphureum' mislabeled as several different plants, especially *E. xperralchicum* 'Fröhnleiten'. Buying plants in bloom is the best way to assure that you are getting what you want.

E. xcantabrigiense is more curious than beautiful, but has a quiet charm. The small, salmon flowers are held just above the neat foliage, which is deciduous to semi-evergreen. Some from Holland seem to have a virus that affects the early leaves but seldom the later ones.

E. grandiflorum, the large-flowered bishop's hat from Japan, is one of the loveliest species. The delicate, one-inch spurred flowers hang in loose clusters mingled with or just above the new spring foliage. Though the flowers of any one plant last barely a week, there are many clones with different colors and bloom times. New foliage is often tinted red, and mounded clumps of divided, deciduous to semi-evergreen spiny leaves remain neat and attractive all season. The cultivar 'Lilafee' has bicolored rose-purple flowers. Less available but choice are the large-flowered 'Rose Queen' and 'White Queen'.

Specimens sold under the latter name in American nurseries are attractive but not the real thing, with smaller white flowers.

E. xperralchicum 'Fröhnleiten' is a lovely hybrid between two Mediterranean species, *E. pinnatum* subsp. *colchicum* and *E. perralderianum*. Erect spikes of daffodil-yellow flowers are carried above the bronze-tinted spring leaves, which have three broad, toothed evergreen leaflets. This cultivar is especially tough and drought tolerant.

For beauty and durability you can't beat *E. xrubrum*, a vigorous, deciduous spreader that rapidly makes a gorgeous groundcover. Foliage that appears to be stained red-brown emerges in spring along with the horizontal sprays of short-spurred carmine and yellow flowers.

The first epimedium I grew was *E. xversicolor* 'Sulphureum', given to me by a friend in 1970. I was captivated. Primrose-yellow, short-spurred flowers are carried above and among the emerging, bronze-tinted, evergreen leaves. The clump nearly doubled the first year from fast-creeping rhizomes. I still have a piece of the original plant, as do 100 of my closest friends. Two other selections occasionally available are 'Neosulphureum', with flowers of a paler yellow, and 'Versicolor', which has flesh-pink flowers.

E. xwarleyense has been around for years, but did not become widely available until the introduction of the German cultivar 'Oranje Konigin'. Plants form dense, evergreen clumps with broad leaflets and handsome burnt-orange, short-spurred flowers that face outward on erect to arching spikes.

E. xyoungianum is an enchanting hybrid with neat clumps of delicate, deciduous oval leaflets. The white flowers have conspicuous flattened spurs and are carried just above the leaves in drooping clusters. 'Roseum' has rose-pink flowers and 'Niveum' is snow white.

Specialty Epimediums

Many epimediums are just now becoming widely available in North America due principally to three nurseries—Heronswood, Collector's Nursery, and Garden Vision. These avid epimedium fanciers have combed nurseries and wild places in Europe and Asia and offer them on a regular basis in limited quantities.

The airy sprays of small yellow and red flowers endear *E. alpinum* to collectors and lovers of subtle wild beauty. The arrow-



The shape of the epimedium flower earned it the common name "bishop's hat." There are many cultivars of *E. grandiflorum*, the large-flowered bishop's hat from Japan, but 'Lilafee' is one of the most widely available. This is probably the only epimedium species that dislikes alkaline soil.

Place them in the company of ferns, primroses, pulmonarias, anemones, and sedges. They bloom with the miniature daffodils and many other bulbs, so countless combinations are possible.

shaped, semi-evergreen toothed leaflets are rimmed with red in spring, and it stands up to heat, cold, and drought.

Large pale yellow spurred flowers would seem to set *E. koreanum* apart from other species, yet it remains taxonomically bewildered, often listed as a subspecies of *E. grandiflorum* and occasionally under an altogether different name of *E. coelestre*. The arrow-shaped, deciduous leaflets are carried on erect two-foot stems with the flowers borne below them. Plants sold as *E. koreanum* 'Nanum' are of murky affiliation, but are charming—only six inches tall with relatively large, spurred yellow flowers.

E. diphyllum is also tiny, with paired, semi-evergreen leaflets shaped like elongated shields and small, nodding snow-white flowers. 'Nanum' is even smaller, only three inches high. 'Roseum' has rose-pink flowers.

There are many exquisitely colored forms of *E. grandiflorum*, most named in Japan, such as *E. grandiflorum* var. *higoense*, a low, spreading white-flowered plant with incurved, clawlike spurs borne before the

leaves unfurl. A few have originated in North America and Europe. 'Orion' is to die for, with huge deep rose-red flowers and large, broad-toothed leaflets. 'Queen Esta' is a stunner with purple spring leaves that flush rose and orange in early autumn and one-inch rose-and-white flowers. 'Saturn' is a compact, slow grower with white flowers held just above the leaves, and 'Sirius' has huge, pure white flowers.

E. pinnatum and its subspecies (*E. pinnatum* subsp. *colchicum*) are tough, drought-tolerant plants from the Mediterranean. Erect spikes of bright yellow flowers are held above the evergreen, heart-shaped leaflets.

E. sempervirens is similar in most respects to *E. grandiflorum*, except the leaves are evergreen and have spiny margins. The wild form has spurred white flowers held among or just above the leaves. 'Aurora' has lavender-pink flowers with light-tipped spurs, giving a bicolor effect, and 'Mars' is clump forming with rose flowers and semi-evergreen leaves.

LYNNE HARRISON; MICHAEL S. THOMPSON



The bloomtime of many epimediums is brief, so it makes sense to choose them for their foliage. The striking spring leaves of *E. x rubrum* emerge at the same time as its red and yellow flowers. This epimedium spreads vigorously and makes an ideal ground cover.

E. x youngianum is a variable hybrid with many lust-worthy cultivars. 'Merlin', introduced by We-Du Nurseries, has large, deep-rose flowers. 'Milky Way' is a low spreader with white flowers and a distinctive gray spot on the upper leaf surface where the petiole joins the stem. Others with white flowers are 'Niveum' and 'Yenomoto', which is taller and has larger blooms. 'Pink Ruffles' is a robust plant that grows to 12 inches tall; its large, ruffled, rich pink flowers appear double.

Hard-to-Find Collector's Plants

There are several choice species, most from China, that have been in the trade for a while but still aren't offered anywhere on a regular basis. You can buy them only sporadically as stocks become available, and they sell out quickly. Order early!

E. acuminatum sports distinctive spear-shaped, evergreen leaflets and gorgeous flowers with white sepals and purple spurs and petals. A well-grown clump is a spiritual thing for an epimedium addict, much

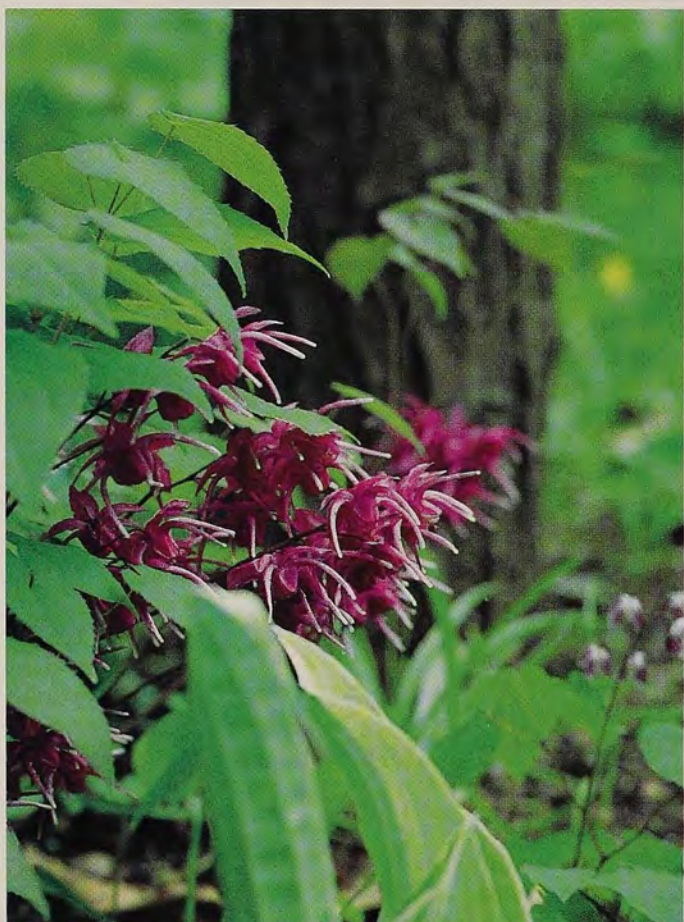
like Dom Perignon champagne. Unfortunately, mine has been severely damaged by spring freezes.

E. davidii is a choice but scarce species with medium-yellow, spurred flowers carried above the leaves in arched sprays. The small evergreen, oval leaflets are distinctly toothed.

E. leptorrhizum has quilted, leathery evergreen leaves tinged with bronze in spring. The huge, flat flowers are rose-colored, with long spurs, and are carried high above the leaves on one-foot stems. The far-reaching rhizomes turn it into an attractive groundcover, but it has been touchy in my Zone 4 garden.

The foliage of *E. pubigerum*, on the other hand, has persisted on my plant for two full seasons despite sub-zero winters under snow. This Turkish species has been in cultivation for years but is seldom seen in gardens. The nearly round, leathery leaflets are deep black-green, and the small, creamy white flowers are carried in branched, airy clusters above them.

There are several choice species of epimediums, most from China, that you can buy only sporadically as stocks become available, and they sell out quickly. Order early!



CLOCKWISE FROM TOP LEFT: ALAN AND LINDA DETRICK; KEN DRUSE (2); GALEN GATES.

Sources

COLLECTOR'S NURSERY, 16804 NE 102nd Avenue, Battle Ground, WA 98604, (360) 574-3832. Catalog \$2.

GARDEN VISION, 63 Williamsville Road, Hubbardston, MA 01452-1315, (508) 928-4808. Catalog free with business-sized SASE.

HERONSWOOD NURSERY LTD., 7530 288th NE, Kingston, WA 98346, (360) 297-4172. Catalog \$4.

WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752-9338, (704) 738-8300. Catalog \$2, deductible.

E. sagittatum is one of the most striking species. The huge, spear-shaped leaflets can be more than six inches long. Mature plants can be two feet tall. It is prepossessing in foliage but not flower; the sprays of tiny white flowers are carried among and above the emerging foliage. There are many clones of this species being introduced from China. Stay tuned for a dazzling set of new introductions.

In contrast to the gorgeous giant above is the Japanese *E. setosum*, only six inches tall, with branched sprays of spurless white flowers. The clone sold in this country is likely a hybrid and not the true species, but by all accounts is a more desirable garden plant than the real McCoy.

The Cutting Edge

In the April 1996 issue of the Royal Horticultural Society's *The Garden*, Robin White of Blackthorn Nursery in Hampshire proclaimed the "dawning of a new era" with the recent introductions of epimediums from Japan and China. The mouth-watering photos and delectable descriptions were enough to send any collector into ecstasy and unbridled lust.

Dan Hinkley of Heronswood Nursery and Darrell Probst of Garden Vision have been trotting the globe to bring the best new species and cultivars into the American nursery trade, and Hinkley described some of them in the fall issue of *Pacific Horticulture*. Far from elitist, many of these extraordinary species are destined to bring epimediums further into the mainstream.

One of the most promising species likely to be offered by American nurseries in the foreseeable future is *E. brachyrrhizum*, which is similar to *E. leptorrhizum* but has shorter rhizomes and dense clumps of one-foot-long evergreen leaves. Hinkley says the two-inch, rose-pink, bicolored flowers are especially prolific.

E. dolichostemon is a large species similar to *E. sagittatum* in foliage, but the white and rose-red flowers are larger. 'Enchantress' is a lovely hybrid that bloomed the first time for me last spring. The quilted, arrow-shaped evergreen leaves and metallic pink flowers are a stunning combination.

After seeing *E. ecalcaratum* in White's *Garden* article, I'm giving it my vote for 1997 poster posy. Upright spikes of spurless yellow lantern-shaped flowers are held above the rounded, spiny evergreen leaves. Need I say more?

E. epsteinii, named for the late amateur gardener Harold Epstein, a passionate

devotee of epimediums, has sprays of flowers with white sepals and red-purple spurs and petals. The leaves form a dark green, glossy groundcover about six inches high.

E. fangii has large, spurred, rich yellow flowers held above the evergreen leaves on upright stems. A lovely hybrid of this species and *E. acuminatum*, called *E. xomeiense*, has two- to three-foot branched clusters of spurred, red-and-yellow flowers. 'Stormcloud' is a named selection introduced by Blackthorn Nursery and being propagated in the United States. I can't wait to get my hands on this one!

Pictures of *E. franchetii*, with the spurred yellow flowers of *E. davidii* and the luscious, six-inch spear-shaped leaflets of *E. acuminatum*, drove me mad. I just latched on to this beauty in the fall, and fell in love with the foliage. Plants may be tender in Zone 5 and colder.

E. myrianthum, a new arrival in my garden, has yet to flower. I expect two-foot sprays of tiny white and yellow flowers over evergreen foliage that appears mottled when it emerges in spring.

Epimedium ogisui is turning heads, but may be elusive since it grows on rock ledges in the cool mist of waterfalls. The pure white flowers carried above bronze-tinted new leaves will assure that collectors make a fair go of trying.

