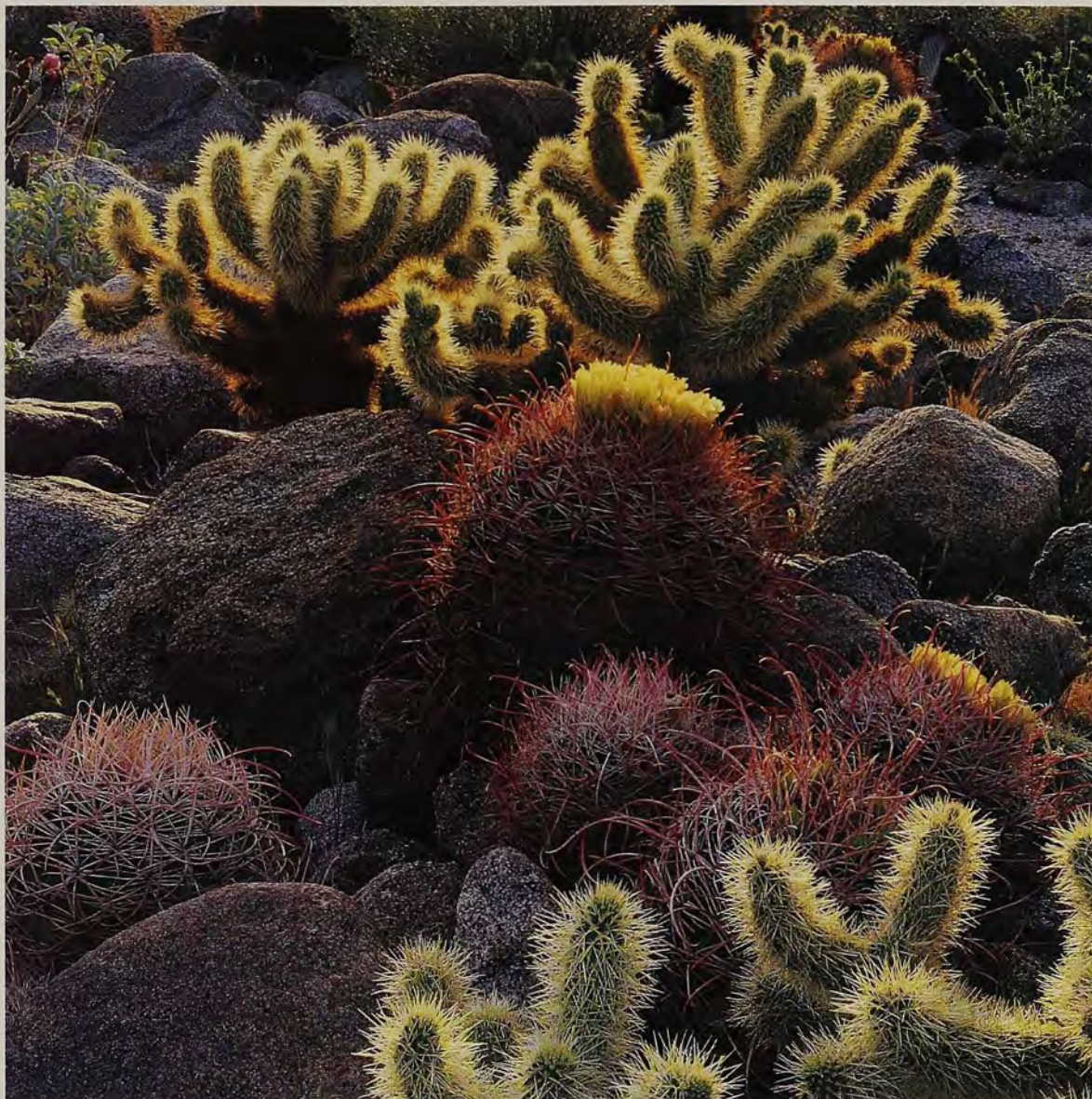


EXCLUSIVE: WEEDS OF HALLOWEEN ✦ *From Sara Stein's forthcoming book*

# THE AMERICAN GARDENER

A Publication of the American Horticultural Society

September/October 1996 \$3.95



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September/October 1996



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**On the cover:** California barrel cactus (*Ferocactus cylindraceus*) and teddy bear cholla (*Opuntia bigelovii*) in Anza-Borrego State Park, California. Photo by George H. H. Huey.



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# commentary

I live for celebrations—births, birthdays, weddings, flower shows, garden tours—or a favorite gardening magazine's arrival in the mail. All these events and many others fill me with appreciation for plants, their uses in design, and the care they will require to succeed.

My enjoyment is heightened by the fact that I recognize most of the plants and am able to appreciate those that are especially rare, are outstanding specimens, or are displayed effectively. The lives of avid gardeners are exciting because they observe plants everywhere. When you notice subtle herb flavors in cooking, and the intricate use of plants and blossoms in fabrics and china and on the lapels of ushers (signaling that "I can guide you"), your sensitivity has expanded to a high level.

The American Horticultural Society intends for *The American Gardener* to increase your awareness and appreciation for plants on many levels. While we try to make our articles as scientifically accurate as possible, they also embrace the writers' feelings and opinions about gardening and plants. There are many gardening magazines and books from which you can garner the basics of gardening. Only *The American Gardener*, however, attempts to take your gardening information to a higher level, in which we celebrate the history that has shaped American gardening—its diversity as well as its specialized interests—examine crucial issues of the environments in which we garden, and invite many personalities to speak up about what we feel are the critical considerations not only for successful gardening, but for a gardening ethic to carry you into the 21st century.

There is probably no better example than author Sara Stein, whose 1994 book *Noah's Garden* made many people rethink the extent to which they alter the natural landscape. In this issue, we offer the first of four excerpts from her follow-up book, *Planting Noah's Garden*. Many of you will agree with her, many won't. We want to hear from you.

Two other book excerpts tell about the discovery of cactus on this continent—with beautiful photos from George H. H. Huey—and from Peter Loewer, the many fascinating means of seed dispersal, bringing a new generation of plants to give us joy—or grief.

We will visit legendary Tennessee nurseryman Don Shadow, who grows the best of new trees and shrubs for gardeners north and south, and who has strong ideas about the conservation of animals as well as plants. Our "Conservationist's Notebook" department this month will tell you about AHS involvement in a new bulb guide to help assure consumers that bulbs they buy are not collected in the wild.

We hope that these stories will help you start noticing plants everywhere you go, so that all of them—from lavish floral arrangement to humble weed—will be occasions of wonder and celebration.



*H. Marc Cathey*

H. Marc Cathey, AHS President





# members' forum

## NICE SURPRISE

Please accept my sincere thanks for the nicest surprise that entered my mailbox in many years. You have done a superb job in all aspects of the magazine—design, printing, photos, editorial content, and humor.

All my responses have been favorable. I don't think you can improve it, but if you can maintain its present excellence, I shall be overjoyed.

Sewell T. Moore

St. Leonard, Maryland

## AN EXCELLENT JOB

I really like the new format. I find it interesting to read the letters to editors of all my favorite gardening magazines, especially to note how often any kind of change is resisted with anger. I don't always like everything about every magazine I get, but that is just a reflection of my tastes at any particular time in my gardening life. I once hated conifers and would hastily flip past any references to them. Now I collect them and read every classified ad for a conifer catalog that I don't already get. I am not now interested in bugs or tillers, but I know many people are.

I think AHS does an excellent job of answering the diverse needs and interests of thousands of avid gardeners. I regard myself as a life member, regardless of what format you choose at any given time.

Anita Stamper

Hattiesburg, Mississippi

## MAKES SENSE

I very much enjoy your new look and content. I think it makes sense to incorporate the News Edition into the magazine. I never have enough time to read all the horticultural publications I get, and it will seem easier with just the one from AHS, rather than two. I especially enjoyed the articles on clematis and botanical names.

Chris O'Connor

Alexandria, Virginia

## TWO MODEST PROPOSALS

Congratulations on the excellent premiere issue of *The American Gardener*. I

can't remember when I both enjoyed and got really substantial information and guidance from so many articles all in the same magazine. There was great relevance for our current national situation and interests, such as ground covers vs. lawn, scanning flowers, etc., all in beautiful detail and color.

The real hook for me was the wonderful cluster of nomenclatural articles from pages 46 to 51. I have frequently found myself "in arrears" nomenclaturally and would love to know of a subscription publication (if one exists) that would let me know when a "new" name bumps away the one that has been in use. Then when combing catalogs and indices I would be less likely to whip right by a plant because I did not recognize it. On the other side of the coin, I recently sent off perfectly good money for a plant sold as *Sagina subulata* 'Aurea', which is apparently a new name for what I had previously purchased as *Arenaria*—in Texas commonly called Irish moss or Scotch moss.

My other request is for a map or chart or directions to a book that will let me know the growing zones of the entire world. Of course, I have that big map of the United States from the Department of Agriculture, with such glowing detail of every county, but I would appreciate the same information on the rest of the world. Sometimes it helps vastly to know the situation for a new plant I order. Australia, for example, has widely divergent growing areas, but I don't know what they are.

Patricia J. Smith

Dallas, Texas

*You've touched on two things that any dedicated gardener would love to have.*

*According to Mark Griffiths' Index of Garden Plants, Sagina subulata 'Aurea' is sometimes mistakenly sold as Minuartia verna 'Aurea', a synonym for Arenaria verna 'Aurea'. But he calls these plants in Caryophyllaceae "pearlwort" or "sand-worts." The plant Hortus Third calls Scotch or Irish moss is in a different family, Se-*

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## Seed Reminder

THIS YEAR AS ALWAYS, November 1 will be the deadline for AHS to receive donations of seed for our Annual Seed Exchange. We hope you've already started collecting seeds from your garden or thinking about what you will have to share with fellow members. Tips on collecting seeds and the form to accompany any you send us—plus our "end of season" seed catalog—will appear in our Annual Report, to be mailed in September.

*laginellaceae. Since common names have so many pitfalls, it would be nice to be certain about our botanical names, wouldn't it? The journal Bailey from Cornell University includes articles about nomenclatural changes, but isn't comprehensive.*

*The Royal Horticultural Society in Great Britain has developed a worldwide zone map of sorts, but it lacks the scientific underpinnings of the USDA cold hardiness map. It is essentially an artistic rendering that indicates average minimum temperatures. It took some 30 years, from data collection to publication, to develop the USDA map. Next year, the American Horticultural Society plans to publish a corresponding map of average maximum temperatures.*

## THE LAWN, THE RAIN, AND OTHER THINGS

Having just read the spirited exchange between letter writer Douglas T. Hawes and Sara Stein (May/June) about the pros and cons of turf grass lawns, and as a student in landscape architecture and regional planning, I can't resist weighing in with a few more facts.

Water runoff varies with several different factors, but it is true that vegetation reduces runoff. The rule of thumb I've learned is that, overall, about 50 percent of precipitation penetrates the soil. With a grassy area, it will be much higher than on the compacted playground Dr. Hawes refers to.

The writer Luna Leopold in her basic work *Water: A Primer* states that a large oak tree gives off approximately 40,000 gallons of water per year. Imagine that! My three-plus acres of mown field grass is never watered (or fertilized) and it's green all summer, and mostly green in even the worst drought years we've been having.