One of England's best-known collectors, Roy Lancaster, discovered *E. stellulatum* in 1983 and his named selection, 'Wudang Star', has been in cultivation in that country ever since. It's just beginning to appear in nurseries here. The tall, branched sprays of small white flowers are enchanting over top of the dense, one-foot mounds of evergreen leaves that turn burgundy in autumn.

If deportment alone made a good garden plant, *E. wushanense* would be renowned. This giant has evergreen, lance-shaped leaflets mottled in spring, and two- to three-foot branched sprays of small butterscotch to brownish-pink spurred flowers. Wow!

Perseverance and patience have historically been the only way to build a collection of these fascinating plants. In the next few years, American gardeners should see a flood of fabulous new introductions in specialty nurseries, and ultimately, garden centers will also offer some of these choice plants. This is the story of horticulture. Get ready to participate in history.

C. Colston Burrell is a landscape designer and garden writer who lives in Minneapolis, Minnesota.

Top: *E. pinnatum* subsp. *colchicum*, left, a tough, drought-resistant variety from the Mediterranean; *E. grandiflorum*, right. Bottom: *E. grandiflorum* 'Rose Queen', left; and *E. xversicolor* 'Sulphureum', right, the variety that hooked the author on the genus in 1970.



The Melting Plot

Except for Native Americans, our ancestors came from somewhere else and so did our garden ideas. First of two parts.

b y S u s a n D a v i s P r i c e

America is a nation of immigrants, so it's no wonder her gardens reflect a multitude of cultures. From the beginning, gardeners from every corner of the world brought their prized vegetables, grains, and fruits, sometimes smuggling the seeds into the country under headbands and in skirt hems. Ornamental plants too—bulbs, small shrubs, and flower seeds—made the ocean voyage along with linens and cookware. Wealthy landowners imported acres of Old World stock; nurseries offered plants from Asia and Europe.

In addition to their plants, settlers brought ideas about garden design. In making homes here, many tried to recreate the landscapes of their former homelands. Spaniards built courtyards and fountains; Italians added arbors and planted grapes. The earliest English settlers started herb and knot gardens; later arrivals from Great Britain planted perennial borders. Well-to-do landowners like William Penn, who brought in five English landscape gardeners to lay out his 6,000-acre estate, hired European designers to plan their grounds.

But as each introduction—plant or plan—arrived, it was modified a bit by weather, other plants and animals, soil. Native Americans offered new food crops, knowledge of the climate, and growing techniques. Their instruction at Plymouth Colony in the intercropping of squash, corn, and beans was but the most famous instance in a long series of exchanges with settlers. Later, established settlements



“Americanized” arriving Swedes and Irish, showing which crops and landscape designs were appropriate for the new world.

Now, nearly 500 years after the first Europeans began turning American soil, sorting out ethnic influences is akin to separating a chocolate chip cookie into its original ingredients. The eggs and butter are there, of course, but how can we single them out? Still, a look at the country's domestic and civic landscapes is a fascinating exercise, offering clues to our past and present.

The Genus Out of Place

The detective might as well begin with the plants themselves; their origins are dizzy-

The shady veranda of the mission at San Juan Capistrano, opposite, with bougainvillea growing against its supports, exemplifies the Spanish influence on Southwest gardens. The Beauregard Keyes House in New Orleans, above, is typical of French-inspired courtyards in that city.



Among the first and most enduring plants brought to the New World were roses like 'Austrian Copper' (also listed as *Rosa foetida* 'Bicolor'), top left, which was introduced before 1590. *Rosa* 'Camaieux', top right, came from France around 1830. Above, the private garden of the Moyer family in Zionville, Pennsylvania, illustrates the German four-square principle.

ingly complex. From the humble dandelions we've historically cursed in our lawns to the elegant ginkgo trees with which we've lined our streets, exotic plants fill our neighborhoods and parks. The many plants whose common names begin with distant geographic areas (Lombardy poplar, Siberian iris, Japanese holly) are one indication of the America's indebtedness to other countries. But having an American place-name is no guarantee that a plant is native. Colorado spruce is indeed from the mountain state, but Boston ivy originates in China and Japan, and Kentucky bluegrass is really a Eurasian plant introduced here around 1685. In her book *Green Immigrants*, Clare Haugh notes that most of our cultivated flowers, vegetables, fruits, and grains and nearly 70 percent of our weeds have come from other nations.

Many of the fruit and vegetable crops came with explorers and settlers, some flourishing so readily that later settlers assumed the plants had always been here. One such hardy transplant, the peach, seems to have been introduced by the Spanish in Florida in the 16th century. From there Native Americans spread the fruit northward and it became naturalized throughout the South. When the English later penetrated Georgia, Virginia, and the Carolinas, they found peaches already growing wild as well as in Native American orchards.

Melons, too, established themselves faster than the Spanish who first planted them in 1575. Twenty-two years later, explorers found Native Americans cultivating watermelons in Georgia, more than 100 miles beyond the nearest Spanish outpost. The next year, the Spanish delegation to New Mexico discovered the Pueblos growing the fruit; apparently the seeds had been traded west by neighboring tribes.

Once they were settled, communities kept up a steady commerce with their homelands. Some 25 years after they landed, the Dutch in Manhattan could name hundreds of plants from the Netherlands growing in their gardens—food crops and herbs, of course, but ornamentals as well. One list from 1655 mentions red and white roses of different kinds, lilies, several types of gillyflowers (pinks), anemones, violets, numerous varieties of tulips and other bulbs, marigolds, and daisies.

Thinking of England

Ethnic influences are not obvious at first glance in our landscape designs. After all, America's favorite plan—the family home surrounded by a sward of green grass—stretches from Maine to California and all points in between. But we need only remember the courtyards of New Orleans and the Japanese gardens of California to be reminded that Americans take inspiration from around the globe.

Perhaps a stroll through typical American neighborhoods will give us clues about our gardening forebears, and we might as well begin with the lawn. This verdant strip, watered at great cost in states like Arizona and New Mexico, came to us from England, a land of heavy rainfall and mild climate. There the lawn was part of the pastoral beauty of 18th-century country estates.

Among the many travelers who imported aspects of the English landscape was Thomas Jefferson. After visiting and admiring some of the most distinguished

OPPOSITE: THE NEWBERRY LIBRARY; PATRICK BISHOP; DAVID CAVAGNARO. ABOVE: DENNIS MOYER

English gardens, Jefferson incorporated their broad green expanse into his designs at Monticello and the University of Virginia. On large properties along the eastern seaboard and throughout the South, lawns became a symbol of the easy country life. For decades, smooth grass was primarily a plaything of the landed gentry, who could afford hired hands to keep it trimmed. But a 19th-century invention, the reel mower, made a clipped lawn attainable for those of modest means, uniting America's diverse towns and suburbs with one vast mantle of green.

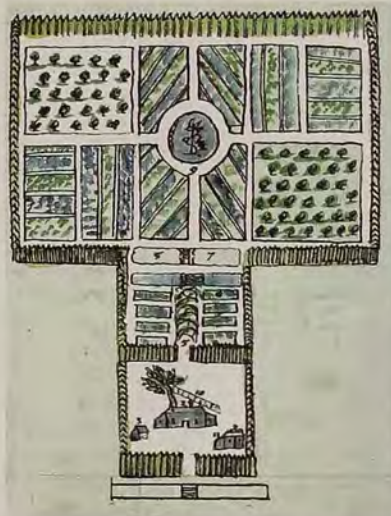
The patio, too—that omnipresent element in the yards of the 1950s and '60s—seems quintessentially American, the focus of the nation's barbecues and socializing. Nevertheless, we can look back to the country's earliest landscapes for its origin.

From Courtyards to Cookouts

In the 16th and 17th centuries, the Spanish established outposts in Texas, southern California, and parts of the Southwest. In these dusty, dry territories, they often arranged their homes and buildings in a U-shape, the long series of rooms connected by an outdoor veranda. The resulting courtyard resembled the Moorish gardens of Spain, with trees planted for shade and fruit, and vines and roses growing along pillars and posts. As in most arid countries, herbs and flowers were often grown in terra-cotta pots to take advantage of waste water.

Nowhere was the Spanish presence felt more keenly than in California, with its series of 21 Franciscan missions from San Diego to San Francisco. Built around a large patio with a fountain and garden, the missions were constructed of massive adobe brick walls with prominent eaves. Plants of the Old World flourished here, brought by the Spanish supply ships. Herbs, date palms, pepper trees, and species roses (important to early Californians because their blooms symbolized the Virgin Mary) were all introduced to the West Coast through the mission agriculturists.

After the missions were secularized in 1834, they fell into disrepair and were ignored by Californians for decades. In the late 19th and early 20th centuries, architects rediscovered the state's mission past, using the patio and veranda as essential elements of new homes. "The Missions," said California architect Irving Gill in 1916, "have taught us the beauty and usefulness of the court (patio). There was always a sheltered and a sunny side and an outlook into the



garden. The arrangement was ideal." The style swept through the Southwest, where the region's mild weather has made it enduringly functional. Also popular now, as then, are container gardens, fountains and pools, and vines along the veranda.

French Formalism

The Spanish were not the only group to favor enclosed gardens. The early French settlers, as one can still see in New Orleans, also built private retreats. These courtyards were bounded by high walls and entered through the house or by a side walkway.

Originally these French Quarter spaces provided respite from the noisy, foul-smelling city. Not just a place to raise ornamentals, the courtyard was an area for hanging clothes and preparing food. Here residents often conducted horticultural ex-

A watercolor of a plan from 1730, top left, illustrates the formal nature of early New Orleans gardens. That formalism persists there today in landscapes such as that of the Herman-Grima House, above, with its parterres of kumquat bordered by privet. The Spanish introduced the peach, top right, into Florida in the 16th century; in the '30s this naturalized food source became known as "the Depression peach."



Settlers found the New World rich in plants such as *Lilium canadense*, top. The fruit and vegetable seeds they brought with them were passed along for generations. One popular heirloom is the 'Moon and Stars' watermelon, above. Opposite top: Bellevue Botanic Garden in Washington state, top, updated the square German bed with drip irrigation. Bottom: English gardens inspired Jefferson's lawn at Monticello.

periments, grew plants to swap with others, and raised herbs and fruit. Brick or flagstone paving provided solid footing for horses and carriages.

In the 18th century, the layout of most French gardens was orderly in form, characterized by strict geometric design. Even in the 19th century, when other Americans were embracing curvilinear English romanticism, gardeners of New Orleans clung to French formalism. Residents of the city's Garden District continued to maintain fences despite advice from commentators like Andrew Jackson Downing on the beauty of the unfenced yard.

Hedges were placed just so—fruit trees and flowers arranged in rows and narrow beds. To mitigate the oppressively hot climate, the courtyard had at least one shade tree and plants with deep green foliage—boxwood, cast-iron plant (*Aspidistra*), and

ivy—that were cool to the eye. Fragrant roses, night-blooming jasmine, and wisteria helped combat the stench of the streets.

Elements of the French influence still permeate much of the southern coastal landscape, where formal brick terraces, vine-filled courtyards, and dark green hedges surround the houses in Baton Rouge, Metairie, and Lafayette.

German Geometrics

In the northern latitudes, another group of people brought a geometric layout to gardens, but with a much different effect. When the first German immigrants arrived in Pennsylvania in the late 1600s, they laid out their gardens as they had for generations—in four, well-tended square beds. Separated by two-foot-wide walkways, the four large beds were enclosed by walls or fences and sited close to the house.

This ancient cross-shaped design had religious origins, referring to the four rivers of Paradise watering Eden. When introduced to Europe through the spread of Islamic culture, the four paths were actual watercourses pouring from a central fountain. Later, German immigrants modified the four-square plan. Their designs, though still geometric, might have six or eight identical beds set in rectangles as well as squares.

The layout was both symbolic and extremely practical. Dimensions were in multiples of 11, a standard length of fencing; 55 or 66 feet square gave the average family ample herbs, vegetables, and flowers. In these raised beds, vegetables grew in straight, weedless rows, with the area nearest the house reserved for herbs. Flowers bloomed throughout, especially at the center where the two walkways crossed. There was little distinction made between the ornamental and practical. Town garden paths were often paved with large flat stones, but country paths were usually swept earth.

The plan persisted in farms and small towns until well into the 20th century, when rototilling replaced hand digging.

Now most of these same yards boast one neat vegetable plot, rather than four equal squares, but the cross design continues to inspire home gardeners.

Susan Davis Price is the author of Minnesota Gardens: An Illustrated History. She lives in St. Paul. NEXT ISSUE: The influences of African Americans, Asians, and Italians.

KEN DRUSE; DAVID CAVAGNARO, OPPOSITE: DAVID CAVAGNARO; MICHAEL S. THOMPSON



LONE STAR

A large, leafy tree with clusters of bright red berries against a clear blue sky. The tree's branches are thick and gnarled, with dense green foliage. The red berries are small and round, clustered in bunches. The background shows a hazy, green hillside under a clear blue sky.

SUPER STAR

Benny Simpson was famous for his plant expeditions—and his generosity.

by Linda Thornton

When Benny Simpson was a small boy in the '30s, his father would hitch up a team and take the family on a day's outing from their dusty little spread on the high, dry plains in the Texas Panhandle. Their destination was a picturesque stretch of the North Pease River, which ran through their property. For Simpson, the trips were a revelation. Until then, he'd seen precious little vegetation.