So what's to make of it all? It's more complicated than either writer can make

clear in the editorial space they have. Keep informed. Make your best choice. Be happy. Garden.

Ellen Jouret-Epstein  
Amherst, Massachusetts

## BLUE, TOO

I read with interest the article on blue flowers ("Desperately Seeking Cerulean," July/August), which I admire. One of my dependables is *Aristea ecklonii*. It does tend to aggressively seed, but in the right site this could be ideal. An iris relative, it has a true blue flower, small but borne in profusion on a long scape, is not bothered by deer, and is drought tolerant once established. The scapes tend to bend downward, so my prospective site for a mass planting is at the top of a gentle slope, where in time it could seed itself down the hill.

I also have an *Aristea major*, which has taken years to bloom, has a charming pinkish flower, and if it seeds itself is certainly modest. It is well worth having but is not the robust performer the former is.

Thanks for being around.

Howard K. Crutcher Jr.  
Guerneville, California

## MORE ON MOSS

I would like to comment on the article titled "Beauty Beyond Bluegrass" by Andy Wasowski (May/June). As a professional bryologist and author of a paper on the mosses of Georgia, I have listed almost 300 species of mosses growing in that state alone. Many of these can be found growing in lawns throughout the South, and as individual species they are members of many ecological systems and have their individual morphological characteristics.

As to the statement "moss has the reputation of disliking limy environments," *Bryum argenteum*, commonly called silvery bryum, is a species I have collected from concrete curbstones and sidewalk cracks all the way from Big Meadows in Shenandoah National Park in Virginia to the sidewalks of downtown Atlanta, Georgia.

Gardeners have been using peat mosses in their soil formulations for many, many years, but I have seen little or nothing about living species of mosses and how they can be used in gardening practices and design. Mr. Wasowski's article was greatly appreciated here, as was the new format of *The American Gardener*.

Robert K. Lampton  
Boca Raton, Florida

Send letters to: Editor, *The American Gardener*, 7931 East Boulevard Drive, Alexandria, VA 22308-1300, or e-mail to gardenAHS@aol.com.





# offshoots

## GOOD-BYE, YELLOW BRICK ROAD

by Jeffrey Minnich

As I sit on the swing, sipping a glass of wine and gazing at our garden, I admire another day's work—we're one step closer. To what? We're only through phase one...well, maybe phase two...of our landscape design. Why do we keep at it? Because we can't bear to give it up or admit that our time with our garden is waning, I guess. You see, our house is up for sale. It's time to move on, and yet—maybe before we move we can see that sugar maple we just planted last fall burst into pumpkin-colored foliage. We can always drive by and see it if we move before then, but then we wouldn't savor it. We'd long for it and crave it because it wouldn't be ours anymore. Today we'll say, "I wish the house would hurry and sell," and then tomorrow we'll turn around and think, "If only we could smell the katsura tree's nutmeg scent on the autumn breeze once more, as it turns the color of butter."

Like every garden, it's had its downsides. The half-century-old silver maple sucks up water like a sponge. It takes hours to water the garden—maybe we need a sprinkler system? The wild black cherry throws seeds throughout the yard, and all we do is pull up baby cherries. That one azalea in the group out front just will not take root. It needs constant attention. It's scorched every day, and so are the pots on the front porch, by the way. I mean, if the sun can crack the front door, how can even those vivid, cheerful, glorious, tough-as-nails zinnias be expected to make it?

But how we enjoy the successes! The lawn wanders and snakes and meanders through our small yard and disappears behind a stone wall like the yellow brick road. Where to? We love that. The first double-flowered, cantaloupe-colored daylily opened yesterday. So did the gloriosa lily, and the 'Rubrum' lilies are showing color. The yellow daylily started to bloom, too. This year the wisteria that never even bloomed before made a firecracker show. And those sunflowers that were sown way too late

came up—and made it through the scavenging of those ever-present and raucous crows. So they'll survive. That trashy silver maple does provide lovely shade. Oh, and the scarlet sage is finally showing tiny red flower buds. In another week...

A new garden will be a clean slate, a chance to start with a different set of conditions, challenges, and an open palette of the plant world. Kids in a candy store—that's what we'll be! We'll take one of those, and one of those! Should we have a yard with gently rolling hills next time? Our garden now is so flat—although those stone planters we put in really did break up the monotony...maybe flat's not so bad after all. Maybe we shouldn't sell this house. We've come so far. But no, this isn't meant to be. It's time to move on. So we keep enjoying our garden until the contract is signed.

## TEMPORARY QUARTERS

The neighbors' yard has been mysteriously transformed into a garden over the past several weeks. For even though we can—or should—start with new plants, we are slowly but surely digging up many of our old plant friends and boarding them at our neighbors' until we can find them new digs. This strategy will also give us an excuse or two, or three hundred—to visit our neighbors. Not for us the one-time, all-day visit. We'll contemplate where each of our trusted varieties will go in their new home, and we'll come get them one at a time. And we'll have coffee and homemade blueberry muffins and swing on the porch while we tell our wonderful, missed neighbors of our exciting new garden.

For now we watch and wait, as we always do—as all gardeners

always do. And we roll through the weeks and the seasons, and take pictures of our beloved garden as it changes and grows each week. We record each success, and each defeat. After all, we don't want to make the same mistakes again, do we? We mulch, we weed, we deadhead. As we endlessly pack up boxes, we reminisce bittersweetly about our garden. And dream of the new.

Jeffrey Minnich is senior vice president of Campbell & Ferrara Nurseries, Inc., in Alexandria, Virginia.







# conservationist's notebook

## AVOIDING WILD-COLLECTED BULBS

by David J. Ellis

Given the choice, most gardeners would prefer not to buy bulbs collected in the wild. Unrestrained collection severely taxes wild populations—many of which are already endangered—and causes long-lasting damage to natural habitats. In most cases, however, it is difficult for even experts to tell the difference between nursery-propagated bulbs and wild-collected ones.

For a copy of *The Good Bulb Guide* (scheduled to be available in September), send your name and address, along with \$1 to cover postage and handling, to: *The Good Bulb Guide*, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308.

To help gardeners make educated decisions about bulb purchases, the American Horticultural Society has joined with the British-based conservation group Fauna & Flora International (FFI) to produce an American edition of *The Good Bulb Guide*—a list of bulb companies that have signed pledges either not to knowingly sell wild-collected bulbs or to clearly label any collected bulbs as being from a wild source. “We need to keep gardeners informed so they can actu-

ally choose based on where the bulbs come from,” says Mike Read, manager of FFI’s Species in Trade program.

Conservation is not the only reason to choose propagated bulbs, Read notes, pointing out that wild bulbs are more likely to be damaged, diseased, or incorrectly identified than nursery-propagated specimens.

Companies that are included in the guide will be monitored for compliance by FFI, which introduced *The Good Bulb Guide* in the United Kingdom in 1994 as part of an integrated program to conserve wild populations of bulbs, to provide sustainable employment for the people who formerly collected the bulbs, and to lobby for more effective international legislation to regulate the trade in wild-collected bulbs.

Among the most commonly sold wild-collected bulbs are snowdrops (*Galanthus* spp.), *Sternbergia*, and hardy cyclamen (*Cyclamen* spp.). According to data compiled by the Con-

vention on International Trade in Endangered Species of Fauna and Flora (CITES), of the more than 15 million bulbs of these three genera imported into the United States in the six-year period from 1990 through 1995, nearly 4.5 million were wild-collected.

In recent years, Turkey has been the principal source for most wild-dug bulbs. In many areas the bulbs have been wiped out and their habitats damaged. In response, bulb dealers are beginning to tap into new sources in the republics of the former Soviet Union. Five million snowdrops, believed to be primarily *Galanthus ikariae*, were imported into the Netherlands from the Republic of Georgia in 1994.

Spring-blooming snowdrops constituted the majority of the three genera imported into the United States between 1990 and 1995. Of the 14 million snowdrops imported in that period, nearly one-quarter were *G. elwesii* wild collected in Turkey.

But it is trade in fall-blooming hardy cyclamen—not to be confused with *Cyclamen persicum*, the tender florist’s cyclamen—and *Sternbergia* species that is probably more damaging. Nearly all the wild-collected cyclamen—more than 950,000 between 1990 and 1995—came from Turkey. Similarly, more than 130,000 *Sternbergia* bulbs were collected in Turkey during the same period,

to the point that the remaining wild bulbs are restricted to one mountainside.

Since 1994, U.S. Federal Trade Commission guidelines require that wild-collected bulbs imported into the United States be labeled as such. When bulk shipments of bulbs are repackaged by retailers, however, information about the bulbs’ origin may not be transferred to the new packaging. According to Faith Campbell, formerly with the Natural Resources Defense Council and now coordinating FFI’s program in the United States, one warning sign that bulbs have been wild collected is a lot of difference in the size and shape of bulbs or corms of one species. “A lack of uniformity is an indication the bulbs may have come from a variety of sources,” she says.

When ordering bulbs by mail, ask where the bulbs came from and which company imported the bulbs to the United States. If you are unsure about the origin of the bulbs, contact AHS and we will investigate on your behalf.



*Galanthus elwesii* are among the most commonly sold wild-collected bulbs.

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

MICHAEL S. THOMPSON





# gardeners' information service

**Can you suggest a natural control for sow bugs? They are eating their way through my greenhouse and chewing holes in my lettuce seedlings.**

—L.F., via the Internet

Sow bugs, also called pill bugs, primarily feed on dead or decaying plant matter, although they will eat roots of seedlings and other new growth. They are often blamed for damage done by slugs, however, since both thrive in moist, dark environments. You can reduce their numbers by limiting available moisture and decaying matter near your plants.

Water early in the day so that the soil surface is dry by evening when the creatures begin to be active. Keep greenhouse and planting beds free of dead and decaying plant materials or items such as flower pots, bricks, or edgings that give both sow bugs and slugs a daytime place to hide.

**My neighbor wants to give me offsets from her voodoo lily. Do I want any?**

—P.L., Los Altos, California



In colder climates the voodoo lily (*Sauromatum venosum*, formerly *S. guttatum* var. *venosum*), also known as monarch-of-the-East, is primarily a novelty because it can grow in just a saucer of water. Native to northwest India, it is a tuberous perennial in the arum family, which also includes jack-in-

the-pulpit and calla lily.

The tubers can be up to six inches in diameter. The flower stalk is only two to four inches tall, but it is surmounted by a tapering spadix and a spathe up to two feet tall. The genus name, from the Greek for "lizard," refers to the interior of the spathe, which is yellowish green to purple and marked with irregular black spots. After the plant flowers, an 18-inch-tall, deeply lobed, umbrellalike leaf forms.

Tony Avent, owner of Plant Delights Nursery in Raleigh, North Carolina, says the peculiar flower is "like life from another planet; it's so weird I can't even describe it." Fully mature flowers emit a powerful odor reminiscent of decaying flesh. Voodoo lily has traditionally been regarded as a curious house plant or tender perennial, but Avent says it is hardy in USDA Zones 7 to 10 and possibly into Zone 6 with protection. It does best in fertile, moist, but well-aerated soil and light shade, and should be allowed a dormant period after the leaf dies back.

**My spruce trees have brown needles on many branches, mostly near the trunk. The browning has begun to spread, especially on the lower branches. What can I do?**

—W.G., Manassas, Virginia



These are typical symptoms of a spruce canker disease that is especially severe on Norway and Colorado blue spruces. The tiny black cankers—the fruiting body of a fungus called *Cytospora kunzei* var. *piceae*—are hard to see, but another symptom is whitish patches of pitch

or resin on ailing branches. The fungus enters the tree through pruning cuts or wounds such as those caused by lawn mowers. Once infected, branches can't be saved; they should be pruned a few inches below the infected area or back to the nearest main branch or trunk. To avoid spreading the fungus, disinfect your cutting tool between cuts and don't prune when the foliage is wet.

The effectiveness of preventive measures is disputed, but some authorities recommend spraying the lower branches and trunk with a copper-based fungicide three or four times at two- to three-week intervals beginning in mid-April to early May.

**In the early mornings I often find my strawberry plants and perennials covered with scattered masses of frothy foam. Is this something that can harm them?**

—A.S., Springfield, Massachusetts

You have spittlebugs. Aptly named, are they not? The foam, usually found in the junctures between leaves and stems, conceals many small, green, soft-bodied, sucking insects that feed on plant juices. These are the nymph stage of quarter-inch-long brownish insects, known as frog hoppers for their ability to jump or fly short distances. The froth, created by air bubbles and liquid exuded from the insect's alimentary canal, protects the nymphs from predators. Some spittlebugs feed on trees and shrubs, but most likely yours are meadow spittlebugs, which feed primarily on herbaceous plants.

Although spittlebugs seldom cause serious damage, heavy infestations may stunt growth, and punctures caused by feeding may open a path for more damaging pathogens. Wash the foam and its inhabitants away with your garden hose.

—Neil Pelletier, Director  
Gardeners' Information Service

## Pregnant Onions

A READER FROM HARRISBURG, PENNSYLVANIA, wrote to point out that in addition to *Allium cepa*, described in our December magazine, there is another plant commonly known as pregnant onion. A member of the lily family, *Ornithogalum longibracteatum* (formerly listed as *O. caudatum*), is also called sea onion, German onion, and healing onion. Native to South Africa, it is hardy only to USDA Zone 9 so is grown as a container plant or dug up and wintered over in cooler climates. Bulbs planted two to three inches deep and 10 inches apart in well-aerated loamy soil produce long straplike leaves. Many small white flowers with a green stripe down the middle bloom a few at a time, beginning at the bottom of an upright raceme.

The bulb looks "pregnant" because it produces offsets at its base. They can be removed when they are about an inch long and free of the parent's membrane, and will grow if buried in warm soil.





# plants and your health

## TAKING THE STING OUT OF NETTLES

by David J. Ellis

Its common name, stinging nettle, has given *Urtica dioica* an unduly sinister reputation. Certainly it can administer a sharp sting to the unwary, but the intensity of the irritation is usually brief and can be alleviated by the application of the crushed leaves of its common associate curly dock (*Rumex crispus*) or those of jewelweed (*Impatiens pallida*).

Because it tends to colonize disturbed ground, this cosmopolitan weed of temperate regions has a long association with humans that has been traced back more than 3,000 years, when it was discovered that nettle fibers could be woven into cloth. Nettle also has a long history of culinary and medicinal use—it is still being evaluated for the treatment of such varied ailments as arthritis, hay fever, urinary tract disorders, and enlargement of the prostate—and is useful as fodder for animals and as a rich source of chlorophyll for green dye.

Nettles are members of Urticaceae, the nettle family, which comprises about 50 genera and 1,000 species. The genus *Urtica* (derived from the Latin *urere*, which means “to burn”) includes 100 species of annual and perennial herbs distinguished by modified hairs that cover the leaves and stems. Each hair is a miniature syringe with a sharp glassy tip and a bladder at its base. On contact, the tiny hairs break off and a chemical that causes a burning sensation is injected into the skin. Among the active ingredients in the irritant are histamine and formic acid. Stings sometimes raise small red welts akin to insect bites but usually of shorter duration. People who are allergic to histamine, however, may respond more severely and should be especially careful of contact with stinging nettle. Nettle can also administer its punishment long after it is actively growing. In 1941, according to botanist William T. Stearn, a photographer working

at the Linnaean Herbarium in London was badly stung on the arm by a sample of stinging nettle collected nearly 200 years earlier.

The common stinging nettle native to Europe and naturalized elsewhere in temperate regions is *Urtica dioica* subsp. *dioica*, but botanists now recognize an American subspecies, *U. dioica* subsp. *gracilis*. Both are perennial, but the American subspecies differs from its European relation in that it is monoecious—having male and female flowers on the same plant—rather than dioecious. Another species commonly found in North America is the small or burning nettle (*U. urens*), an annual. The stinging nettle grows three to six feet tall, with four-sided stems and opposite, somewhat spear-shaped leaves with serrated edges. Insignificant cream-colored or greenish flowers form branched clusters from leaf axils.

Nettles thrive on the nitrogen-rich soils found around old homesteads, graveyards, fallow fields, orchards, and other areas where humans have cleared ground. They spread by fibrous underground rhizomes and are often found in colonies of 100 or more plants. In his 1955 book *The Englishman's Flora*, Geoffrey Grigson writes, “Woodland is the natural home of the Nettle, but it travels round with man, grows out of his rubbish, gets a hold where he has disturbed the ground, clings to the site of his dwelling long after the dwellings themselves have disappeared. So not unnaturally in the Highlands and Islands [of Scotland] Nettles were believed to grow from the bodies of dead men.”

Historically, nettle has been associated with treatment of a wide variety of medical conditions. Dried nettle leaves—taken in the form of a tea—have been shown to stimulate urine flow, something herbalists such as Gerard and Culpeper were aware of in the 16th and 17th centuries. In his *Herball or Generall Historie of Plantes*, Gerard wrote that nettles “provoketh urine, and expelleth stones out of the kidneyes.”

Modern researchers have clinically tested the roots of both *U. dioica* and *U. urens* for treatment of enlarged prostate. In his book *Herbs of Choice: The Therapeutic*



The deeply serrated leaves of nettle, above, are covered with fine, glassy hairs. They secrete an irritating chemical that can sting unwary passersby. The leaves of curly dock, left, which is often found growing near nettles, can be used to alleviate the bite of its unruly neighbor.

DAVID LIEBMAN (TOP), ANITA SABARESE (BOTTOM)



*Use of Phytochemicals*, Varro E. Tyler notes that German health authorities have concluded that nettle root is an effective treatment of urinary difficulties arising in the early stages of benign prostatic hyperplasia, or prostate enlargement.

In *Handbook of Edible Weeds*, James Duke writes that various ethnic groups worldwide have used nettles as a counterirritant for arthritis and rheumatism. Nettle has also long been used as a treatment for chest congestion and shortness of breath. More recently, when the National College of Naturopathic Medicine in Oregon tested freeze-dried nettles on 98 hay fever sufferers, 57 percent of those given nettles rated the treatment moderately to highly effective, and nearly 30 percent said it was as effective as hay fever medications they had used.

In addition to their medicinal virtues, nettles are valued by foragers as a tasty source of vitamins A and C, protein, and minerals, including iron. The chemical irritant in nettles is neutralized by boiling or steaming. Using gloves to avoid the stinging hairs, foragers collect tender young top leaves in early spring; older leaves, which contain crystals of calcium oxalate, are tough and gritty.

Thomas Elias and Peter Dykeman, authors of *Edible Wild Plants: A North American Field Guide*, suggest simmering nettle leaves in boiling water until tender, then seasoning the greens with butter, lemon juice, or vinegar. The cooking water can be reserved to make a beverage with lemon and sugar. Russ Cohen, a New Englander who teaches courses on wild foods, writes that nettle greens “have a flavor reminiscent of split peas” and are delicious in a creamy soup or as a replacement for spinach in such dishes as quiche and spanakopita.

## OUTLAWING SNEEZE TREES

by Kathleen Fisher

Albuquerque, New Mexico, was expected to adopt an ordinance late this summer that would ban sales, commercial growing, importation, and planting of trees in at least four genera, and require warning labels on two others, because of their allergy-causing pollen.

The law would ban sales of all species of *Cupressus* (cypresses), *Morus* (mulberries), and *Ulmus* (elms), and all *Juniperus* (junipers) except those labeled as female clones. The fate of trees in the *Populus* genus was still under debate, although one version called for banning all cottonwoods and poplars except the native *Populus fremontii* var. *wislizeni* (Rio Grande cottonwood, sometimes called *P. deltoides* subsp. *wislizeni*) and *P. tremuloides* (quaking aspen). Members of *Fraxinus* (ash) and *Platanus* (sycamores) would have to bear labels warning consumers of their high allergen potential.

The ordinance would not require removal of any existing trees, which has led critics to question how much it will actually help those suffering from allergies. The nursery industry generally opposes plant bans, and the proposal has upset citizens who encourage tree planting.

Curtis Smith, an Extension state specialist in Albuquerque, summarized the Extension position: “We don’t like to see plants outlawed for any reason. We do want to push diversity.”

Those supporting the ban say lack of diversity is the primary reason the trees are causing a problem. Not only do they produce a prodigious amount of pollen, but they have been overplanted. Cypresses, for example, are widely used for hedging, according to Smith. “And the mulberry is a tree I wouldn’t encourage anyone to plant. It’s too fast-growing, and destroys lawns and driveways. And it’s not native to this area.” He said he would like to see a con-

cession added for the attractive lacebark elm, *Ulmus parvifolia*.

A number of Arizona cities have adopted laws intended to reduce the pollen count, beginning with Tucson in the mid-’80s. In Phoenix, one went into effect in 1995, after giving nurseries a year and a half to sell existing stock. Most ban the sale of two species—the common or Mediterranean olive (*Olea europaea*) and the white mulberry (*Morus alba*). Tucson also requires the trimming of weeds and regular mowing of Bermuda grass.

Chester Leathers, emeritus professor of microbiology at Arizona State University and now director of the Pollen/Mold Pro-

## Those supporting the ban say lack of diversity is the primary reason the trees are causing a problem.

ject of the Hi-Health Corporation, a franchise of health food stores, was instrumental in the passage of the Phoenix ordinance.

“These two species rate highest in both pollen production, as measured in parts per cubic meter of air during peak production, and the number of individuals who react to them,” he says. The percentage of people with pollen and mold allergies may be one-in-eight to one-in-four, depending on which study you accept, he says. Some victims must wear face masks or carry atomizers throughout the allergy season, while others may go into anaphylactic shock and require emergency care. “We believe that every tree not planted is bound to be a contribution,” Leathers says.

Cheryl Goar, of the Arizona Nursery Association, says her organization doesn’t support “the exclusionary process that seems to be becoming a trend. But sometimes it’s fruitless to oppose it, and we have to participate in the process.” Because these two species are no longer in fashion, she says, the industry has been relatively unaffected.