"Just a few Siberian elms and a lilac bush that grew by our house," Simpson recalled of his family homestead. He couldn't get over the relative lushness of the landscape before him:

cottonwood, hackberry, shinnery oaks (*Quercus havardii*), and even maples—some grown to an imposing size. He had never dreamed such an abundance of plant life could exist, or that trees could grow so tall. Often these trips were in early summer, and Simpson would marvel at the wildflowers in bloom.



*Long before
xeriscaping, Benny
Simpson had
launched his
one-man mission
to promote
native plants.*

So began a lifelong passion for plants—a passion that resulted in his becoming one of the region's foremost horticultural pioneers. Long before the world had heard of xeriscaping, Benny Simpson had launched his one-man mission to promote native plants adapted to the vicissitudes of Texas weather. It was a mission that would lead him into remote, rugged, and often never-before-explored ranching country seeking the best plants for propagation. He would cover hundreds of thousands of miles of highways and backroads in a little Chevrolet pickup and many additional miles on foot as he searched canyons, river bottoms, and escarpments for plants that scarcely anyone knew existed—let alone thought about using in the lawns and gardens of urban Texas and the booming Southwest.

Plants from Simpson's collection have been donated to the Heard Natural Science Museum in McKinney, Texas, and a collection of 345 of his plants in 84 genera has been dedicated at the Dallas Horticulture Center as the Benny Simpson Texas Native Plant Collection. The Research and Extension Center, where he worked for 42 years, is establishing a Benny Simpson Outdoor Learning Center.

writer and landscape designer Jill Nokes recounts receiving a phone call from a tree trimmer who had just discovered the book. He wanted to know all about its author and reeled off a string of excited questions.

"Do you think he'd let me follow him around some day when he's out lookin' at trees?" When he finally paused," Nokes wrote, "I once again had the sad task of telling someone that Benny had died on Friday, December 27, of complications following heart surgery. The tree trimmer man had missed knowing a most generous and special person."

There's no doubt Simpson would have let this new fan tag along with him. His plant-hunting expeditions were famous, as was his eagerness to share his hard-won knowledge. Book coauthor Sally Wasowski

calls Simpson a mentor who not only shared his contacts and slides, "He even let me disagree with him. There were never any strings attached to Benny's advice or his love." He wrote frequently for regional publications and lectured on native plants at venues throughout the Southwest. Among the results of his explorations—and years of observation—were a dozen new cultivars now finding their place in residential landscapes, and many more still being tested. They include selections and hybrids of the Tex-Mex shrub genus *Leucophyllum*, desert willow (*Chilopsis linearis*), false indigo (*Amorpha fruticosa*), and, even though his first love was woody plants, two salvias.

Few plants met his standards. Simpson insisted that his selections be cold hardy. They had to survive in the gummy, alkaline soils of the north Texas Blacklands region. They had to be drought tolerant. And, above all, they had to be beautiful. "There's no sense planting them if no one wants to look at them," Simpson would say.

Simpson began to think of using native plants back in the 1950s, even though at that time his professional work was agronomy rather than horticulture. He was particularly interested in trees. For instance, he observed the native hackberry—what he called the "Number-one tree of the 1950s"—and noticed that some were better adapted for survival than others.

"Once in a while, a hackberry doesn't have galls. It doesn't tear up. You could select it for its resistance to aphids. Same thing with a live oak. Only problem was, there was no research on Texas trees. The research was back in the East where the money was. No one was looking on the prairies," Simpson said.

"You walk down the streets of Phoenix and Tucson and the plant materials were all Yankeeified," he continued. "Or you walk down the streets of Texas cities and you'll see plants from South Africa and Australia and



In a Texas magazine, *Neil Sperry's Gardens*, Simpson called the Texas madrone (*Arbutus xalapensis*, previous page) a "ravishing wildling." His photos of the Chisos rosewood (*Vauquelinia corymbosa*, top) and Turner mimosa (*Mimosa turneri*, opposite) were in the March 1997 issue. Among his introductions was a *Salvia greggii*, above.





Simpson photographed Schott acacia, top, at the Barton H. Warnock Education Center in Big Bend Ranch State Park, where he often went plant hunting. Two of his selections of *Leucophyllum frutescens* are 'White Cloud', above right, and 'Rain Cloud', above.



South America. You might see a mesquite, but it'll be Chilean because it has no thorns." Simpson set out to change all that.

The Making of a Plant Hunter

Simpson entered Texas Tech, in Lubbock, when he was 16, and escaped action in the Korean War serving with the Marine Reserves in California. When he returned and completed his degree in agronomy, he planned to work on the family ranch. But his father, stung by the desperate and prolonged drought of the 1950s, urged him to find a more dependable livelihood.

Hired in 1954 by the Texas Research Foundation in Dallas, a private institution devoted to improving crop production through soil research, Simpson became an expert on the topic. His understanding of how the soil of a plant's provenance—its place of origin—related to its survival would serve him in good stead later, when his career took a turn and he was able to realize his ambition of becoming a full-time plant hunter.

That phase began in 1973, when the foundation was taken over by Texas A&M. Dallas was growing and losing interest in agriculture, and Simpson convinced the A&M hierarchy that a reasonable new direction would be finding tough ornamentals for North Texas' booming suburbs. He would

devote more than 20 years of his life to that program, ultimately called New Landscape Plants for Texas and the Southwest.

Because plants that prosper in North Texas must tolerate calcareous soils, most of Simpson's exploration was concentrated in the western parts of the state—the Panhandle Plains and the canyons, deserts, and mountains of the Trans-Pecos, where plants are found growing in limestone. The names of his destinations evoke that high, lonesome country: the Caprock Escarpment, the Rolling Plains, the Glass Mountains, the Guadalupe, the del Nortes.

While most people think of the Trans-Pecos region as dry and barren, Simpson pointed out that half the plants native to Texas grow in this region. It is a veritable meeting place of plants from the Rockies, the Rio Grande, Mexico, and the western deserts. Many of his discoveries were on the vast cattle ranches that encompass much of the western part of the state—private holdings with relatively unexplored botanical resources. Here the challenge was often not so much in finding likely plants for cultivation, but in tracking down property owners for permission to explore.

Some years ago Simpson was on the trail of an extremely rare plant, the Mexican blue oak (*Quercus oblongifolia*). It was rumored to be in the canyon of the Bofecillos Moun-

PHOTOGRAPHS THIS PAGE BY BENNY SIMPSON; OPPOSITE, ANDY WASOWSKI



tains on the Diamond A Ranch in the Big Bend area, although most experts claimed this tree was not to be found in Texas.

"One man owned the ranch. I found out he was the head of the Atlantic Richfield Company, the Los Angeles branch," Simpson said. "I wrote to him and asked permission to look for the oak. He sent me back an address, and said check with the manager, who lived in Roswell, New Mexico. I found out I'd gone to school with the manager. I checked with him, and he said sure, check with the foreman. By the time I tracked the foreman down it had taken two or three years.

"But I finally got in and he gave me a jeep and a guide. Unfortunately, the guide, a Mexican national, was a trapper of cats [the cougar or Western panther] and we spent the whole day going from waterfall to waterfall, checking his traps, before I realized what was going on."

Simpson's search for the Mexican blue oak illustrates the meticulous, years-long quest he was known to invest in a plant. Often the search was propelled by a brief mention in an old book.

"The paleobutterfly men found the Mexican blue oak in Arizona, in the Mule Mountains," Simpson related. "In the late 1800s, [Charles Sprague] Sargent at Harvard said the Mexican blue oak was in the

Chisos Mountains, but rare. I could find no other comments about it in other books. Where we did find it was in the Bofecillos mountains next to the Chisos. Maybe 50 to 100 years ago they didn't distinguish between the mountain ranges."

Unfortunately, such explorations of these ranches may be a thing of the past. Enforcement of the Endangered Species Act has made ranchers fearful of allowing botanists on their property. They believe that discovery of species close to the point of extinction—and Simpson said there are many to be found here—means the federal government has the authority to step in and take measures to protect the plant, in a way the ranch owners feel may impede their business operations.

In fact, this is extremely unlikely. Although endangered animals are protected, because they can move from place to place, a plant, no matter how rare, is seen as belonging to the property owner.

Nevertheless, Simpson said, "It's locked all the doors. There are trees and shrubs no one has ever seen out of the wild. We need to see them cultivated away from the cattle and the wild hogs, to see what they can be."

Simpson's Selections

Fortunately, Simpson made the most of the years when ranchers were more open to botanical exploration. Plants that used to be rare in Southwestern nurseries are appearing more frequently, and the drought-conscious public is beginning to ask for plants like *Leucophyllum candidum*, commonly called ceniza or violet silverleaf. It's also sometimes called dwarf silverleaf sage, but it's not a true sage. A member of the figwort or snapdragon family *Scrophulariaceae*, which also includes penstemon and Indian paintbrush, it is native to the United States only in the Chihuahuan Desert in southern Brewster County. Simpson found these three-foot shrubs in flower over an area of many square miles, but the plant he took to propagate was superior in flower color, number of flowers, tightness of form and compact shape. In 1985 the research station released this selection as 'Thunder Cloud'.

Other releases in his 'Cloud' series are selections of Texas purple sage, *L. frutescens*, also called ceniza or barometer bush. 'Green Cloud' is a green-foliaged form of this typically gray-leafed plant, and 'White Cloud' has white flowers instead of rosy purple. They're five to six feet tall, as is 'Rain Cloud', a hybrid of *L. minus* and *L. frutescens* with dark purple flowers



Yellow damianta (*Chrysactinia mexicana*) and purple shrubby scullcap (*Scutellaria drummondii*) bloom in a hot traffic island at the Texas Agricultural Experiment Station, where Simpson, above, worked and designed the gardens on its grounds.

Lynn Lowrey: Another Mighty Oak

Six months after Benny Simpson's death, Texas horticulture lost another native plant pioneer, Lynn Lowrey, who died of cancer at the age of 80. Lowrey was known for introducing Mexican oak species, beginning 30 years ago, and also selected American hollies from superior East Texas trees. David Creech, professor of horticulture and director of the Stephen F. Austin State University Arboretum in Nacogdoches, writing in the newsletter of the Native Plant Society of Texas shortly after Simpson's death, called Lowrey "another mighty oak."

He earned a degree in agriculture from Louisiana State University before serving in the Army in World War II, then spent the rest of his life collecting and propagating plants for various Texas nurseries. Although he started his own nursery in the '50s, "Lynn was more a true plantsman than a true nurseryman. [It was] hard for him to stay in one spot," said Creech. Business and money seemed a distraction; his talent was in putting people together, Creech went on. "Whether connecting medical researchers and cancer foundations with rare cancer-fighting plants like the happy tree (*Camptotheca*) of China, or locating



Taxus globosa in the mountains of Mexico for the Arnold Arboretum, or hunting down a particular genotype for a botanist, or chasing down a natural hybrid between two related genera... Lynn was always there to help out."

Before it was politically correct, Creech said, Lowrey was teaching others about such topics as biodiversity; taking advantage of microhabitats; understanding the importance of site preparation, plant community development, and natural form in design; and using superior and adapted natives and exotics.

Benny Simpson was just beginning to earn a reputation outside Texas when he died; Lowrey was even more low-key. William D. Adams, a County Extension Agent with Texas A&M, noted in *Texas Gardener* magazine that Lowrey went out of his way to avoid notoriety and lectures before big crowds, even though his reputation would have filled large rooms. Agreed Creech: "Lynn wrote little and spoke less. Yet, his followers were legion."

—Kathleen Fisher, Editor

Another release is 'Dark Storm,' a cultivar of desert willow (*Chilopsis linearis*), a member of the catalpa family and related to trumpet vine and cross-vine. This cultivar came from the Sierra Blanca in Hudspeth County, from an altitude of 4,512 feet. 'Dark Storm' is a descendant of thousands of desert willows planted by the U.S. Forest Service in Texas and Oklahoma as part of the shelterbelt program of the depression days. Only two species of that planting remain: desert willow and soapberry (*Sapindus drummondii*). Desert willow is becoming increasingly popular throughout the Southwest, although it needs periodic deep watering during dry summers or extended drought.

From Collin County, Simpson brought back a false indigo, released as *Amorpha fruticosa* var. *angustifolia* 'Dark Lance'. It grows to 10 feet tall and can either be

trained as a small tree or left to spread to seven feet. From late April to early May 'Dark Lance' is covered with blue-purple spikes six to eight inches long. A native of low wet areas, it's not recommended for arid regions.

Simpson's first salvia introduction was *Salvia regia* 'Mount Emory', which has fragrant, glossy green, deciduous leaves. Native to dappled shade in mile-high areas of Big Bend National Park, it grows to eight feet tall and produces its orange-garnet flowers most heavily in September and October. A selection of *S. greggii* with violet-pink, white-throated flowers has been unofficially given the name 'Lancaster Hill'.

He had also been working on Mexican buckeye (*Ungnadia speciosa*), evergreen sumac (*Rhus virens*), Mexican redbud (*Cercis canadensis* var. *mexicana*), wax

myrtle (*Myrica cerifera*), and a hybrid of two kidneywood (*Eysenhardtia*) species.

The Acorn Doesn't Fall Far...

For Simpson, like many other Texans of his age, the droughts of the '30s and '50s were seared in memory. He foresaw Texas cities facing water shortages already common in Arizona, New Mexico, and California, and felt it crucial that Southwesterners wean themselves from Eastern plants.

But while drought tolerance is important, so is provenance—an issue that Simpson preached with evangelical fervor, "Don't tell me about the courthouse square where you picked up that acorn," he would say. "Tell me where the acorn that the oak tree came from was collected."