## TREE PROPONENTS MAY COMPROMISE

An initial opponent of the Albuquerque ordinance has also decided to quit fighting and work toward a compromise. Suzanne Probart is executive director of Tree New Mexico, a nonprofit group that promotes tree planting by groups from elementary classes to state agencies. “We felt that the amount of information available on what plant does what to whom was very vague,” she says. “We all know that weeds and grasses are a big contributor to allergies, but you can’t pass an ordinance that will stop a tumbleweed from blowing down the street. So you choose something that’s big and visible, like a tree.”

Probart says this sends the wrong message about the value of trees in the urban landscape. “When it comes to health and well-being, there are issues other than pollen, such as noise and pollution abatement, erosion control, cooling and heating.” Her group has been accused of “wanting to make western cities like cities back East,” she says. “But we have always supported choosing the right plant for the right place, and trees indigenous to the area.”

Tree New Mexico is not a lobbying group, however, and Probart says they have agreed on a compromise that would include an educational component. What form it would take is still unclear. “But these aren’t particularly popular trees any more, and as long as we can use this opportunity to tell people that ‘trees aren’t bad for you,’ it seems silly to keep on fighting.”

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





# urban gardener

## USING ROCK FOR A HARD PLACE

by Marie D. and Anna R. Hageman

Ed Lindemann, designer and director of Philadelphia's famous flower show, likes to say that rocks give instant permanence to a garden, and it's true, no matter how they're used. And once you've put them to one use, you'll begin to see many others, even in the smallest garden. Stones can enhance plants and flowers while requiring almost no maintenance. They're especially useful for reducing lawn area and controlling upkeep costs at a weekend cottage or summer beach house. If you love every square inch of your lawn, a few flagstones set directly into it will reduce wear and tear from foot traffic. (Just set them low enough to mow over.)

If foot traffic has already taken its toll, you can use stones creatively to hide the ugly spots—as well as those caused by poor drainage or drought, too much or too little sun, or a steep slope. They can provide a workable surface in places where you don't want or need to plant, such as under trash receptacles. Dry creeks—inspired by Japanese gardens—are an elegant solution to low areas.

A single boulder—which has been pragmatically defined by one designer we know as a rock “too big for a person to carry”—makes a dramatic accent. Interspersing several between plants on slopes can fill bare space and help retain soil. Natural boulders are more attractive, but synthetic ones are much lighter and easier to move because they're hollow. Many can be moved with a hand truck. (If you do use them on a slope, remember to set them so they are one-third to even two-thirds covered.) And of course, you can also terrace your slope with stone retainer walls.

Homeowners who—in a misguided interpretation of xeriscaping—completely replace their lawns with huge swaths of white landscape rock give stonescaping a bad name. But if you love gardening yet have limited time and energy or live where water use is restricted, beds of appropriately chosen stones are a useful replacement for turf. And they might offer a wise alternative to grass in city yards too small to justify the purchase of mowers and edgers.

### SELECTING STONE

The first time that homeowners visit a well-stocked stone yard, they're usually surprised at the variety of choices. Before you begin to shop, you need to analyze not only the use of the area you're going to stone, but the style and color of your house, other garden structures, and plants. To complement a brown-stone town house or rustic deck, for instance, you'll want river rocks or other pebbles indigenous to your area or slate flagstone, rather than crushed marble, which would be more appropriate for a formal Victorian house or ultramodern deck.

Your color choice can provide unity or contrast. Monochromatic schemes make smaller areas appear larger, but some people consider them boring. For harmony, match the house or its trim. Flower growers can try to capture the hues of predominant blooms or choose an opposite color to accentuate the blossoms. A bed of multicolored stones will complement evergreen plantings, while a multihued flower bed is enhanced by a stone border in one color.

Next consider what artists call “value.” Light colors reflect light, brightening shady spots, but in hot sunny areas they will intensify the sun's heat with possibly lethal effects on surrounding plants. Dark colors camouflage leaf litter and other debris and absorb some of the intensity of hot sunlight.

Look at texture, too. Crushed stones or nature-sharpened lava rock will provide an interesting foil for weeping willows, marigolds, and other plants with soft lines. For plants with sharp or vertical interest, such as hollies, yuccas, and delphiniums, choose water-rounded pebbles.

Of course you'll want to measure the area to be stoned, and you might also want to take a photograph of the house or any other object whose color is a factor. You could even bring along a



PHOTOS BY MARIE D. HAGEMAN



blossom, or a spool of thread matching anything too large to carry.

Shopping for stones is fun. Salespeople are typically friendly and helpful, guiding novices through the vast array of shapes, sizes, and colors. Nevertheless, you may want to make several trips before reaching a final decision. As with wallpaper or paint, you should be able to bring small samples home to “live with” for a few days. Place them where you’ll be using them and observe their changing appearance in daylight and at night, and in sunny, cloudy, and rainy conditions.

Generally, stones indigenous to your area will be less expensive. Even if you want to find something different from the neighbors, consider “homegrown” rock for this reason, especially if you have a natural-style garden. In California you’ll see quantities of palo verdes; in Hawaii, lava rock and crushed coral; in Colorado, blue limestone. Colorado also has gray granite, as does Vermont, while Texas boasts auburn granite. New Jersey has white to yellow “ocean pebbles,” and Pennsylvania, red shale. Many locations produce marble in various colors. Each locality has its own breed of river stones.

Local sales personnel will advise you about the most appropriate choice for your intended use. For areas of heavy foot or vehicular traffic they will generally show you crushed stone, which can be tamped down for a firm foundation. Flagstones—flat slabs of hard, fine-grained rock—are used as single stepping stones or pavers for a walk or patio-type area. Pebbles—natural little stones washed smooth by an ocean or river—are suitable for non-traffic areas. Larger water-rounded stones—three-inch ones are common—discourage unwanted pedestrian traffic.

You may recognize few rock names beyond marble, granite, and lava rock, and sellers are less than helpful here, bestowing nomenclature with an eye to sales, not science, such as “Barn Red,” “Ozark Sponge,” “Cactus Canyon Green,” or “Eastern Sunrise.”

They will, however, be glad to help you estimate how much

you need. For beds of pebbles, a depth of about two inches is generally recommended. Any more is a waste of money, and shallower beds tend to shift and show bald spots. But stones are sold by weight, from 50-pound bags to tons, so you will need help figuring how much coverage a certain weight will give you.

## INSTALLING STONework

Before you put down your stones you’ll want a border to keep them from being kicked out of place or washed away, and a landscape blanket to keep them from sinking into the soil.

Borders should be high and sturdy enough to keep the stones from moving, but there are many choices: plastic borders made for this purpose, wood or simulated wood landscape timbers, bricks, or mid-size stones (larger than pebbles and smaller than boulders). Border stones can either match or contrast with bed stones. Some companies will custom-design a cement border for you.

You can choose among several types of landscape blankets at garden centers and even more from catalogs. One of the most pop-

## Crushed stones will provide an interesting foil for weeping willows, marigolds, and other plants with soft lines.

ular is polyethylene plastic, which is solid and prevents the growth of weeds. Porous landscape fabric lets water, air, and liquid fertilizer through, so it should be the choice where you might be covering the roots of nearby trees or shrubs. Weeds will be discouraged but not prevented. Some gardeners prefer tar paper—the material used for roofing. Also available from roofing suppliers are butyl rubber sheets, which should last longer. (In a low area where an impermeable blanket might cause a drainage problem, you’ll want to poke holes in the blanket at the lowest point.)

Before the stones arrive, remove soil, grass, weeds, and debris to a two-inch depth, and rake the surface relatively smooth. Lay the blanket and place the border, remembering to leave an opening for a wheelbarrow if you are using one to move the stones. All that’s left is to scatter the stones, raking them into an even layer or Japanese-style wave patterns, and to finish the border. If the area will have some foot traffic, you can work in some flagstones. Or you may want to add a small statue or a nature-sculpted rock of a contrasting color as an accent.

Ed Lindemann meant, by “instant permanence,” that rocks properly placed in a garden immediately look as though they belong there and will be there forever. They also solve many garden problems beautifully and as permanently as any human endeavor can be.


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*Marie D. Hageman has been a “stone-scaper” for 10 years. Anna R. Hageman is a free-lance writer living in Sewell, New Jersey.*

**Opposite page:** Junipers and driftwood provide contrast to an area of small pebbles, above left. Dry streams, above right, provide an elegant, Oriental-style solution to problem areas. Low-water plants, river rocks, and crushed shale, bottom, create an easy-care space. **Left:** Stone dealer Jack Liss shows the variety of stonescaping choices.







# mail-order explorer

## AVENT GARDENERS

by David J. Ellis

Few mail-order nurseries would be taken seriously if they listed the price of their catalog as a box of chocolates or 10 stamps. But customers of Plant Delights Nursery in Raleigh, North Carolina, know that its owners, Tony and Michelle Avent, combine a passion for horticulture with a well-developed sense of humor. So far this year, the Avents have received about 40 boxes of chocolates, including truffles and Godiva.

"It's one of the few nursery catalogs with a sense of humor," says garden writer Allen Lacy. "Some people probably think Tony is a little flip, but he's really quite charming." The humor begins on the catalog cover—with a warning label from the "Horticulture General"—and continues throughout. John Elsley, vice president of Park Seed Company in Greenwood, South Carolina, says the Avents "bring dedication to offering interesting and exciting plants and inject their own personalities into the presentation."

Avent says response to the catalog has been overwhelmingly positive. "We're in business because we want to have fun and we want our customers to have fun. It's a very different attitude than most nurseries, and we've had great success with it," he says.

Despite the puns and tongue-in-cheek cultivar names, it is clear that the Avents are dedicated plantspeople. Plant Delights is probably best known for its hostas—of which there are nearly 200 offerings—but the catalog is loaded with unusual perennials and hard-to-find selections of more common plants.

"Tony's quite a student," says James Waddick, a plant hunter and writer based in Kansas City, Missouri. Waddick cites in particular Avent's interest in the Asian genus *Amorphophallus*, about which "he has been corresponding with people all over the world." The catalog lists several *Amorphophallus* species, "most of which are hardy in our zone, contrary to what the references say," says Avent. Plant Delights is probably the only U.S. nursery ever to have offered *A. titanum*, the legendary titan arum of Sumatra with the largest inflorescence of any plant. "I'd seen it somewhere in a book as a kid, and I said, 'This is my holy grail plant,'" Avent says. He and several other collectors pooled funds to send veteran plant hunter Jim Symon to Indonesia in search of titan arum seeds. This year Plant Delights sold 30 plants for \$200 apiece. "It was a one-time shot," says Avent, who made it a condition of sale to speak with each prospective purchaser. "These were very special plants, and I wanted to make sure the people who got them would be able to take care of them."

The Avents met at North Carolina State University (NCSU) in Raleigh, where Tony majored in horticulture and Michelle in communications. The combination of skills has served them well—Michelle handles record-keeping, administration, and customer service so that Tony is able to focus on the plants.

Upon graduating from NCSU, Tony became landscape director for the state fairgrounds, a job he held for 16 years. This position enabled him to work with a wide variety of plants and meet notable horticulturists from all over the country.

Meanwhile, the Avents began assembling a collection of plants in a small garden, known as the Dixie Trail Garden, about a block from the NCSU campus. Needing to expand, in 1987 they moved their home, nursery, and display garden to two acres of land about 10 miles south of downtown Raleigh.

"It's part of an old black community called Juniper Level that's not even on the map anymore, so we named the gardens Juniper Level Botanic Gardens because we thought it was a good name and to put it back on the map," says Avent. By the end of 1993, the nursery operation had grown so large that he "retired" from the fairgrounds to work at the nursery full-time. Recently the Avents increased their holdings to seven-and-a-half acres to make room for more display gardens and much-needed extra green-

**To receive a catalog, send 10 stamps or one box of chocolates to Plant Delights Nursery, 9241 Sauls Road, Raleigh, NC 27603. To make an appointment to visit the nursery, call (919) 772-4794.**



Tony Avent, above, is owner along with his wife, Michelle, of Plant Delights Nursery, right. The nursery's catalog reflects Avent's offbeat humor.



MICHAEL HAYMAN (LEFT), JOHN M. HALL (RIGHT)



house space. In addition to Tony and Michelle, there are four full-time employees and six part-time helpers.

Among frequent customers is Charles Price, who in partnership with Glenn Withey designs the acclaimed perennial border at the Bellevue Botanical Garden in Bellevue, Washington. "We have really promoted the nursery because we got some very nice things from them for our display bed," relates Price. "We particularly liked a number of *Hedychiums*, the ginger lilies, that will bloom here before frost."

Another is garden writer Colston Burrell, whose Minneapolis garden is in USDA Zone 4a. "For me, a lot of their plants are annuals or tender perennials that I winter over in a cellar." Among the plants Burrell has purchased from Plant Delights are salvias, agastaches, cannas, elephant's-ears, verbenas, and unusual forms of southeastern natives such as baptisias and amsonias.

With the exception of a few plants produced elsewhere by tissue culture, the Avents propagate all the plants they sell. "We like to make sure we have the right plant. Even when we get things from growers we grow them out to make sure," says Tony. He also dabbles with breeding a variety of plants, but has concentrated mainly on hostas "because we felt there was a real gap there." Introductions by Plant Delights include hostas such as 'Bubba' and 'Out House Delight'. The latter name may be amusing, but you won't laugh at the price—\$100 for this nearly pure white hosta, derived from a freak seed pod found on the normally sterile *Hosta undulata*. From one viable seed in that pod, Avent grew a white hosta he describes as "the ugliest I've ever seen." The seeds of that albino hosta, however, produced more presentable offspring that inherited both an unlikely moniker and the double-take price. "We gave it the most outra-

geous name we could think of and put a ridiculous price on it just so only serious collectors would buy it, but it has sold like crazy," Avent says with a chuckle.

Some people might question why anyone would want or need nearly 200 different hostas, but Avent says he is very critical and rejects as many hostas as he keeps. "We have a 10-foot rule. If we can't identify a new hosta by name from 10 feet away, then we throw it out."

Among new offerings this fall will be "a bunch of Japanese wild gingers [*Asarum* spp.] that have been completely unavailable in

## Introductions by Plant Delights include hostas such as 'Bubba' and 'Out House Delight'.

this country," says Avent. The upcoming spring catalog will feature more *Asarums*, new *Arisaema* species, and hardy, fragrant *Calanthe* orchids developed by a Japanese breeder. There are plants collected on a recent trip to Mexico under scrutiny in the propagation house, and new treasures will undoubtedly result from a trip to China this fall. "He's always got all these irons in the fire," marvels Waddick.

"Many other nurseries have had measured growth and reach a point where they have a fixed amount of material they can offer each year," says Burrell, "but with Plant Delights you feel like it is almost limitless."

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

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# *The Weeds of*



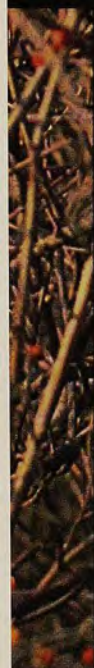
ROB SIMPSON





# f Halloween

b y S a r a S t e i n



**Like rude guests,  
they arrive early,  
stay late, and  
trash the house.**

I drove along the country roads one Halloween morning toward a nearby preserve and my regular Monday walk. The autumn air was balmy, but a line of thin clouds to the northwest rode a stiff breeze that scattered the last of the sugar maple leaves along the tar. The day would darken, the wind would rise, the rain

*This article has been excerpted with permission from Planting Noah's Garden, to be published by Houghton Mifflin in February 1997. It is the first in a series of four excerpts from that book to be published in The American Gardener.*



would hit by evening. Already the goblins of the plant world were materializing throughout the New York countryside.

I watch this phenomenon each year with mounting dread. The goblins, known to conservationists as alien invasives, are rapidly increasing in number and in geographic spread. They are not mere nuisances like brambles in a hedge: They do real harm. Like ghosts, they are invisible during bright summer days, when their forms are lost in the general greenery. Then, in one dark autumn storm that strips the woodland bare, they materialize in the lurid colors of their unseasonably clinging leaves.

By the morning after Halloween, the extent to which these aliens had penetrated the woodland was clearly visible. Yellow-green tatters of Asian bittersweet shrouded the skeletons of our native trees. Huge splotches of that same strange yellow-green were Norway maples—*Acer platanoides*—growing from pools of their own black shade. Clots and mats of honeysuckle bushes and vines greened the woodland floor that should have been plain brown. The colors altogether reminded me of cheap masks sold in drugstores or five-and-dimes: Poisonous chartreuse combined with the bittersweet's orange berries and the Day-Glo pink leaves of winged euonymus, *Euonymus alatus*.

These aliens obey a rhythm out of time with that of the surrounding natives. They come from other places whose seasons don't coincide with ours; they leaf out earlier in the spring or hold their foliage later in the fall. They're not set to the *Farmer's Almanac*. And their syncopation is apparent all across the continent.

I had been in Wisconsin the previous Monday. The season there was more advanced: temperature in the 30s, bur oaks and hickories already leafless. There, the ominous green that penetrated deep into the wind-whipped woods was a buckthorn of European descent, *Rhamnus cathartica*.

The week before I'd been in California. The hills were at their driest; the temperature in the Bay Area still climbed past 70 by noon, and there had been no rain since March. The grower at the nursery I visited there called autumn "the tan season," though to me the scrap of native coastal scrub that she tends seemed more a mosaic of silvery greens and grays among tufts of dry grasses tinged pale olive at their base. Atrocious splotches of bright green interrupting the subtle coloration were *Senecio*

*mikanoides*, which despite its common name of German ivy is a creeper from South Africa. It covers everything in its path much as kudzu does in the Southeast.

Kudzu was still blanketing roadsides in green when I passed through Virginia on my looping route back home. *Pueraria lobata* has buried seven million acres of the South. I look in vain for a word better than mere "weed" to convey the threat of such invaders.

### The Ghouls of Spring

When I was a child growing up in New York City, I looked forward every spring to the budding out of privet. The first green of the year, *Ligustrum* meant that it was time to oil roller skates and forage through the junk drawer for a stick of sidewalk chalk. I can still smell the tender foliage unfurling as I skated through the thin sun of April past greening privet thickets already escaped to Central Park.

Privets, honeysuckles, buckthorns, barberries, and winged euonymus all invade and destroy woodland habitat, and they all do it in the same way. As birders have often pointed out, their berries are popular with birds. That's how they escape cultivation. As gardeners remark, they are easy to grow under all sorts of conditions, even in the shade. That's why, wherever birds plant them, they thrive and spread, even into woods. As everyone agrees, these plants are attractive. That's why they are so widely grown; that's why there are so many sources for their spread. If part of their attraction is their lingering color late into the fall, so too are we pleased with their precocious leafing out so early in the spring.

And it is that, their early greening, that makes these plants especially cruel.

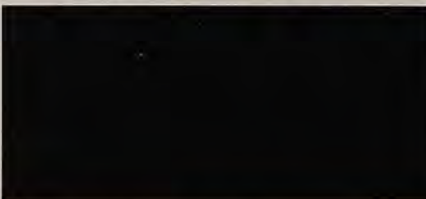
I've walked through April woods infested with Japanese barberry (*Berberis thunbergii*). Maples aren't in flower yet; a month will pass before the oak trees swell their leaves. The sun warms my shoulders and sets the barberry foliage sparkling. The effect is pretty. But beneath the bushes the maple wing, the bloodroot seed, the coiled fiddlehead are already in their shade, and I know better than to bother looking for these springtime gifts in such a woods.

That period of precocious shade, roughly from mid-April to mid-May here but earlier in mellow climates, is just when the forest floor relies critically on sunlight. During this briefly lit spring window, wildflowers bloom, tree seeds sprout, ferns unroll their fronds before the shade is pulled back

down. In woods infested with early-greening aliens, the shade is lowered before the forest floor has even woken up, and those that lie there die unmercifully in their sleep.

I used to look at shrubs with a gardener's eye and plant them with a gardener's ignorance of their behavior. What did I know of Scotch broom when I planted it in my garden? Nothing but how wonderfully it bloomed and in how buttery a yellow. It didn't seem possible to me that this treasure, killed by the cold one winter years ago but still recalled with fondness, was the same beastly weed that I ran across this year in an article in *Sierra* magazine called "Botanical Barbarians." There my former ornamental was shown slobbering up a hillside in San Bernardino National Forest in Southern California, burying in yellow all the native vegetation. The same species, *Cytisus scoparius*, has escaped from cultivation on the East Coast, where it drowns the dunes in butter.

I had planted autumn olive in equal innocence and enjoyed enormously the



**Preceding pages: Berries of Asian bittersweet (*Celastrus orbiculatus*) color a fence at Fire Island National Seashore in New York. Opposite, top: Russian olive, which is still recommended by some sources as a good wildlife plant. Bottom: A winged euonymus has a hard time hiding in a woodland.**





*One slaps the label “weed” on a species not because it is without virtue, but because whatever virtues that plant may have cannot outweigh the countless virtues of the entire habitat it displaces.*





sight of its red berries hung in silver leaves. The nursery label didn't say that *Elaeagnus umbellata* and its Russian olive relative, *E. angustifolia*, have spread their silver gleam over meadows and prairies from the East Coast through the Midwest, destroying grassland as though beneath a permanent rime of frost. In fact, I had thought that planting these fruitful shrubs was environmentally correct: They were at the time—a mere 10 years ago—widely recommended and lavishly planted to feed the birds.

Sorry, birders: I must now hit this nerve. The fact that a plant feeds birds does not vindicate its use. It is true that without multiflora rose's northward spread, we Yankees would not enjoy the song of mockingbirds on moonlit nights. But if those rose hips enable that one bird to make it through our northern winters, the meadows that might otherwise flourish where *Rosa multiflora* has invaded would support many more bird species on the myriad insects they provide in spring and summer, the variety of grains and flower seeds they offer in the winter, and the rodent diet they serve up all through the year. One slaps the label "weed" on a species not because it is without virtue, but because whatever virtues that plant may have cannot outweigh the countless virtues of the entire habitat it displaces.