It's a point that nurseries seem scarcely aware of, and the gardening public not at all. To most people in the South, a live oak is a live oak. There are, in fact, many species of live oaks in Texas—among them, *Quercus virginiana* and *Q. fusiformis*. They look very similar and are sold almost interchangeably. But the difference was brought to bear dramatically in 1989, when a severe freeze killed many of the live oaks in Dallas. The survivors? *Q. fusiformis*, a species thought to have been much more widespread in Texas during glacial times. The botanist C.H. Muller of the University of California at Santa Barbara has suggested that *Q. fusiformis* is a hybrid of *Q. virginiana* and *Q. brandegii*, the latter of which is found now only in Baja California.

In contemplating retirement, Simpson was gratified to see so much interest in Texas natives but frustrated that so few nurseries were propagating them. The problem was not a lack of natives suitable for our gardens, he felt, but the bottleneck between the plant hunter and the homeowner.

North Texas—where most people try to create southern or southwestern gardens—is neither. Southern plants like more acidic soils, while southwestern vegetation often freezes during Northerners and rots in wet spells. Simpson experimented with more than 500 plants, many flourishing now for a decade or more at the research station, that appear to be tough enough to take the harshest weather the region can dish out. Their role in helping North Texans achieve a unique, homegrown gardening style will be part of Benny Simpson's legacy.

Linda Thornton is a free-lance writer living in Tucumcari, New Mexico. Benny Simpson's photos are courtesy of Texas A&M University.

Out of the Woods

**Native azaleas are still
virtual unknowns
to many gardeners.**

b y R i c h a r d E . B i r

You would think, given all that native azaleas have going for them, that the public would know about them and invite them into their gardens. Yet I don't see this happening, even with otherwise savvy gardeners.

The first time I noticed this awareness gap was in the '60s, when I was a graduate student in plant chemistry and was asked to identify plants on a birthday hike with fifth and sixth graders. On Mount Tom, between Northampton and Holyoke, Massachusetts, there were some pink-flowering shrubs in the woods that no one could believe were azaleas. After all, everyone knows that azaleas are evergreens that only grow in the South.

But Southerners aren't tuned in to them either. A decade later, when I was an Extension agent in Gainesville, Florida, a neighbor asked me what those lovely, fragrant shrubs were, blooming pastel pink in February alongside a house he'd passed. They were *Rhododendron canescens* that had been transplanted from a woodland—and the neighbor asking about them made his living as a landscaper.

Flash forward another decade and back north to a Connecticut arboretum in August, when a group asked me about some red-flowered shrubs. They at least knew they looked like native azaleas, but I don't think they believed me when I said they were a Georgia native, *R. prunifolium*.

In all three cases, it was the beauty of the plants that drew attention. Taxonomists



have created confusion by changing the name of flame-colored *R. speciosum* to *R. flammeum*, although that made some sense, but then they gave the pinxterbloom *R. nudiflorum*—a species that flowers when its branches are still naked—the mouth-twisting moniker of *R. periclymenoides*. But I don't think it matters a lot to the people who finally discover them what their scientific names are. They just want to grow them in their gardens.

Need a reason? First, native azaleas may be the perfect plant for a garden niche you may not even think about—those patches

The plumleaf azalea is a Georgia native with flowers that will stop traffic, although it lacks fragrance.



THIS PAGE, TOP LEFT: JESSIE M. HARRIS; TOP, RIGHT: MICHAEL S. THOMPSON; BOTTOM: LYNNE HARRISON. OPPOSITE, TOP: ROB SIMPSON; BOTTOM: MICHAEL S. THOMPSON.

of woodland that look fine as they are, but could use some seasonal excitement. Or maybe you're among the gardeners who've given up on a corner of the yard where a neighbor's tree—or some of your own—casts shade for most of the day. In the Southeast, these shrubs actually do best where they get only an hour or two of full sunlight, or in a site that's just sprinkled with sunshine. In New England, where summer nights are cooler and the growing season is shorter, many of these same azaleas thrive in full sun.

Most native azaleas are grown to enhance a natural landscape rather than to overwhelm the viewer, as the flashy-colored evergreen oriental azaleas can do. Subtlety of flower and fragrance are a keynote of their appeal, with pink and white flowers predominating. But if you want to stop traffic, you can easily do it with appropriate siting of the orange to red Oconee or deep brick-red plumleaf. And bright yellow and color combinations that mimic orange-pineapple ice cream are not all that rare.

Bloom time extends from earliest spring into late summer, and among the scented ones, fragrance ranges from heliotrope to clove to sugary sweet. And fortunately, some azaleas with the nicest fragrances flower when early spring weather is tempting us to linger outdoors and enjoy their seductive scents.

Those are merely the attributes of the pure species, and genetic purity is not necessarily the norm with wild azaleas. Blame the bumblebee—natural hybrids are common and they can add a smorgasbord of variations. Nor have human hybridizers ignored these wonderful native shrubs. The array of colors, forms, and fragrances available has consistently expanded over the past few decades.

As happened with so many of our native plants, our azaleas took a tour of Europe. Hybridizers in England and Ghent, Belgium, began crossing them with each other and with Asian species in the early 1800s. These were parents of the splashy deciduous Knap Hill and Exbury hybrids that caused such a stir when they arrived on our shores, before settling down as standard items in many of our best gardens. In the mid-1900s, these begat the Ilam azaleas from New Zealand.

Which One?

Even if you can't distinguish a pinxterbloom from a Piedmont (*R. canescens*), you need



to know about colors, time of bloom, size of shrub, and the plants' environmental preferences if you wish to be successful with native azaleas in your garden.

All North American native azaleas are deciduous. Botanically, they are all rhododendrons. There is one western species, *R. occidentale*, which I've only visited. They're big with a yellow-orange blotch, said to be fragrant and hardy to USDA Zone 7, but apparently they don't like the humidity of the East. It's okay, though—we have plenty of our own.

The flowers of some, such as pinkshell—*R. vaseyi*—bloom before leaves emerge in the spring. Others, such as the hummingbird-attracting plumleaf azalea, *R. prunifolium*, which is so closely identified with Georgia's Callaway Gardens, don't show their blooms until leaves are fully expanded in early to mid-summer, de-

Opposite: Three natives with sweet fragrance are, top, swamp azalea and Piedmont azalea, and bottom, coastal azalea. Flame azalea, top, will tolerate occasionally dry soils, while roseshell azalea, above, is a bit cold hardier than most.

SPECIES	COMMON NAME	FLOWER COLOR	FRAGRANCE	USDA ZONE
<i>R. alabamense</i>	Alabama	white, pink	lemony spice	6-8
<i>R. arborescens</i>	smooth, sweet	white	heliotropelike	5-8
<i>R. atlanticum</i>	coastal, dwarf	white	sugary sweet	6-8
<i>R. austrinum</i>	Florida flame	yellow-orange	sweet, fruity	6-9
<i>R. calendulaceum</i>	flame, yellow	yellow, orange	none	6-7
<i>R. canadense</i>	rhodora	pink to pinkish purple	none	4-6
<i>R. canescens</i>	Piedmont	light pink	delicate, sweet	6-8
<i>R. cumberlandense</i>	Cumberland, Bakers	red-orange	none	6-8
<i>R. flammeum</i>	Oconee	red, orange	none	6-8
<i>R. periclymenoides</i>	pinxterbloom	pink, white	faint to none	6-8
<i>R. prinophyllum</i>	roseshell, election pink	pink, rose	clove	5-7
<i>R. prunifolium</i>	plumleaf	brick red	none	6-8
<i>R. vaseyi</i>	pinkshell	pink, white	none	5-7
<i>R. viscosum</i>	swamp	white	spicy sweet	5-8



Both the smooth azalea, left, and the pinkshell azalea (shown at right, *R. vaseyi* 'White Find') are hardy to USDA Zone 5 with careful siting. The Florida flame azalea, opposite, which lights up the woodlands of the Deep South coastal plain in early spring, will grow in southern Zone 6.

spite the flower buds having been prominent since the previous autumn.

Most native azaleas will eventually grow 12 to 15 feet tall, although pinxterbloom is about half that at a maximum of eight feet and the coastal azalea is essentially a ground cover at only one to two feet. Please don't ignore hybrids of native azaleas. They are some of our most garden-worthy shrubs. Three of my favorites are small in stature and have wonderful fragrance. Two that came out of the breeding program at Weston Nurseries in Hopkinton, Massachusetts, are 'Pink and Sweet' and 'Lemon Drop.' Both have *R. viscosum* in their heritage and both are very slow to develop. My plants are 10 years old and about three feet tall. Both wait until summer to bloom, so flowers appear with leaves. 'Pink and Sweet' has a delicate spicy sweet fragrance and medium-pink flowers

with a golden throat while, 'Lemon Drop' has a fragrance reminiscent of its namesake, lemon drop candy.

But the winner for fragrance and inspiring covetous comments from visitors is 'Marydel'. Its discoverer, Polly Hill, named it for the location where she found it growing wild, near the Delaware-Maryland border. Our plant is about three feet tall and 10 feet across, slowly getting wider due to a suckering habit. I enjoy cutting azaleas to bring indoors—Graham Stuart Thomas has written that "it is almost impossible to pick a spray...without making an effectively balanced little display." They'll last five days without preservatives, especially if you cut them early in the morning. 'Marydel' is a favorite for this, too. If you can find it, it's worth adding to your garden in partial shade or, if you garden in the mountains like we do, 'Marydel' will thrive in full sun. The more sun, within limits, the more flowers you are likely to enjoy.

Cold Hardiness Range

Nearly all of the azaleas native to the eastern United States will thrive in hardiness Zones 6 and 7. When you get into Zone 5 and slightly colder, rhodora (*R. canadense*) and roseshell (*R. prinophyllum*) azaleas are most dependable. But if you select your planting site carefully, the North Carolina native pinkshell (*R. vaseyi*), some swamp azaleas like *R. viscosum* var. *montanum* and the hauntingly sweet-scented, sometimes treelike smooth azalea (*R. arborescens*) can perform spectacularly in Zone 5.

In Zones 8 and some selected locations in Zone 9, native azaleas have long been a gardeners' tradition and hikers' delight. I've already mentioned the February-blooming *R. canescens* that started the season when I lived in Gainesville. Bringing life to deep South woodlands later in the season are the red and orange flowers of plumleaf and Oconee (*R. flammeum*), and the golden flowers and spicy-sweet fragrance of the showy Florida flame azalea (*R. austrinum*). From personal experience growing them in North Carolina, I can attest that all of these southern natives grow and flower profusely as far north at hardiness Zone 6b. The gardens at Biltmore House in Asheville have some that are decades old.

Assess Your Soil

All native azaleas do best in soils with a pH between 5.0 and 5.8 with good drainage and some organic matter. If your soils don't

LEFT: JESSIE M. HARRIS; RIGHT: MICHAEL S. THOMPSON; OPPOSITE: BILL JOHNSON.



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drain well, either do something to improve drainage or choose a species that can survive occasionally flooded soils, like swamp azalea (*R. viscosum*) or dwarf azalea (*R. atlanticum*). If your soils are occasionally a bit dry, perhaps the flame azalea (*R. calendulaceum*) should be your choice. Remember there are limits to the extremes these azaleas will endure. Hot, sunny locations in Atlanta or even Birmingham may be too much to ask of a flame azalea.

When planting any azalea, it's a good idea to have your soil tested. Where I live in the southern Blue Ridge mountains, our soils are notoriously deficient in phosphorus and extremely

acidic, so that a small handful of superphosphate or a larger handful of rock phosphate may be called for before planting. In other areas you may have all the phosphorus you need. The only way to be certain is to have your soil tested. I have actually seen cases where the soil was so extremely acidic it required dolomitic limestone to grow healthy native azaleas. Such situations are very rare, of course, and limestone is usually the last thing you want to add to azalea planting soil. After your soil test, follow the recommendations of someone who knows how to interpret the results, such as an extension agent or certified nurseryman.

Your planting holes should be much wider than deep.

Sources

CARLSON'S GARDENS,
Box 305, South Salem,
NY 10590

CUMMINS GARDEN,
22 Robertsville Road,
Marlboro, NJ 07746,
(908) 536-2591.

Catalog \$2.

FAIRWEATHER GARDENS,
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NJ 08323, (609) 451-6261.
Catalog \$3.

ROSLYN NURSERY, 211
Burrs Lane, Dix Hill, NY
11746, (516) 643-9347.
Catalog \$3.

WOODLANDERS, INC.,
1128 Colleton Avenue,
Aiken, SC 29801, (803)
648-7522. Catalog \$2.

Azalea roots are not the most aggressive and seem to perform well if soil has been loosened in the perimeter of the planting hole. A rule of thumb is to loosen the soil in an area three to five times as wide as the rootball of your azalea but absolutely no deeper. Not only should you never plant your shrub deeper than it was growing in the nursery—as would be true of any plant—but if you have poorly drained soil, you may actually need to plant with as much as one third of the rootball above the existing soil line. If you do this, be sure to mulch three to four inches deep, maintain the mulch at this depth, and irrigate whenever the soil becomes dry to help establish the roots in your garden soil.

Our research has shown that sometimes mixing organic soil amendments with planting soil helps and sometimes it does not. With most azaleas, unless you are preparing a wide planting hole as I have suggested, you are better off saving your organic amendment to use as a mulch. But in planting a bed of azaleas or using wide planting holes, we've found that mixing three or four inches of pine bark—not hardwood bark—with sandy or rocky planting soils has improved the survival and growth rate.