It makes no sense to measure a broom, a rose, a buckthorn, or a barberry against its own absence—an ounce of nectar or a pound of fruit or a yard of cover versus nothing. You must weigh the broom against Sierra chaparral, the rose against Pennsylvania meadow, the buckthorn against Michigan oak savanna, the barberry against Connecticut sugar maple forest. Conservationists now estimate that in the last 10 years alien invasives have destroyed more habitat than development has.

## Space Invaders

I'm getting cranky, no doubt about it. No season seems suitable to me anymore. I look for scented violets in what's become a garlic mustard spring, for bright roses when pallid honeysuckles bloom, for blackberries along bittersweet roads.

I've grown unaccustomed to this place.

And it's getting stranger all the time. A vine that tried to take our land this summer looked as if it might have slithered from a flying saucer.

The alien, *Polygonum perfoliatum*, was described in the *New York Times* one Au-

gust while we were on vacation. The drawing resembled no plant I had ever seen. The leaves are equilateral triangles that clasp their petioles. Round goblets encircle the stem at the leaf axils, as though the plant could gather liquid from the atmosphere or exude some potion of its own. The species climbs by clawing over other plants with reverse barbs that cover stems, petioles, and the veins under leaves and along leaf margins. The common name of the plant is mile-a-minute. That's an exaggeration: It grows only six inches a day. The article warned that this new invader, which had arrived not by UFO but in a mundane shipment of Asian rhododendrons to Pennsylvania, was rapidly moving south.

Well, let me tell you, mile-a-minute is rapidly moving north as well.

I know because no sooner had I gotten home than one came at me through the blueberries. Its barbs clung to my bare skin. Another caught my ankle at the mailbox. They were in the meadow. And among the birches. One had prowled deep into the shade below an elm tree. By the time I found the last patch late that September, it had formed a thick blanket of strands more than 20 feet long. We had been away only a month.

The article had not described the color of the leaves. They were pale, pale green, like luminescence. The creamy flowers, too, were pale as wax and lit up when the sun shone through them. The sweet and fleshy fruit hung in clusters of iridescent sky blue berries more beautiful than any I have ever seen. When fully ripe, the blue deepens to rich purple.

You know what I wish?

I wish the fruit raised blisters. I wish the leaves caused a rash. I wish the plant were slimy and ugly and stank of rotting flesh. I wish all the weeds of Halloween inspired such nausea that no one could abide one on their property.

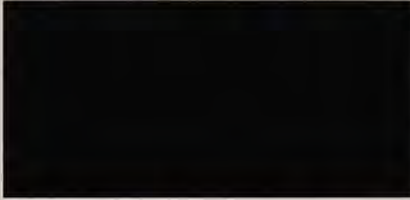
I suspect, though, that most people get about as exercised over such weeds as our new neighbor, who, when warned that we had spotted mile-a-minute in his yard, shrugged and said, "I'm a city boy, what do I know?" and left it there to spread.

The local source of the weed was at that time a mystery. Typically, a new species spreads radially outward from a center of concentration. Because *P. perfoliatum* is spread by birds, though, and the fruit ripens in late summer, the pattern of its distribution more likely was eccentric, skewed in a southerly direction along the route of

autumn bird migration. In fact, I later found out that our state Department of Environmental Conservation (DEC) had been expecting the weed's New York debut along the Delaware Water Gap, close to its point of origin in Pennsylvania, and had been monitoring that area for some years.

In the spring following our scattered sightings, the property up the hill from the pond was vacated, placed in receivership, and thus made available to snooping. We entered through a gate to an old farm road bounded on both sides by rubble walls but long since grown back to woods.

When we had bought our portion of the original farm, the hillside and the wet meadow where the land leveled out along our boundary had been mowed every year in summer. A more recent owner had managed the five acres quite differently. One half, the part that overlooked our pond, had been mowed to lawn as though it were the greensward of a rich estate. (Clank, clank went the Saturday ritual. "They're mowing the rocks again," my husband

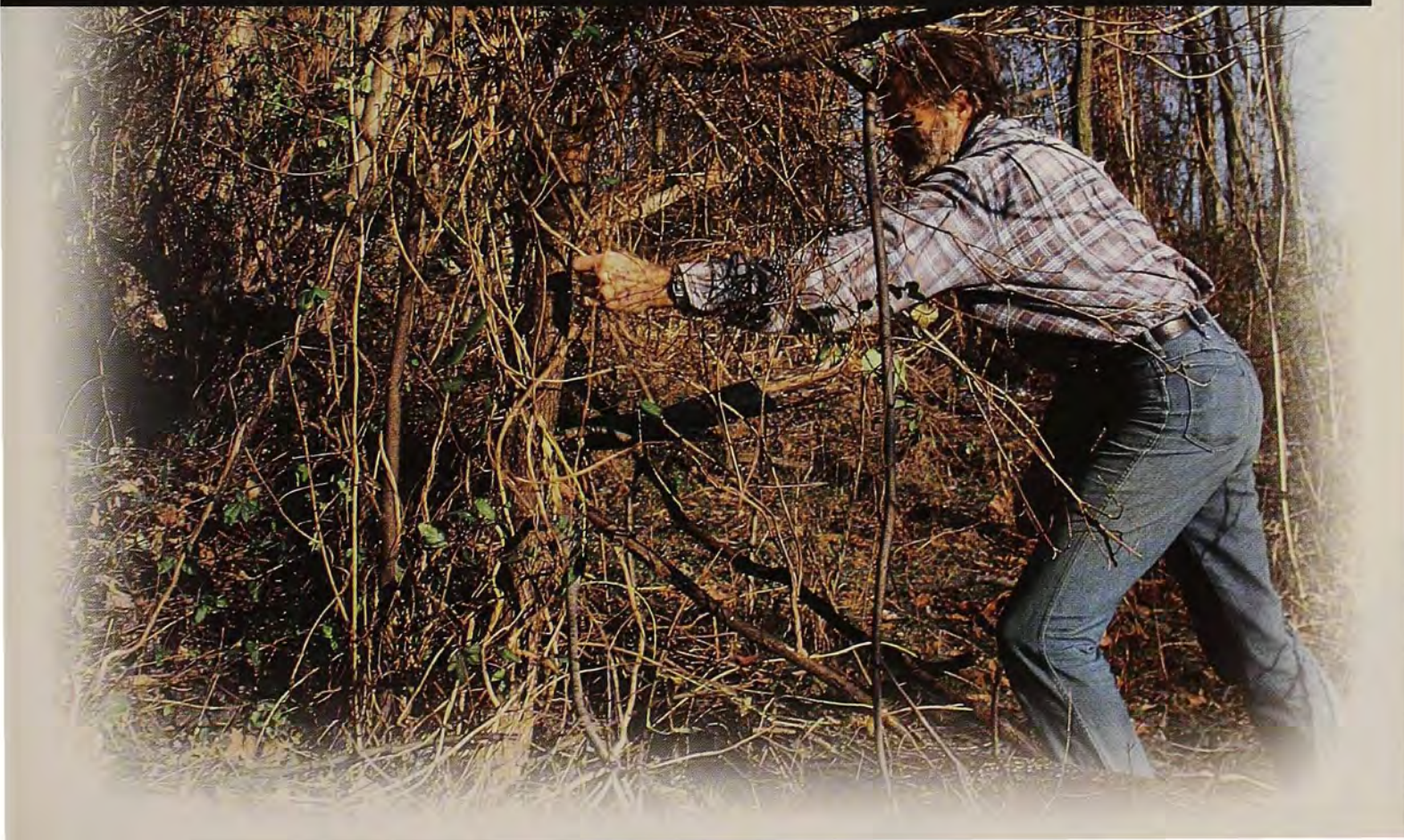


When Japanese honeysuckle, opposite, escapes to a wood or roadside, it will need frequent hand-pulling to keep it from strangling young trees. But it betrays its presence by remaining green all year.





*Conservationists now estimate that in the last 10 years alien invasives have destroyed more habitat than development has.*





would remark.) The other half, along the farm road, had been totally neglected, and it was here that we emerged over the rubble wall into a scene from Hell.

The former meadow, encompassing about two acres, was heaped with multifloras through which waggled thousand-tongued snakes of bittersweet. The ground was laid with snares of honeysuckle vines, leafless and like wire that early in the spring. We saw no living mile-a-minute. Instead we saw the lingering nightmare of the previous season: straw-colored thatch over nearly the whole abandoned acreage, six inches thick in places, stacked even over grape vines, vying with the bittersweet, heaped over what remained of native dogwood and pussy willow, and covering the ground as well in its barbed hay.

Later, Dick Mitchell, our state botanist, would call it a "monster." Ted Kozlowski, our county forester, would say it reminded him of when he was vacationing in the South with his seven-year-old son, who, tucked into bed one evening after watching a scary movie, had been reduced to sheer terror by a tendril of kudzu coiling through his open window.

It was like that, this weed.

But wouldn't you think, therefore, that someone besides me in our presumably threatened county had heard of it?

## Calling in the Cavalry

When the field of horror began to resprout in May, I called my county agents. They'd never heard of it. They referred me to Ted the county forester, who hadn't heard of it either. These people get hysterical calls daily about fire ants and killer bees, which here are figments of overwrought imagination: I understand their skepticism toward this citizen's report. What I don't understand is why the state DEC, whose naturalists had been alerted to a possible invasion years before, had not communicated its concern to the counties, or why Cornell University's College of Agriculture, from which emanate our county agents and the information they proffer, also had not seen fit to warn their minions of the weed. And don't our county employees—foresters, naturalists, park managers, et al—read the *New York Times*?

I have to give credit to Ted Kozlowski, though, who promised to check my story out with Albany and get back to me. The phone rang 10 minutes later. Within a half-hour he was here collecting samples for "positive identification" by state botanist

Dick Mitchell. The weed was ankle-high.

Positive ID was made one week later: The weed scratched my shins.

It took another week to file a report with the Department of Agriculture and Markets, whose commissioner is the only person in the state authorized to order the eradication of a noxious weed on private property. The weed tugged at my knees.

Albany arrived in force to survey the damage and devise a strategy one month after the samples had been taken. The weed by then was ripping at their shirts.

At that visit, a strategy was outlined: All properties within a one-mile radius of the central infestation would be surveyed by naturalists. The location of each plant or the extent of each patch of it found would be flagged with fluorescent orange plastic streamers. For the mumbled reason of "avoiding excessive use of herbicides"—but I think more for fear of political repercussions—the method to be tried was one that had never been tried before: They would bring in a generator, hook it up to a steam cleaner—the kind used on sooty buildings—and kill the weed with heat. Then, to prevent further germination and hopefully also to destroy the seed stock in the soil, they would cover the steamed areas with black plastic.

We were invited to a neighbor's barbecue, the "What do I know?" one. Mile-a-minute was rising not between but through head-high multifloras. How do you lay black plastic over that terrain?

I found another patch of the barbed menace in our meadow. It was in bloom.

There was a problem about the one-mile survey: Not enough naturalists were available to do the job. There was not enough money, either. Why did I think the county owned steam-cleaning equipment? It didn't. The equipment had to be rented. The nozzle was the wrong one; a different nozzle was ordered.