As you can see, there is a native azalea for almost any growing condition. Our eastern woods are full of garden-worthy plants, but these are among the most impressive.

Richard E. Bir is an Extension horticulture specialist with North Carolina State University.



book reviews

- 🌱 *ten garden designers*
- 🌱 *flower arranging*
- 🌱 *botanical watercolors*
- 🌱 *food plants*

BREAKING GROUND: PORTRAITS OF TEN GARDEN DESIGNERS

Page Dickey. Photographs by Erica Lennard. Artisan, New York City, 1997. 208 pages, 9 × 12" Publisher's price: hardcover, \$45. AHS member price: \$40.50 **WOR 003**

If you can't resist big, glossy garden books, then this book is for you. The pictures are beautiful and depict a wide range of European and American gardens—unfortunately, few that would survive my USDA Zone 5 climate. Be forewarned, though, that this is not a book for those enamored of soft-colored, Jekyll-style gardens. Rather, it is a kind of companion piece to Ken Druse's *The Collector's Garden* in that it, too, suggests what exciting times these are for passionate gardens.

The 10 contemporary designers covered in this book look to a variety of landscape traditions: Madison Cox reinterprets Mogul gardens on the rooftops of Manhattan; Patrick Chassé creates beautiful, peaceful gardens in the Chinese/Japanese tradition on the rugged coast of Maine. Other designers are inspired by native North American plants or formal French designs. In most of these gardens, structure and pattern matter as much as or more than color. Rules about placement and axis are broken in favor of interesting and unexpected results.

The gardens are powerful. Here are designs that can hold their own with strong ar-

chitecture like that of Frank Gehry's famous Santa Monica home. What plants would you use in front of corrugated metal walls? The vivid colors and strong forms of Nancy Goslee Power's gutsy design enhance rather than fight with the architecture.

These gardens explore the delicate art of balancing nature with the controlling hand of humans; they ask us to question our desire for neatness and order at the expense of "wildness." The designers also explore the relationship between the garden and the site. This interest goes beyond the merely visual to an almost mystical communion with a particular place. Finally, virtually all of these gardens teach a lesson most gardeners find so difficult to learn—the value of restraint. Oh, what a hard concept for those of us who can't resist that next plant we see at the nursery!

The text accompanying the photographs is competent, but a few more plans of the gardens would have helped. Sometimes the text's emphasis on the designer makes one wish the author had seen these gardens with her astute gardener's eye rather than that of a casual visitor.

The afterword, however, is a brilliant stroke. Having seen these wonderful gardens—most of which lie far beyond the average gardener's pocketbook—Page Dickey writes a very personal account of how they have affected her vision



of her own garden. For example, she comes to understand the necessity of water, both for its sound and its ability to reflect the sky. She reconsiders the transition from garden to surrounding landscape and vows to plant more native plants in her garden. She is emboldened to try wilder color groups and larger masses of plants—10 to 20 rather than two or three.

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Finally, she comes to appreciate how a sense of place can invigorate a garden.

—Norma Prendergast

Norma Prendergast is an art historian and a writer. She gardens in Ithaca, New York.

FRESH CUTS: ARRANGEMENTS WITH FLOWERS, LEAVES, BUDS, AND BRANCHES

Edwina von Gal. Photographs by John M. Hall. Artisan, New York. 144 pages, 9 × 10 1/4". Publisher's price: hardcover, \$25. AHS member price: \$22.50 **WOR 002**

Perhaps out of awareness that books on the subject are often relegated to the coffee tables of floral design aficionados, von Gal urges us to consider flower arranging as "more than flowers, and much more than arranging." Her proposition that this art is "an accessible path to a deeper knowledge of plants" challenges us to look past the perfect containers to the intricacies of plant structure and function.

Von Gal explores the beauty of buds, leaves, stems, branches, and bark through a series of arresting images coupled with an unconventional narrative. Believing that "every aspect of a plant can inspire its own world of scientific study," she uses solitary stems and simple arrangements to focus our attention on an eclectic mélange of botanical fact, childhood memory, culinary technique, poetry, movie trivia, and practical tips for producing "an excellent cut." Her prose evokes visions of emerging leaves "fresh

from their bud wombs" and galls opening to reveal "the queasy allure of a weird and beautiful horror film."

Tales of enticement and the particulars of reproduction flesh out the private lives of plants. Flowers, fruits, berries, seeds, and



pods incite von Gal's curiosity, inspiring research and romance. Lush images of luminous Allium, voluptuous roses, and oddly seductive skunk cabbages visually support von Gal's premise that "sex sells." Her text is so engaging and her enthusiasm so genuine that one tolerates the occasional excesses and eddies of self-indulgence in von Gal's stream of consciousness: "As nature is irreversibly changed by man's clumsiness, perhaps our aesthetics will follow and ease the pain."

John Hall's photographs transcend il-

lustration. A faded *Physalis* cradling its carmine pearl rivals any Tiffany brooch. A branch of rose hips seems to chart distant constellations. Twigs of oak gall whisper "haiku." Hall's eye for dramatic framing and his affinity for the photogenic enable him to exalt both bark and blossom. A few subjects aspire to questionable grandeur, however. A vase of pear twigs by the hearth—contemplation or kindling? A bowl of lettuce in the kitchen—center-piece or salad?

Fresh Cuts represents an opportunity to increase the breadth of our curiosity and the depth of our observation. Anyone interested in botany or beauty should respond to von Gal's encouragement to "expand a bit...to take a chance on a new area of understanding."

—Christine Kurtz Fuerhoff

As a Master Gardener with the Missouri Botanical Garden, Christine Kurtz Fuerhoff lectures on native plants and garden photography.

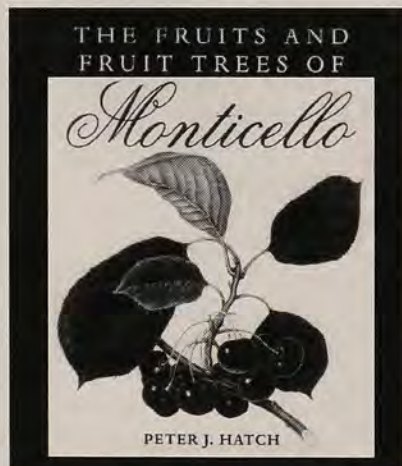
MARK CATESBY'S NATURAL HISTORY OF AMERICA

Henrietta McBurney. University of Washington Press, Seattle. 1997. 160 pages. 9 × 12". Publisher's price: hardcover, \$40. AHS member price: \$36 **UWP 001**

As an illustrator, I am tempted to evaluate books on artists primarily for the reproductions of their artwork, but in this case the accompanying discussion of Catesby's life and influences enhances the intriguingly beautiful watercolors he painted.

The English-born Catesby (1682-1749) first traveled to the British colonies in America in 1712 to record the flora and fauna native to the "New World." His interest in the sciences had been encouraged in his early years by English naturalists John Ray and Francis Willughby, and he set out on several expeditions to the colonies and to the islands of Jamaica and the Bahamas to reaffirm the concept of order and classification. This devotion to detail and careful documentation over the course of 20 years resulted in the two-volume *Natural History of Carolina, Florida and Bahama Islands*, the first major work on the plants and animals of North America. The illustrations inspired subsequent American artist-naturalists such as William Bartram and John James Audubon.

Catesby's interest in botany led him to focus primarily on the botanical aspect of his art. But he portrayed animals in connection with plants' habitats—a novel idea



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at the time—and here his illustrations are divided into sections based on the type of animals portrayed. Sections include mammals; birds; insects; snakes, lizards, and frogs; and turtles, crabs, and corals.

This book contains 60 full-page paintings selected from those housed in the King George Collection at Windsor Castle. The watercolors served as preliminary studies for the etchings that appeared in his *Natural History*. For those not able to travel to England to see the exhibit, this is the only way to view these remarkable paintings, each of which is accompanied by the artist's notes and a facing page of descriptive text.

The introduction, by Amy Meyers, curator of American art at the Huntington Library in San Marino, California, provides detailed biographical information about Catesby and offers insight into his determination to reflect in his images a "perfection so visible in Nature itself."

—Alice Tangerini

Alice Tangerini is a botanical illustrator with the Smithsonian Institution's National Museum of Natural History in Washington, D.C.

J. G. Vaughan & C. A. Geissler
**THE NEW
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BOOK OF
FOOD PLANTS**

*A guide to the fruit, vegetables,
herbs and spices of the world*



Illustrations by B. E. Nicholson
Elisabeth Dowle & Elizabeth Rice

**THE NEW OXFORD BOOK OF
FOOD PLANTS**

John G. Vaughan and Catherine A. Geissler.
Oxford University Press, New York. 1997.
239 pages. 8 × 10 1/4". Publisher's price:
hardcover, \$37.50. AHS member price:
\$33.75. **OXF 004**

This updated edition of the *Oxford Book of Food Plants*, first published in 1969, has the comforting look and feel of a book your grandfather might have given you for your 13th birthday. The old-style botanical illustrations of plants, fruits, and vegetables are, for the most part, life



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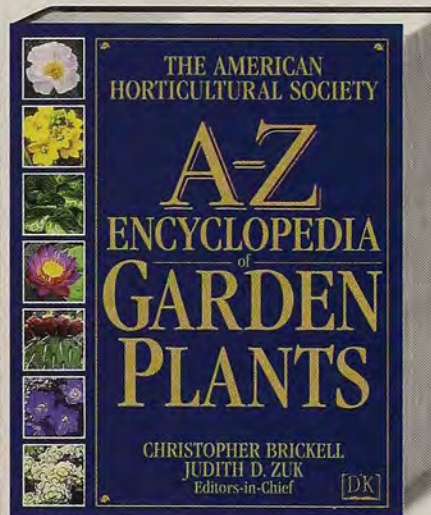
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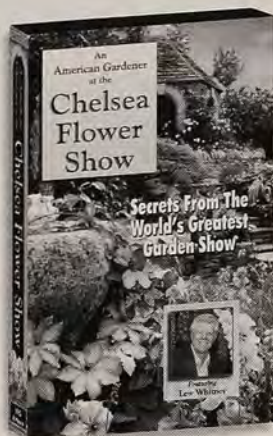


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size. Some of them whisper of breadfruit found on exotic beaches, while others provide a hand-lens view of the familiar green beans you grow in the family vegetable plot.

The book's text has been revised significantly to account for the amendments and additions to botanical and nutritional knowledge that have occurred in nearly 30 years, but most of the illustrations are originals, painted by B. E. Nicholson. Two new artists have illustrated plants new to the book, including tamarind, buckwheat, quinoa, kiwifruit, coriander, and modern apple varieties.

A new introduction gives an overview of plant classification and the history of human use of plants. The dispersal of food plants around the world is also briefly discussed. The book is then divided into crop types, starting with grains and ending with wild food plants. In between are sections on legumes, fruits, spices and flavorings, herbs, root vegetables, and many others.

The information about major food plants is quite extensive. For instance, the entry for peanuts discusses their origins in South America, describes their physical and nutritional characteristics, and their use as a source of oil and in the cuisines of Africa and Asia. Three pages of text are devoted to citrus fruits and six pages to apples. But by necessity, specific cultivars and varieties are only briefly mentioned.

The final chapter analyzes different food plants in terms of our current understanding of nutrition and health. It describes the components of food—carbohydrates, fat, protein, and so on—their effects on humans, as well as the effects of different cooking methods on nutritional content. A series of tables compares the nutritional composition of various plant products.

As is to be expected with any book attempting to cover a topic of this size, it falls short in a number of areas. The authors have added many plants more widely available today because of our increasing appreciation of diverse international cuisines, but a few that deserve attention, such as lemon grass, are still missing. Although tropical fruits such as annonas, mangos, and sapodillas are mentioned, American wild fruits such as pawpaw and persimmon are not described.

All in all the book is well written and attractively illustrated—a useful introduction to food plants and nutrition for the beginning vegetable gardener, neophyte cook, or high school student.

—David J. Ellis

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

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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.

GREAT PLANTS

CYCLAMEN: A GUIDE FOR GARDENERS, HORTICULTURISTS AND BOTANISTS

Christopher Grey-Wilson. Timber Press, Portland, Oregon, 1997. 192 pages. Publisher's price: hardcover, \$39.95. AHS member price: \$36.95

TIM 120

The most comprehensive work on the genus *Cyclamen* ever undertaken, this book includes both wild and cultivated species, some hardy enough to grow outside, and others for greenhouses and indoors. Cultivation, propagation, and diseases are covered, along with identification keys and over 140 color photographs.

The Encyclopedia of Rhododendron Species



Peter A. Cox & Kenneth N.E. Cox

THE ENCYCLOPEDIA OF RHODODENDRON SPECIES

Peter A. Cox and Kenneth N.E. Cox. Glendock Publishing, Perth, Scotland, 1997. 396 pages. Publisher's price: hardcover, \$125.00. AHS member price: \$112.50

GLE 001

The authors are second- and third-generation nurserymen and plant hunters who have traveled the globe to observe and collect rhododendrons. In this volume they have attempted to list all the temperate species in cultivation, each fully described with identifying characteristics, flowering times, and cultural information. There are more than 1,500 photographs. A must for true rhododendron enthusiasts.