All residents within the surveyed area were to be mailed a bulletin describing the weed, its danger to private property and the public good, and a photograph that happily, because the federal government was suitably concerned, had already been issued in full color by the USDA to state forestry departments in Pennsylvania, New Jersey, Delaware, and Maryland (not New York). I was given a copy. Darned if I could have recognized *Polygonum perfoliatum* from that Most Wanted poster, which failed even to show its weird triangular wraparound leaves, its odd

pale color, its waxworks blossoms, or its purpling fruit.

By the end of July, the weed topped the tallest growth in the nightmare landscape up the hill. Fruit was forming.

I'd like to say that men then came with steam cleaners and black plastic just as in a science fiction film, and that the scary movie ended with a father tucking his son safely into bed. That's not what happened. Steam cleaning didn't work. Herbicide was used. And though there is a moral to the story, there is no conclusion.

If the odds of an amateur botanist living next door to the first infestation of mile-a-minute in New York was like winning the state lottery, the chance that it really was the first and only infestation is much slimmer. There are undoubtedly others, unnoticed and spreading fast. The patches here are discouraged, that's all. They'll come back.

The name of mile-a-minute vine, right, is an exaggeration. It really only grows six inches a day.

JESSIE M. HARRIS



It takes four or five years of repeated killing to eradicate the vine—if everyone in the community is aware of it, reports it, and does his or her own part in uprooting it or poisoning it.

I wish this genie of alien invasives were not too big to cram back into the bottle, but I know that can't be done. Containment, diminishment, vigilance—the sum total of aroused community response: That much I can ask.

I can ask it because, when people take it into their heads to loathe prairie dogs or gray wolves or timber rattlesnakes, or when they perceive that wetlands, woodlands, or grasslands interfere with their livelihood—or with their developments or with their golf courses—they tenaciously and with considerable moral satisfaction put forth the effort to destroy them. If property owners were to attack destructive alien weeds with the same venom that they now mistakenly direct toward poison ivy, the weeds of Halloween would go as meekly to their graves.



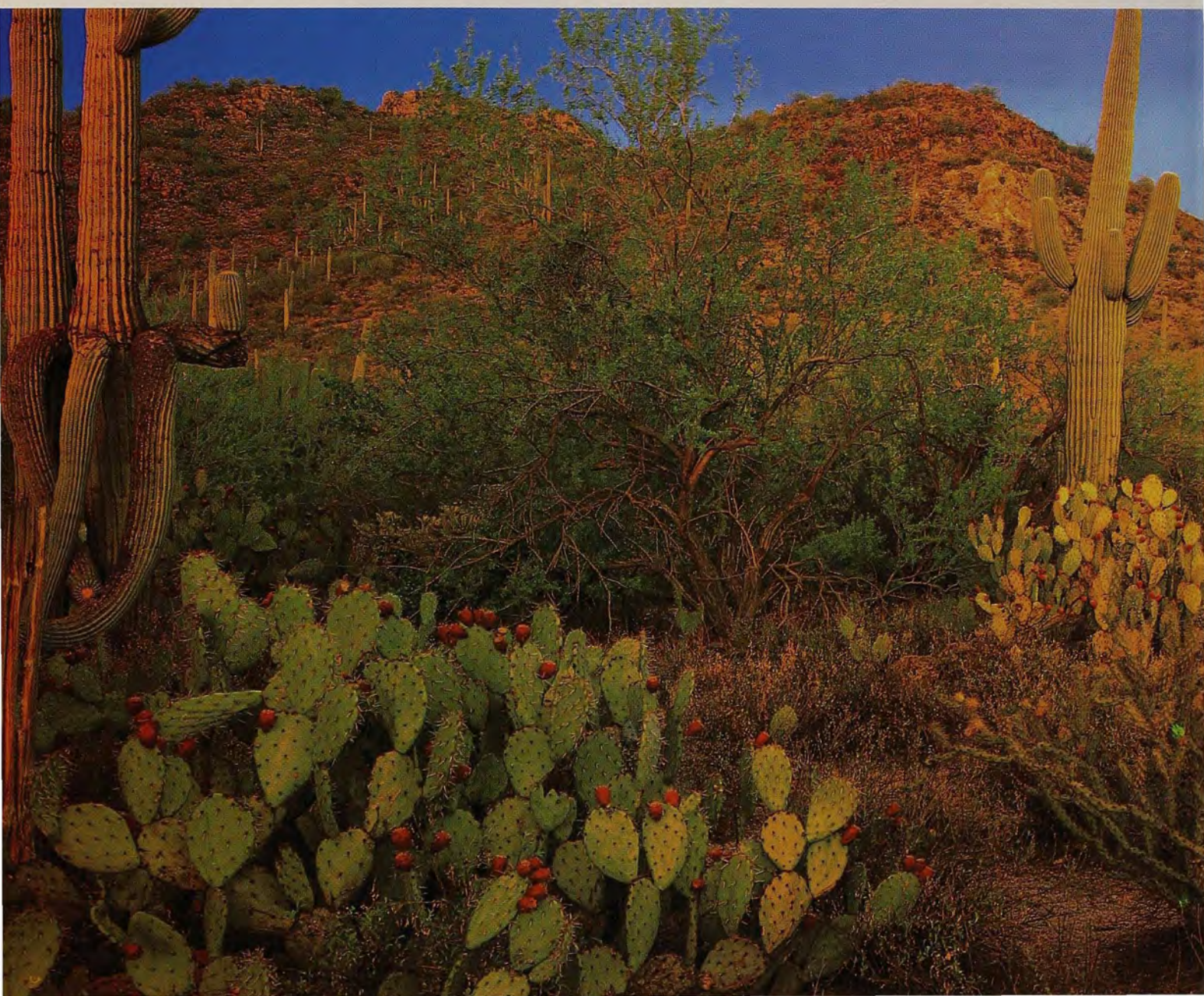
*The weed was ankle-high... Albany arrived in force one month later... the weed by then was ripping at their shirts.*





by Rose Houk    Photographs by George H.H. Huey

# *Cactus Chr*





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### **In Mexico, legend tells of a priest's dream**

of a cactus growing from a rock, then turning into a tree in which perched a caracara, a long-legged South American hawk. At the site of this prophecy, the Aztecs settled their capital of Tenochtitlán in 1325. Tenochtitlán is now Mexico City, and the Mexican flag still proudly bears the symbol of a caracara perched atop an *Opuntia* cactus.

These strange and wonderful plants became known to Europeans when Columbus sent back a cactus, possibly one now

known by the common name of Turk's-head or Turk's-cap (*Melocactus* spp.), to Queen Isabella of Spain in 1492. By the 16th century, several books, including Gerard's classic 1597 *Herball*, carried the names of a few cactuses.

Throughout the 1600s and 1700s, increasing numbers of cactuses made their way back to the Old World, where live specimens survived in orangeries. The growing interest in these exotics was accompanied by a host of bewildering names for many of the species. In his *Species Plantarum* of 1753, the great Swedish

# onicles

**America's early explorers  
were awed by the  
plant life of its deserts.**



Statuesque saguaros appear to stand guard over chollas and prickly pears in Arizona's Saguaro National Park.



**What these explorers saw as they ventured into the arid regions was a completely alien, and immensely exciting, plant world.**

botanist Carolus Linnaeus classified 22 species under one genus that he called *Cactus*. Soon after, his classification was altered, and a nearly constant procession of nomenclatural changes has continued ever since.

Among the cactuses Linnaeus described was an *Opuntia* from Virginia, the only cactus from the American colonies then known to science. Cactuses were reported along the coast of Southern California by naturalist Archibald Menzies in 1793, but the first collections were not made until the early 1800s when naturalist Thomas Nuttall took on the task.

Born in Yorkshire in 1786 and a printer by trade, Nuttall learned botany on the slopes of his native land. His enthusiasm for natural history drew him to Philadelphia in 1808, where he came under the influence of botanist Benjamin Smith Barton and plantsman William Bartram.

During his first two years in the United States, Nuttall continued to work six days a week as a printer, while devoting every spare second to learning more about plants. Then in April 1810, eager but naive, he set out on a momentous two-year collecting trip up the Missouri River into the immense wilderness of the Great Plains. His contract with Barton specified a salary of eight dollars a month, all expenses paid.

Traveling much of the way by foot and boat and suffering from attacks of fever, Nuttall proceeded with great difficulty across the Great Lakes, down the Mississippi River to St. Louis, then up the Missouri in the company of fur hunters. By all reports, he was singularly devoted to his botanical pursuits, blithely oblivious to ordinary concerns such as food, time, distance, or personal comfort.

Nuttall spent the summer of 1811 near the Mandan Indian villages in what is now North Dakota, collecting all four species of cactuses known to grow in that state—two *Opuntia* and two *Coryphantha*. Although his plant explorations would embrace many other plants over the next quarter-century, in 1836 he made significant cactus collections around San Diego, California, as well.

Three years later Richard Brinsley Hinds, surgeon on the HMS *Sulphur*, made the first collections of cactuses in Baja California, a wild peninsula known for its varied and unusual cactuses, such as the cardon (*Pachycereus pringlei*) and the treacherous creeping devil (*Stenocereus eruca*). Hinds wrote that he “studiously” sought cactuses and collected so many that “the afterpart of the vessel... presented a small forest of them... but they one by one pined and died during the subsequent voyage.” Despite the losses, it proved a profitable un-

dertaking. Seventy-eight new species, nearly three-fourths of the cactuses now known in Baja California, were named from Hinds’ collections.

The years from 1845 to 1883 stand as the great age of discovery of cactus species in the United States. Much of the work coincided with the monumental government and railroad surveys that essentially completed the opening of the American West. What these explorers saw as they ventured into the arid regions was a completely alien, and immensely exciting, plant world.

Frequently traveling with the surveyors were physician-naturalists. These dedicated souls, and other collectors supported by eastern patrons, lugged heavy plant presses through all kinds of weather, over all types of terrain, and by all means of transportation. Some risked entering Mexico during wartime. After an arduous day of travel, a plant collector worked by fire or lantern light, carefully arranging and cataloging specimens in hopes that they would remain intact for the weeks or months before they could be shipped back to botanists in the East or Midwest. Because plant specimens need to dry quickly in order to last, the moist, succulent cactuses presented a particular challenge.

### *The Revered Authority*

During this period, the most frequently invoked name in the cactus world was that of George Engelmann. Although the German-born obstetrician ran a busy St. Louis practice, he devoted so much time to identifying cactuses sent to him from the hinterlands that, in the mind of 20th-century cactus expert Lyman Benson, he was simply “the most outstanding student of cacti of all time.”

Engelmann adopted the cactus family. Two other giants in the American botanical world, Asa Gray and John Torrey, so trusted Engelmann’s judgment that they sent all of their cactuses on to him for identification. The abbreviation “Engelm.” appears often with the scientific names of cactuses, indicating Engelmann as the authority for the description. He has also been remembered in species names, such as *Echinocereus engelmannii* (Engelmann’s hedgehog cactus) and *Opuntia engelmannii* (Engelmann’s prickly pear).