GARDEN DESIGN

THE MAGIC LAND: DESIGNING YOUR OWN ENCHANTED GARDEN

Julie Moir Messervy. Macmillan, New York, 1998. 128 pages. Publisher's price: softcover, \$19.95. AHS member price: \$17.95

NEW

MAC 031

This book is full of ideas that can help you turn your "yard" into an "enchanted garden"—a landscape with personal meaning and magic. Messervy encourages us through meditative and hands-on exercises to approach gardening as an act of creating emotional space. Illustrated with 33 charcoal drawings.

MY GARDEN IN SPRING

E.A. Bowles. Timber Press, Portland, Oregon, 1997. 322 pages. Publisher's price: hardcover, \$24.95. AHS member price: \$22.50

NEW

TIM 121

First published in 1914, this memoir has delighted and informed its readers ever since. Bowles was a gifted writer and a great amateur gardener. His book is part of a series of classics being reprinted by Timber. Plant names have been updated. Includes some vintage black-and-white photographs.

PARADISE BY DESIGN: NATIVE PLANTS AND THE NEW AMERICAN LANDSCAPE

Kathryn Phillips. Farrar, Straus & Giroux, New York, 1998. 240 pages. Publisher's price: hardcover, \$23.00. AHS member price: \$20.50

NEW

FSG 002

Within this portrait of landscape architect Joni Janecki and her work, the author deftly intertwines the history of contemporary landscape design in America. Janecki has been a rebel in her field for her careful balance of the needs of her clients with those of the environment, her championing of good ecological design, and her use of native plants in her strikingly beautiful landscapes.

PENELOPE HOBHOUSE'S NATURAL PLANTING

Penelope Hobhouse. Henry Holt & Co., New

NEW

York, 1997. 192 pages. Publisher's price: hardcover, \$45.00. AHS member price: \$40.50

HOL 012

Using her worldwide experience and vast knowledge of plants, Hobhouse's book illustrates her vision of natural design, in which plants thrive because they are growing in the conditions nature intended. Using both native and introduced species, she gives us ideas for our own woodlands, shrub borders, open spaces, and water gardens. The book features more than 100 color photographs.

GREAT REFERENCES

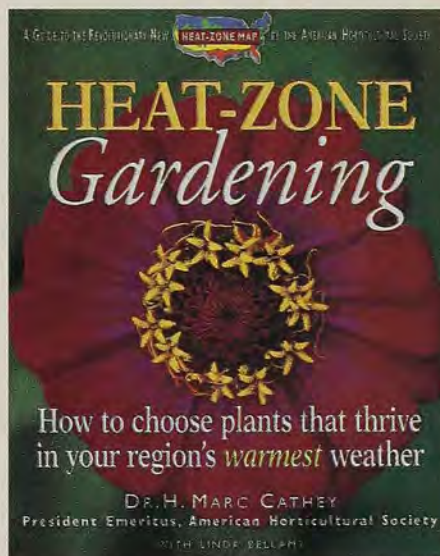
THE COMPLETE VEGETABLE AND HERB GARDENER: A GUIDE TO GROWING YOUR OWN GARDEN ORGANICALLY

Karan Davis Cutler. Macmillan, New York, 1997. 438 pages. Publisher's price: hardcover, \$29.95. AHS member price: \$27.95

NEW

MAC 030

Beautifully illustrated with 300 color photographs and 20 line drawings, this book is an extensive, detailed, and encouraging guide to growing vegetables and herbs for gardeners of all experience levels, whether they live in the city, suburb, or country. Features more than 90 individual plant portraits, plus strategies for coping with a host of pest and disease problems.



HEAT-ZONE GARDENING: HOW TO CHOOSE PLANTS THAT THRIVE IN YOUR REGION'S WARMEST WEATHER

H. Marc Cathey. Time-Life Books, New York, 1998. 192 pages. Publisher's price: hardcover, \$24.95. AHS member price: \$22.50

NEW

TLB 002

Most gardeners are familiar with the

A Way to Garden

A HANDS-ON PRIMER FOR EVERY SEASON

by **MARGARET ROACH**
 Garden Editor, MARTHA STEWART LIVING

photographs by KIT LATHAM

Margaret Roach. Clarkson Potter, New York, 1998. 176 pages. Publisher's price:

Margaret Roach is a garden columnist, the garden editor at *Martha Stewart Living*, and has contributed to Ken Druse's *Natural Garden* books. This innovative how-to guide, appropriate for both beginning and more experienced gardeners, is a blend of practical advice and personal reflections, illustrated with more than 200 color photographs. The text, organized chronologically by the gardener's year, is highlighted by plant sidebars describing individual plants and unusual step-by-step projects that encourage us to create our gardens with a personal and contemporary sensibility.

Newton, a renowned American floral designer who lives and works amid a wildflower meadow in the Blue Ridge Mountains of Virginia, has a style that reflects her personality—natural, colorful, inventive, and uplifting. Her book is filled with detailed observations and instructions on how to work with flowers, complemented by nearly 200 heartwarming color photographs of her garden and floral designs. The book includes a “blossom glossary” that gives detailed information about how to grow, harvest, and arrange specific flowers.

This is a spectacularly beautiful book, with elegant color photographs composed as perfectly as the floral arrangements they depict. These are no garden-to-vase arrangements, but Roehm—a fashion designer who apprenticed with a French florist to do research for this book—has included step-by-step illustrated instructions that will allow even amateurs to achieve her level of sophistication. This work is both a coffee-table book to admire again and again, and a serious new how-to-create book for the floral design field.

A still life photograph featuring a bouquet of flowers, including orange and yellow roses and smaller yellow blossoms, arranged in a textured, metallic-looking vase. The scene is set on a dark, reflective surface, possibly a wooden table, with a dark, patterned fabric in the background. The lighting is warm and dramatic, highlighting the textures of the flowers and the vase. The overall mood is elegant and sophisticated.

March/April 1998



regional happenings

*a look at what's
happening around
the nation*

MID-ATLANTIC

March 6-8 & 13-15 ■ The Maryland Home and Flower Show. Maryland State Fairgrounds, Timonium, Maryland. (410) 863-1180.

March 14-15 ■ Flower and Garden Show. Hagerstown Junior College,

Hagerstown, Maryland. (301) 290-2800, ext. 346.

March 27-29 ■ Mid-Atlantic Home and Garden Show. Virginia Beach Pavilion, Virginia Beach, Virginia. (804) 420-2434.

April 2 ■ Daffodil Show and Tea. Trinity Parish House, Upperville, Virginia. (540) 955-0428.

April 4-5 ■ Washington Daffodil Society Standard Flower Show. National Wildlife Federation, Vienna, Virginia. (703) 273-8641.

April 5-7 ■ Natural Resources Income Opportunities on Private Lands Conference. Ramada Inn Convention Center, Hagerstown, Maryland. (301) 432-2767, ext. 301.

April 15-17 ■ Team Wetlands. Meeting for those interested in community-based wetlands conservation. Arlington, Virginia. (703) 548-5473. e-mail terrinst@aol.com.

April 18 ■ Garden Fair and Plant Sale. U.S. National Arboretum. Washington, DC. (303) 544-8733.

April 18-May 3 ■ Gardening Days. George Washington's Mount Vernon

Estate and Gardens, Mount Vernon, Virginia. (703) 780-2000.

April 19-20 ■ Historic Garden Week, Middleburg Area. Home and garden tours. Middleburg, Virginia. (540) 687-3676.

April 25 ■ Herbs Galore. Festival. Maymont, Richmond, Virginia. (804) 358-7166.

April 25-26 ■ Leesburg Flower and Garden Festival. Historic District, Leesburg, Virginia. (703) 777-1368.

May 2 ■ Goose Creek Herb Guild Herb Fair and Sale. Oatlands Plantation, Leesburg, Virginia. (703) 777-3174.

NORTH CENTRAL

March 7-15 ■ Floralscape—Outdoor Living. Garden show. Cleveland Convention Center, Cleveland, Ohio. (216) 721-1695.

March 10 ■ Shigo on Trees. Workshop. Cleveland, Ohio. (402) 474-5655.

March 12 ■ Shigo on Trees. Workshop. Minneapolis/St. Paul, Minnesota. (402) 474-5655.

March 12-15 ■ Builders Home and Detroit Flower Show. Cobo Conference—Exhibition Center, Detroit, Michigan. (248) 737-4478.

March 14-22 ■ Chicago Flower and Garden Show. Navy Pier, Chicago, Illinois. (312) 321-0077.

March 14-22 ■ Indiana Flower and Patio Show. Indiana State Fairgrounds, Indianapolis, Indiana. (317) 576-9933.

March 15 ■ Annual Pleasures. Lecture by Rob Proctor. Chicago Botanic Garden, Glencoe, Illinois. (847) 835-5440.

March 28 ■ Gardening for the New Millennium. Symposium. Johnson County Community College, Overland Park, Kansas. (816) 697-2600, ext. 225.

March 28-29 ■ Gesneriad Show and Sale. Chicago Botanic Garden, Glencoe, Illinois. (847) 835-5440.

March 29-31 ■ Building With Trees Workshop. Lied Conference Center, Nebraska City, Nebraska. (402) 474-5655.

Wild Guide to Columbia Basin



Sisyrrinchium inflatum

The Federal Bureau of Land Management (BLM) has produced a beautiful guide to native wildflowers found in the Columbia Basin region of southeastern Washington state. Titled *Watchable Wildflowers: A Columbia Basin Guide*, the 35-page full-color booklet is designed to help hikers and wildflower lovers track down elusive seasonal flowers and understand the dynamics of the ecosystems and plant communities where they grow. It is illustrated throughout with brilliant color photographs of the area's vistas, flora, and fauna.

The booklet explains the geological and climatological underpinnings of the terrain and soil in the Columbia Basin. It then describes different habitats in which plants are found, from thin, dry rock soils to riparian, or river, environments. Specific sites where wildflowers can often be seen are profiled, along with maps and explicit directions. The rear flap of the booklet contains pocket-sized brochures for each site, including a checklist of commonly seen plants.

The BLM is encouraging its regional offices to produce similar brochures for other areas of the country.

To receive a copy of the booklet, send \$4 to BLM, Wenatchee Resource Area, 915 Walla Walla, Wenatchee, WA 98801-1521.

Aquarium Landscape a Winner

Chicago's Shedd Aquarium won first place in the public institution category of the 1997 Mayor's Landscape Awards Program, which recognizes landscapes that make visual and aesthetic contributions to the city. This was the first year that the aquarium entered the contest. "After seven years, we were



finally ready," said Bryce Bandstra, Shedd horticulturist. "Gardens need to reach a certain level of maturity before they can be entered in contests like this one."

Shedd's nearly two acres include a fragrance garden, an herb garden, a winter garden, a butterfly habitat, a perennial bed, and an annual border.

April 1-6 ■ Arboricultural Consulting Academy. Lied Conference Center, Nebraska City, Nebraska. (301) 947-0483.

April 22-25 ■ Cincinnati Flower Show. Ault Park, Cincinnati, Ohio. (800) 670-6808.

May 1-3 ■ Orchard in Bloom Garden Show. Holliday Park, Indianapolis, Indiana. (317) 290-7673.

NORTHEAST

March 7-15 ■ New England Spring Flower Show. Bayside Expo Center, Boston, Massachusetts. (617) 536-9280.

March 10 ■ Community Tree Conference. University of Massachusetts, Amherst, Massachusetts. (413) 545-6626.

March 19-22 ■ GardenScape '98 (The Rochester Flower and Garden Show). Dome Center, Henrietta, New York. (716) 265-9018.

March 20-22 ■ Biointensive Sustainable Mini-Farming Workshop. Wilson College, Chambersburg, Pennsylvania. (707) 459-0150.

March 21-April 19 ■ Spring Flower Show. Phipps Conservatory, Pittsburgh, Pennsylvania. (412) 622-6914.

March 26 ■ Horticultural Lecture. Hunter College School of Social Work Auditorium, Bronx, New York. (718) 549-3200.

March 26-29 ■ Capital District Garden and Flower Show. Hudson Valley Community College, Troy, New York. (518) 356-6410.

March 26-29 ■ The Ann Arbor Flower and Garden Show. Washtenaw Farm Council Grounds, Ann Arbor, Michigan. (313) 988-7002.

April 23-26 ■ Urban Garden Festival. MetroTech Commons, Brooklyn, New York. (212) 253-8584

May 1-3 ■ Northeast Pennsylvania Flower Show. 109th Field Artillery Armory, Wilkes Barre, Pennsylvania. (800) 836-3413.

May 1-10 ■ Chestnut Hill Garden Festival. Philadelphia, Pennsylvania. (215) 248-8600.

NORTHWEST

March 27-29 ■ Boise Flower and Garden Show. Boise Centre on the Grove, Boise, Idaho. (503) 335-3336.

SOUTH CENTRAL

March 21-22 ■ State Garden Show of Texas. Heart of Texas Coliseum, Waco, Texas. (254) 772-1270.

March 27-28 ■ March Mart Plant Sale. Mercer Arboretum and Botanic Garden, Humble, Texas. (713) 443-8731.

March 27-29 ■ Round Top Herb Festival. Round Top, Texas. (409) 249-3973.

April 16-19 ■ Garden Gate Shop Spring Plant Sale. Ridgway Center, Missouri Botanical Garden, St. Louis, Missouri. (314) 577-9400.

April 17-19 ■ Spring Herb Festival. Fredericksburg Herb Farm, Fredericksburg, Texas. (830) 997-8615. e-mail herbfarm@kctc.com.

April 18-19 ■ Wildflower Days Festival. National Wildflower Research Center, Austin, Texas. (512) 292-4200.

April 24-26 ■ Heritage Rose Foundation Annual Conference. Harvey Hotel, Dallas, Texas. Pre-registration required. (919) 834-2591.

SOUTHEAST

March 7 ■ Sixth Annual Hellebore Day. Piccadilly Farm, Bishop, Georgia. (706) 769-6516.

March 12-15 ■ Ft. Lauderdale Spring Home and Garden Show. Broward County Convention Center, Ft. Lauderdale, Florida. (888) 775-3462, ext. 23.

March 19-April 18 ■ Festival of Houses and Gardens. Charleston, South Carolina. (803) 722-3405.

March 20-22 ■ Audubon Pilgrimage. Tours of historic buildings and gardens. St. Francisville, Louisiana. (504) 635-6330.

March 20-22 ■ Richmond Home Show. Fairgrounds on Strawberry Hill, Richmond, Virginia. (804) 288-5653.

March 21 ■ Summer and Fall Bulbs Horticulture Workshop. Daniel Stowe Botanical Garden, Belmont, North Carolina. (704) 825-4490.

Reminder

To list an event, please send information at least four months in advance. Address to Regional Happenings, The American Gardener, 7931 East Boulevard Drive, Alexandria, VA 22308.

Massachusetts Project Wins Award

The Garden Club Federation of Massachusetts has won the New England Wildflower Society Conservation Award for fostering awareness, use, and conservation of native plants. Through its "Project Native," the federation sponsored local and regional wildflower symposia and an urban forestry symposium for local government officials. The group helped plant more than 100,000 native trees, including 12,000 *Magnolia virginiana*, the Massachusetts state tree. They also formed a curriculum committee to develop an educational program to teach third through fifth graders about native plants.

Inspired by the achievements of the Massachusetts federation's "Project Native," all five of the other New England states have now adopted similar programs.

New Butterfly House in Hershey

This spring, central Pennsylvania's first outdoor butterfly house will open at Hershey Gardens in Hershey. Unlike enclosed butterfly houses, this structure will allow butterflies access to temperate shrubs and perennials that will go through their natural seasons. A framework of metal beams from Milton Hershey's greenhouse, which was torn down in 1961, support a mesh enclosure that will be removed each winter. Flowering annuals will be added to the display each spring to provide additional color, nectar, and host plants for butterflies and caterpillars. The butterfly house will feature more than 400 butterflies of some 20 different North American species.

March 27-29 ■ Ellen Biddle Shipman Symposium and Traveling Art Exhibit.

Duke University, Durham, North Carolina. (919) 684-3698.

March 27-29 ■ Gardeners' Weekend.

Plant sale, gardens open free to the public. Tryon Palace, New Bern, North Carolina. (919) 514-4900.

March 28-29 ■ Spring Plant Sale.

Harry P. Leu Gardens, Orlando, Florida. (407) 246-2620.

April 17-18 ■ "Exotica: Flowers and Art."

Flower show. The Dixon Gallery and Gardens. Memphis, Tennessee. (901) 761-5250.

April 17-19 ■ Spring's Best Plant Sale.

Memphis Botanic Garden, Memphis, Tennessee. (901) 685-1566, ext. 108.

April 17-19 ■ Spring Plant Sale.

Huntsville-Madison County Botanical Garden, Huntsville, Alabama. (205) 830-4447.

May 2 ■ World of Plants Inter-

national Children's Festival. Memphis Botanic Garden, Memphis, Tennessee. (901) 685-1566, ext. 116.

SOUTHWEST

March 10 ■ Mesa Art League Juried

Art Show. Boyce Thompson Arboretum, Superior, Arizona. (520) 689-2811.

March 18-22 ■ Spring Home & Patio

Show. National Western Complex, Denver, Colorado. (303) 892-6800 or (800) 457-2434.

April 25 ■ Albuquerque Garden

Center Annual Garden Fair. Albuquerque Garden Center, Albuquerque, New Mexico. (505) 296-6020.

WEST COAST

March 13-15 ■ Orchid Show and

Plant Sale. Scottish Rite Memorial Center, Mission Valley, California. (619) 444-8839.

March 20-22 ■ Santa Barbara

International Orchid Show. Earl Warren Showgrounds, Santa Barbara, California. (805) 967-6331

March 22 ■ Wistaria Festival.

Sierra Madre, California. (818) 355-5111.

March 26-29 ■ San Francisco Garden

Show. Cow Palace, San Francisco, California. (415) 495-1769.

April 11-12 ■ Annual Spring Plant

Sale. Mendocino Coast Botanical Gardens, Fort Bragg, California. (707) 964-4352.

May 1-3 ■ The Carmel Garden Show.

Quail Lodge Resort, Carmel, California. (408) 625-6026.

classifieds

a look at current offerings from the marketplace

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BOOKS

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Angel Girl, Aurelia Weddle, Bambey, Barkarole, Big Duke, Bowie Pink Lady, Burgund '81, Dr. Dick, Dream Time, Electron, Gallivarda, Ginger Rogers, Gravin d'Alcantra, Hondo, Jean du Tilleux, John Waterer, Kanegem, Kardinal, Konrad Henkel, Koppies, Kuroshinju, Lady Rose, Lavender Lady, Leana, Liebeszauber, Limelight, Louise de Funes, Lovers Meeting, Lynn Anderson, Madame Violet, Maid of Honour, Mandy, Maria Stern, McCartney Rose*, Midnight Magic, Miwaku, Monica, Nightingale, Papa Meilland, Peace of Vereeniging, Pea-douce, Polar Star, Precious Platinum, Quebec, Queen Charlotte, Quinella, Rebekah, Remember Me, Ruby Wedding, Sandringham Centenary, Schwarze Madonna, Seashore, Senator Burda, Shining Flare, Shi-un, Shunpo, Southern Sunset, Starshine, Stephanie Diane, Sunstation, Sutter's Gold, The Fordham Rose, Tifton, Trojan Victory, Valencia, Victor Borge, Violet Ruffles, Wietek Van Dordt, Wimi, World Rose; **HYBRID PERPETUALS**: Baron Girod de l'Ain, Fisher Holmes, George Arends, Henry Nevard, Reine des Violettes; **FLORIBUNDAS**: Aalsmeer Gold, Anisley Dickson, Betty Prior, Bright Smile, Chess, City of Leeds, English Miss, Escapade, Evelyn Fison, Fellowship*, Grus an Aachen, Huntingburg, Iceberg, Kirsten Poulsen, Lavender Dream, Nan Moussouri, Nearly Wild, Octavia Hill, Oh La La, Park Place, Persian Princess, Radox Bouquet, Scarlet Pearl*, Shades of Pink, Tango, Valentine Heart, Ville de Roelux; **GRANDIFLORAS**: Apricot Queen Elizabeth, Cristin Cara, Gold Medal*, Pink Parfait, Rosalynn Carter*, Tournament of Roses*, White Queen Elizabeth, Cameo, Edith Cavell, Lovely Fairy, White Koster; **PATIO**: Minilights, Queen Mother; **MINIATURE**: Bella Rosa, Dandenong, Golden Beryl, Mandarin, Rubies 'n Pearls*, The Fairy, Young Love; **CLIMBERS**: Altus, America, American Pillar, Blush Noisette, Buff Beauty, Butterflies, Casa Blanca, Champney's Pink cluster, Chariots of Fire, City of York, Danse de Feu, Dortmund, Dr. Harry Upshall, Dublin Bay, Falcon, Ilse Krohn Superior, Morning Jewel, New Dawn, Pele, Prairie Princess, Red Fountain, Roberta Bondar, Rosarium Ueterson, Spectra, Swan Lake, Tausen-schon, Veilchenblau, Zepherin Drouhin; **MODERN & OLD SHRUBS**: Angela, City of Alexandria, Comte de Chambord, Dornroschenschloss Sababurg, Duchess of Portland, Elvishom, Eye Opener, Golden Wings, Jacques Cartier, Jim Bowie, Lavender Friendship, Morden Centennial, Morgenrot, Pink Robusta, Pink Spray, Prairie Joy, Prairie Youth, Sally Holmes, Sutton, Warbler, Wildfire; **AUSTIN & ENGLISH GARDEN**: Admired Miranda, Casa Lonta, Charles Austin, Chateau Frontenac, Dapple Dawn, Fisherman's Friend, Immortal Juno, Jean Rex, Lucetta, Peach Blossom, Redcoat, Swan, The Yeoman, White Hero, William Shakespeare, Wise Portia; **ALBAS**: Mme Plantier; **BOURBONS**: Gros Chous d'Hollande, Honorine de Brabant, Louise Odier, Variegata di Bologna, Zepherine Drouhin; **CENTIFOLIAS**: Petite de Hollande, Reine des Centifolies, Robert le Diable; **DAMASCENA**: Marie Louise, Rose de Castille, Rose de Rescht, Semperflorens (Autumn Damask), Versicolor (York & Lancaster); **FOETIDA**: Bicolor Austrian

Copper, Harison's Yellow; **GALLICA**: Assemblage des Beutes, Camaieux, Charles de Mills, Complicata, Duchesse de Montebello, Empress Josephine, James Mason, Officinalis (The Apothecaries Rose), Rosa Mundi, Scharlachglut, Splendens, Tuscan Superb; **MACRANTHA**: Raubritter; **MACRO-PHYLLA**: Master Hugh; **MOSS**: William Lobb, Rosa Moyessii Fargesii, Nevada; **MUSK**: Ballerina, Buff Beauty, Cornelia, Golden Mozart, Lavender Lassie, Marjorie Fair (Red Ballerina), New Face, Penelope; **PIMPINELLIFOLIA**: (Spinossissima): Mary Queen of Scots, Stanwel Perpetual; **RUBRI-FOLIA**; **RUGOSA**: Apart, Belle Poitevine, Blanc Double de Coubert, Flamingo, Margaret Fleming, Monte Rosa, Red Frau Dagmar Hastrup, Sarah Van Fleet, Snowdon, Theresa Bugnet; **SPECIES**: Alpina Pendulina, Arvensis, Hugonis, Pomifera (Apple Rose), Rugosa Alba, Rugosa Rubra, Xanthina; **GROUND COVER**: Dwarf Pavement, Foxy Pavement, Heideschnee, Palmengarten Frankfurt, Pierette Pavement, Pink Pavement, Pristine Pavement, Purple Pavement, Rosy Carpet, Roal Bassino, Scarlet Pavement, Sea Foam, Showy Pavement, Snow Pavement, White Pavement. (*Not available to the U.S.) Catalog \$3. We ship all over the USA by temperature-controlled truck to local UPS centres for further; large order with our own truck. HORTICO INC., 723 Robson Rd., Waterdown, ON L0R 2H1. Tel: 1-905-689-6984; Fax: 689-6566; E-Mail: hortico@bigwave; Web: http://hortico.bigwave.ca

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hardiness and heat zones

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

For your convenience, the cultivated plants featured in each edition of the magazine are listed here with their USDA Plant Hardiness Zones and AHS Heat Zones. If 0 is listed in place of USDA hardiness zones, it means that plant is a true annual—it completes its life cycle and dies in a year or less. Tropical plants that require minimum temperatures warmer than 40 degrees Fahrenheit—the minimum average temperature in USDA Zone 11—will be listed by minimum average temperature rather than by zone numbers.

A-C

Abies fraseri USDA 4-7, AHS 7-2
Amorpha fruticosa var. *angustifolia* 3-8, 8-1
Araucaria heterophylla 9-11, 12-10
Boronia fraseri 9-11, 12-10
Bouteloua curtipendula 4-9, 9-3
B. gracilis 4-9, 9-1
Buchloe dactyloides 3-11, 12-2
Buddleia davidii 6-9, 9-5
Cercis canadensis var. *mexicana* 5-9, 9-4
Chilopsis linearis 'Dark Storm' 8-9, 9-8
Chrysanthamnus nauseosus 3-11, 12-3
Comptonia peregrina 3-7, 7-3

D-G

Dicentra spectabilis 3-9, 9-1
Diospyros kaki 7-19, 10-7
Duranta erecta 11, 12-11
Elaeagnus pungens 7-9, 9-7
Epimedium acuminatum 5-9, 9-4
E. alpinum 4-9, 9-4
E. x cantabrigiense 5-9, 9-4
E. davidii 5-9, 9-4
E. diphyllum 5-9, 9-4
E. grandiflorum 4-8, 8-4
E. grandiflorum var. *higoense* 5-8, 8-4
E. koreanum 5-9, 9-4
E. leptorrhizum 5-9, 9-4
E. x perralchicum 5-9, 9-4
E. perralderianum 5-9, 9-4

E. pinnatum subsp. *colchicum* 5-9, 9-4
E. pubigerum 5-9, 9-4
E. x rubrum 4-9, 9-4
E. sagittatum 5-9, 9-4
E. setosum 5-9, 9-4
E. sempervirens 5-9, 9-4
E. suchuenens 5-9, 9-4
E. x versicolor 5-9, 9-4
E. x warleyense 5-9, 9-4
E. x youngianum 4-9, 9-4
Fraseria caroliniensis 3-9, 9-1
Gaura lindheimeri 6-9, 9-6

I-O

Ipomopsis rubra 6-9, 9-5
Kallstroemia grandiflora 0, 12-7
Leucophyllum candidum 8-9, 9-8
Leucophyllum 'Rain Cloud' 8-9, 9-8
Linum perenne subsp. *lewisii* 5-8, 8-3
Lobularia maritima 0, 12-1
Magnolia fraseri 6-9, 9-5
Microlepis strigosa 11, 12-10
Myosotis scorpioides 5-9, 9-4
Myrica cerifera 6-9, 9-5
Osteospermum fruticosum 10-11, 12-6

P-R

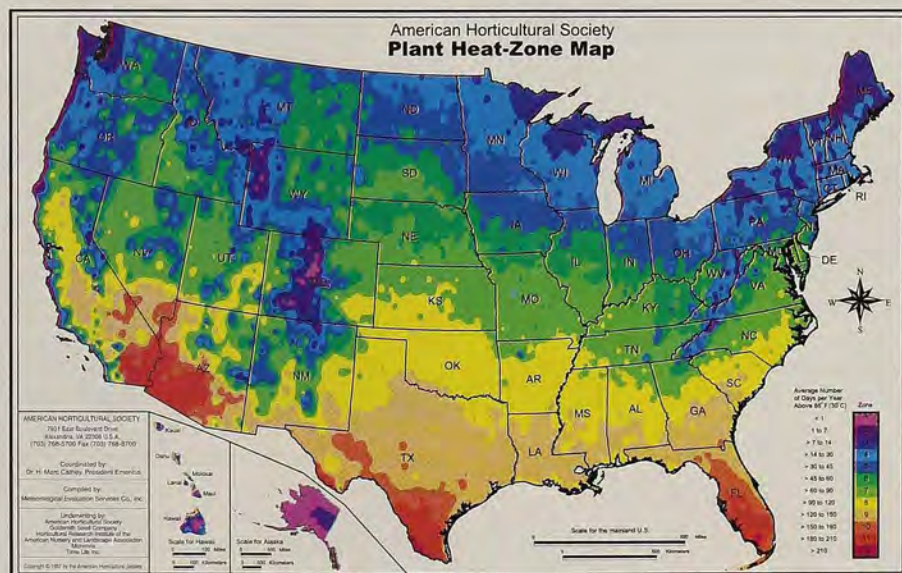
Penstemon barbatus 4-9, 9-2
P. cardinalis 4-9, 9-2
P. pinifolius 4-11, 12-1
P. spectabilis 8-10, 10-7
Quercus havardii 6-9, 10-7
Q. oblongifolia 7-10, 11-7
Q. virginiana 8-11, 12-8
Rhododendron arborescens 5-9, 9-4
R. atlanticum 6-9, 9-4
R. austrinum 6-10, 11-7
R. calendulaceum 5-8, 9-4

R. canadense 4-7, 9-4
R. canescens 6-9, 9-4
R. cumberlandense 5-8, 8-4
R. flammeum 6-9, 9-5
R. occidentale 7-9, 9-7
R. periclymenoides 4-9, 9-5
R. prinophyllum 4-9, 9-3
R. prunifolium 6-9, 9-5
R. vaseyi 5-8, 8-4
R. viscosum var. *montanum* 4-8, 8-4
R. 'Lemon Drop' 6-9, 9-5
R. 'Marydel' 6-9, 9-5
R. 'Pink and Sweet' 4-7, 7-3
Rhus trilobata 4-6, 6-2
R. virens 9-11, 12-9
Ribes aureum 5-8, 8-3
Robinia pseudoacacia 4-9, 9-3
Rosa 'Abraham Darby' 5-9, 9-3
Rosa 'Sally Holmes' 5-9, 9-3
Rosa 'Tournament of Roses' 5-9, 9-3

S-Z

Salvia elegans 8-11, 12-1
S. greggii 7-9, 9-7
S. regia 7-9, 9-6
Sapindus drummondii 8-11, 12-8
Senna splendida 11, 12-1
Sophora japonica 5-9, 9-4
Taxus globosa 7-8, 8-6
Ungnadia speciosa 8-11, 12-9

The codes above are based on a number of commonly available references and are likely to be conservative. Factors such as microclimates, plant provenance, and use of mulch may affect individual gardeners' experiences. 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.





pronunciations

a simple speaking guide to plants found in this issue

- Amorpha fruticosa* var. *angustifolia*
uh-MOR-phuh froo-tih-KO-suh var.
ang-gus-tih-FO-lee-uh
- Araucaria heterophylla*
ah-raw-KAIR-ee-uh het-ur-o-FIL-luh
- Boronia fraseri*
bor-O-nee-yuh FRAYZ-yer-eye
- Bouteloua curtipendula*
boo-teh-LOO-uh kur-tih-PEN-
dyew-luh
- Buchloe dactyloides*
boo-KLOH-ee dak-tih-LOY-deez
- Chilopsis linearis*
ky-LOP-siss lih-nee-YAR-iss
- Chrysothamnus nauseosus*
kris-o-THAM-nus naw-zee-O-suss
- Comptonia peregrina*
comp-TOH-nee-uh pair-eh-GRY-
nuh
- Diospyros kaki*
dy-OS-pih-ros KAH-kee
- Elaeagnus pungens*
el-ee-AG-nus PUN-genz
- Epimedium acuminatum*
ep-ih-MEE-dee-um ak-yew-min-AY-
tum
- E. brachyrrhizum*
E. brak-ih-RHY-zum
- E. ×cantabrigiense*
E. kan-tuh-brij-ee-EN-see
- E. dolichostemon*
E. dol-ih-kos-TEH-mon
- E. calcaratum*
E. eh-kal-kuh-RAY-tum
- E. epsteinii*
E. ep-STEIN-ee-eye
- E. fangii*
E. FANG-ee-eye
- E. franchetii*
E. fran-CHET-ee-eye

- E. grandiflorum* var. *higoense*
E. E. gran-dih-FLOR-um var. hih-
go-EN-see
- E. leptorrhizum*
E. lep-tor-RHY-zum
- E. myrianthum*
E. mir-ee-AN-thum
- E. ogisui*
E. o-GEE-soo-eye
- E. ×omeiense*
E. ee-may-EN-see
- E. ×perralchicum*
E. pair-al-CHEE-kum
- E. perralderianum*
E. pair-al-dair-ee-AN-um
- E. pinnatum* subsp. *colchicum*
E. pin-NAY-tum subsp. KOAL-chih-
kum
- E. pubigerum*
E. pew-BIJ-ur-um
- E. sempervirens*
E. sem-pur-VY-renz
- E. suchuenens*
E. soo-choo-EN-ens
- E. ×versicolor*
E. vur-SIK-uh-lur
- E. ×warleyense*
E. wor-lee-EN-see
- E. wushanense*
E. woo-shuh-NEN-see
- E. ×youngianum*
E. yung-ee-AN-um
- Frasera caroliniensis*
FRAY-zer-uh kair-o-lin-ee-EN-sis
- Gaura lindheimeri*
GAW-ruh lind-HY-mur-eye
- Ipomopsis rubra*
ip-o-MOP-sis ROO-bruh
- Kallstroemia grandiflora*
kal-STRO-me-uh gran-dih-FLOR-uh
- Leucophyllum candidum*
loo-ko-FIL-um KAN-dih-dum
- Linum perenne* subsp. *lewisii*
LIE-num pur-EN-ee subsp.
loo-ISS-ee-eye
- Lobularia maritima*
lob-yew-LAIR-ee-uh muh-WRIT-ih-
muh

- Microlepidia strigosa*
my-kro-LEH-pee-uh stry-GO-suh
- Myosotis scorpioides*
my-o-SO-tis skor-pee-OY-deez
- Myrica cerifera*
my-RIH-kuh seh-RIF-er-uh
- Osteospermum fruticosum*
os-tee-o-SPUR-mum froo-tih-KO-sum
- Penstemon pinifolius*
PEN-steh-mon py-nih-FO-lee-us
- P. spectabilis*
P. spek-TAH-bih-liss
- Quercus brandesii*
KWER-kus bran-DEE-zee-eye
- Q. fusiformis*
Q. few-sih-FORM-is
- Q. havardii*
Q. huh-VAR-dee-eye
- Q. oblongifolia*
Q. ob-lon-jih-FO-lee-uh
- Rhododendron arborescens*
ro-doh-DEN-dron ar-bo-RES-enz
- R. austrinum*
R. aw-STRY-num
- R. calendulaceum*
R. kuh-len-dew-LAY-see-um
- R. cumberlandense*
R. kum-bur-lan-DEN-see
- R. occidentale*
R. ahk-sih-den-TAL-ee
- R. periclymenoides*
R. pair-ih-kly-meh-NOY-deez
- R. prinophyllum*
R. prin-o-FIL-lum
- R. vaseyi*
R. VAY-see-eye
- R. viscosum* var. *montanum*
R. viss-KO-sum var. mon-TAN-um
- Rhus virens*
RHUS VY-renz
- Robinia pseudoacacia*
row-BIN-ee-uh soo-doe-uh-KAY-shuh
- Sapindus drummondii*
suh-PIN-dus drum-MON-dee-eye
- Sophora japonica*
so-FOR-uh jah-PON-ih-kuh
- Ungnadia speciosa*
ung-NAD-ee-uh spee-see-O-suh

What's in a Name: *Comptonia peregrina*

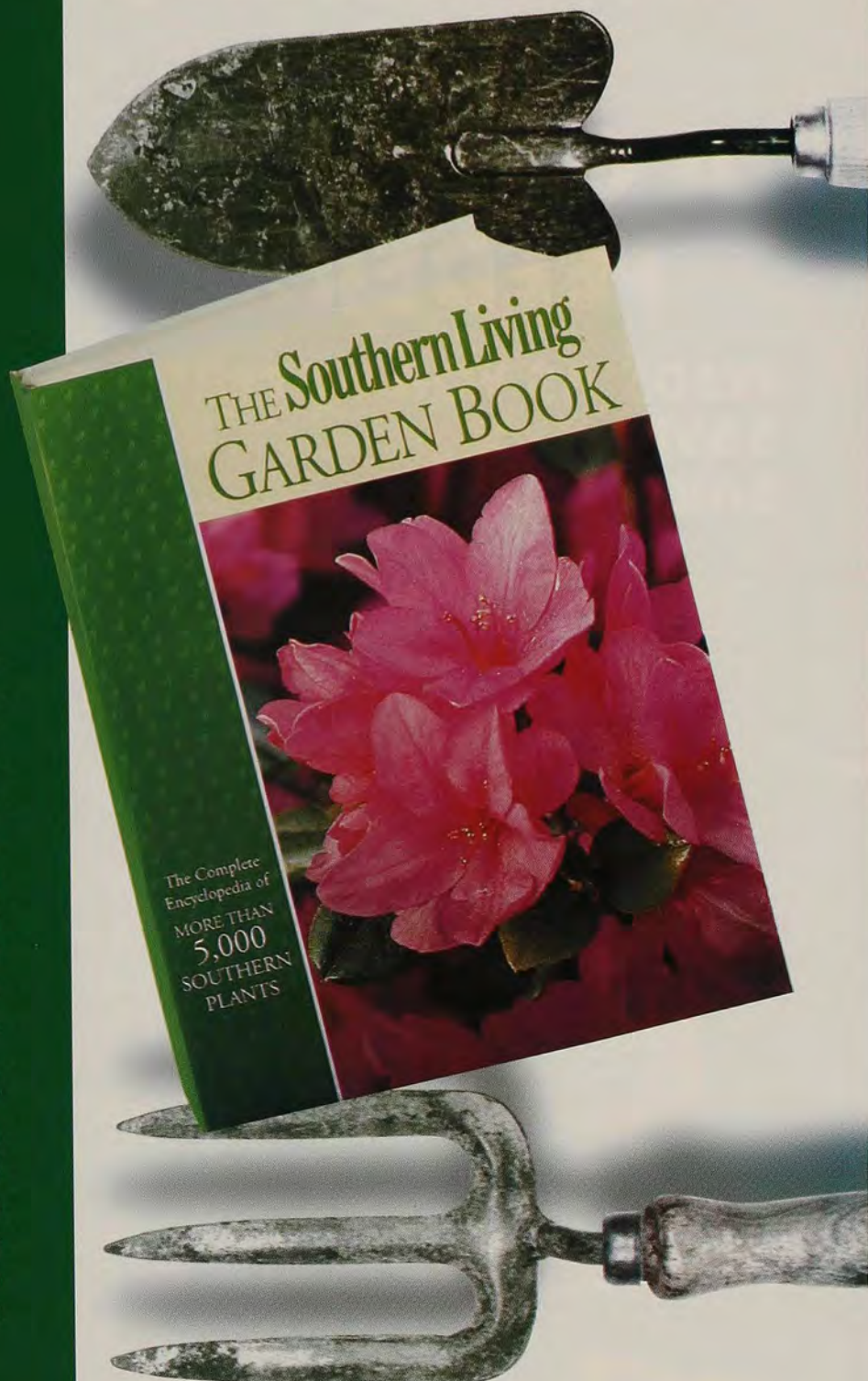
A member of Myricaceae, or the bayberry family, sweetfern is a deciduous shrub up to four feet tall that is native to sandy or gravelly soils in eastern and central North America. Its common name is derived from the spicy scent of its narrow, slightly serrated, fernlike leaves.

The genus is named for Henry Compton (1632-1713) an English military officer and noted patron of botany who eventually became Bishop of London. Compton took an active interest in the new plants that began arriving in Europe from North America in the late 17th century. The species name means "exotic" or "immigrant," either because the plant was first named by Europeans who were not familiar with it, or perhaps because of its tendency to spread by suckering roots.

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