Engelmann assured another German immigrant, Texas farmer Ferdinand Lindheimer, that he could make a name for himself collecting rare plants in Texas. For 43 years Lindheimer pursued a botanical career, working along the coast of Matagorda Bay, into the High Plains, and in the Rio Grande Valley, and did gain a





small measure of fame with a prickly pear, *Opuntia lindheimeri*. A variety of this species is known commonly as cow's-tongue, for the long green pads that resemble that part of the bovine anatomy.

Also encouraged by Engelmann was Friedrich Wislizenus, a partner in his medical practice for six years, who in 1846-47 explored the Rio Grande down into Mexico. Along the tortuous Jornada del Muerto, a trail that ran beside the river in southwest New Mexico, Wislizenus wrote that he "met on the road with the largest cactus of the kind that I have ever seen. It was an oval *Echinocactus*, with enormous

Texas prickly pear (*Opuntia engelmannii* var. *texana*), top left, and hedgehog cactus (*Echinocereus engelmannii*), bottom left, were named in honor of George Engelmann, a St. Louis obstetrician who named hundreds of cactuses. Some experts now consider the former the same as

*Opuntia lindheimeri*, named after Texas farmer Ferdinand Lindheimer. The luxuriant-flowered night-blooming cereus (*Peniocereus greggii*), top right, is named for 19th-century Santa Fe trader Josiah Gregg. The fishhook barrel cactus (*Ferocactus wislizeni*), bottom right, honors botanist-explorer Friedrich Wislizenus.







fishhooklike prickles, measuring in height four feet." He gathered the yellow flowers, seeds, and some ribs, but regretted not collecting the entire "exquisite specimen" for Engelmann. Wislizenus did send enough that the good doctor felt confident in describing yet another new species, which he called *Echinocactus wislizeni*. This magnificent barrel cactus, common in the Southwest, is now known as *Ferocactus wislizeni*.

After 10 months in Mexico, Wislizenus completed his extensive journey—2,200 miles by land and 3,100 by water—and returned with significant collections. All were examined, naturally, by Engelmann, who contributed the "Botanical Appendix" to Wislizenus's report.

### *The Right Prescription*

During his travels, Wislizenus struck up a friendship with a Santa Fe trader, Josiah Gregg, who had traveled the trail many times between 1831 and 1840. Born in Tennessee in 1801, Gregg had been bedridden with consumption until a doctor prescribed a trip in a prairie wagon on the Santa Fe Trail. In 1844 Gregg published the classic *Commerce of the Prairies*, a book known to all travelers of the day. Gregg's strong interest in natural science led him, too, to strike up a correspondence with Engelmann. From specimens Gregg sent to Engelmann, the St. Louis doctor named three species of cactuses: a *Mammillaria*, an *Opuntia*, and *Peniocereus greggii*, the night-blooming cereus.

About this same time a major military convoy with 10-mule teams and howitzers veered west from the Rio Grande toward San Diego. At the head of the Army of the West in 1846 was Lieutenant William Emory. Beyond the 98th meridian, Emory commented on the changes in the country, "the transition marked by the occurrence of cacti." Of traveling across the plains he said: "The eye wanders in vain over these immense wastes in search of

trees. Not one is to be seen. The principal growth is the buffalo grass, [and] cacti in endless variety, though diminutive." In October, after trying the fruit of the prickly pear, he found that "it tasted truly delicious, having the flavor of a lemon with crushed sugar." Later that month in what is now Arizona, Emory saw "a very great vegetable curiosity," most likely a barrel cactus, for he remarked that "when the traveller is parched with thirst, one of these, split open, will give sufficient liquid to afford relief."

Emory's most famous description from this "virgin" botanical country was the saguaro, whose common name comes to us from Yaqui Indians. In his report, Emory included a superb engraving of a saguaro he found near the Gila River in central Arizona, a specimen that stood "six feet in circumference, and so high I could not reach halfway to the top of it with the point of my sabre..." Emory called this giant *pitaya*, a name applied to several species. In 1848 Engelmann named it *Cereus giganteus*. The saguaro was later renamed *Carnegiea gigantea* in honor of Andrew Carnegie, whose institution established the Desert Botanical Laboratory.

The idea of a laboratory to investigate desert plants and animals was first proposed by Frederick Coville, chief botanist of the U.S. Department of Agriculture. The Carnegie Institute approved the idea of studying plant growth so the knowledge could be applied to growing crops in the region. Coville and Daniel T. MacDougal, then with the New York Botanical Garden, suggested that the best site for the laboratory was on a prominence overlooking the dusty frontier town of Tucson, Arizona.

The cluster of rock buildings amid the cactus forest of Tumamoc Hill was completed in 1903, and two years later MacDougal left New York to become director of the Desert Botanical Laboratory. In November 1907, MacDougal and William

Before opening, the flower buds of the saguaro cactus, opposite, resemble miniature artichokes. Giants, such as the one at left, impressed Lieutenant William Emory, who headed the Army of the West in 1846. The botanical name, *Carnegiea gigantea*, honors philanthropist Andrew Carnegie.



Hornaday, head of the New York Zoological Garden, set off with a crew of seasoned southwestern explorers on an expedition to the Pinacate region in northern Sonora, Mexico.

Although it was the prospect of bighorn sheep that piqued Hornaday's interest, the zoologist said the cactuses along their route made "a botanical exhibit that was well worth the labour of the whole trip." So wonderful and varied were they that Hornaday was moved to include a chapter called "The Cactus Display" in his book *Camp-fires on Desert and Lava*. In his mind, the saguaro served two important purposes: "to entertain and cheer the desert traveller, and to furnish high places for nests of woodpeckers." The organ-pipe cactus (*Stenocereus thurberi*), he wrote, "capriciously clings to...the foot of the mountains...well placed to be seen of men." The portly, picturesque barrel cactus, the "Traveller's Friend," was "a vegetable to be reckoned with." Among the cactuses Hornaday noted were chollas, including "Bigelow's Accursed Choya" (*Opuntia bigelovii*), whose worst feature was its spiny "treachery."

A year later, plant ecologist Forrest Shreve arrived at the Desert Botanical Laboratory and stayed two decades, becoming director in 1928. In landmark publications, Shreve would define the biological boundaries of the four major deserts of North America—the Mohave, Chihuahuan, Great Basin, and Sonoran—describing the vegetation of the last in great detail.

Meanwhile back on the East Coast, two other botanists pored over pressed herbarium specimens as part of a comprehensive restructuring of the entire cactus family. Nathaniel Lord Britton, former mining engineer and geologist, had turned to a career in botany and married Elizabeth Gertrude Knight, also a botanist. The couple helped found the New York Botanical Garden, of which Nathaniel became the first director-in-chief, in the late 19th century.

It was a small world in botany in those days; Britton and MacDougal were at one time colleagues at the Botanical Garden, before MacDougal left to head the Desert Lab in Tucson. Now MacDougal urged Britton and Joseph Nelson Rose of the U.S. National Herbarium to expand their cactus research. Beginning in 1912, Britton and Rose collaborated on their definitive four-volume work, *The Cactaceae*, first published in 1920. They made trips into Mexico and South America, reexamined all the type specimens and original descriptions of cactuses, and assembled large collections for greenhouses and herbaria.

One botanist undoubtedly familiar with their work was Elzada Clover, professor at the University of Michigan at Ann Arbor and a cactus specialist. During a trip to southern Utah in 1937, Clover met an enterprising river man named Norm Nevills whom she hired to guide a plant study expedition down the Green and Colorado rivers on the Colorado Plateau.

With Nevills engaged in building three wooden boats, Clover returned to Ann Arbor and assembled a crew, among them a young graduate student in botany, Lois Jotter. When they left from Green River, Utah, in June 1938, the *Detroit Free Press* headlined an article "Two Flora-Minded Women Off On Daring Boat Trip."

Only a handful of people had boated that entire stretch of wilderness white water, and the group had a wild run through Cataract Canyon in late June, when the Colorado was in flood. Though boat travel prevented collecting great quantities of bulky cactuses, the two women did manage to stow many specimens in watertight hatches. After 18 days the entourage arrived at Lees Ferry, at the head of the Grand Canyon. They were a few days late, and the press had engaged in a flurry of speculation that disaster had befallen the adventurers.

Downriver and deeper into the desert, Clover noted the change in plants, especially the increasing size of the barrel cactuses. Upon their arrival at Boulder (Hoover) Dam at the head of Lake Mead on August 1, they had traveled 666 miles in 42 days.

Clover declared the trip "more successful than we had dreamed." In the first of two major papers she and Jotter published, in 1941 and 1944, they described three new species of cactuses from the Grand Canyon and one from upstream in Glen Canyon. They also made history as the first women to complete a run on the Colorado River through the Grand Canyon.

Cactus exploration has continued unabated throughout this century with the excursions of George Lindsay into Baja California and Werner Rauh's detailed studies in North and South America. Helia Bravo-Hollis, Mexico's "first lady of cactus," produced the four-volume *Las Cactaceas de Mexico*, a monument to a life of studying that country's amazing cactuses. The late Lyman Benson was yet another great contributor to our knowledge of the cactus family.

Scientists and amateurs alike are still exploring Central and South America, combing the countryside for new species to study and describe. The cactus chronicles have by no means come to an end.

**In William Hornaday's mind, the saguaro served two important purposes: "to entertain and cheer the desert traveller, and to furnish high places for nests of woodpeckers."**



# Dietes

## The Peacock Flower

**These iris lookalikes are unstinting bloomers that seem immune to pests and disease.**



b y J o h n E . B r y a n

### **Whenever I think of certain plant species,**

I associate them with locations where they were especially striking. Perhaps also because of the recent tragic history of the area, I vividly recall *Iris pallida* on the slopes above Dubrovnik in what was formerly Yugoslavia, growing with the Spanish broom, *Spartium juncceum*. The blue and gold together was a glorious sight, as was the view over this attractive city and the island-dotted coastline seeming to stretch into infinity.

The Southern Hemisphere has no native irises, but it does claim two close relatives, *Dietes* and *Moraea*. While the latter is the far more colorful of the two, *Dietes* is tougher, seemingly unfazed by pests and disease and the roughest of conditions. When I think of *Dietes*, I think not of some outstanding natural scenery, but the way it adds beauty to the streets of Cape Town and other South African cities. Although it is in its native land, it is far from its natural haunts, which are much more pastoral—grassland or the edges of forests. You will find it growing there in the median strips

of busy highways, unaffected by dust, drought, or the exhaust fumes of traffic. Visitors to California, too, will frequently see it growing in borders around parking lots and along highways, and wonder which iris it is. It seems impervious to discomfort.

There has been ongoing debate regarding whether *Dietes* and *Moraea* are members of the same genus. There are two major differences, however, involving the rootstocks and the foliage. In *Dietes*, the rootstock is a rhizome, and the foliage is held in a fan formation of many leaves; in *Moraea*, the rootstock is a corm, and the foliage is in a random pattern. Certain species of the latter produce only one leaf, although all species seem to have leaves that twist and turn. In addition, all *Dietes* are evergreen, while some *Moraea* are not.

The common name “peacock flower” is used for several species of both genera and is a carry-over from the time they

**The brown blotches on *Dietes bicolor*, above, help guide pollinators.**



were considered one. Members of *Moraea* are very colorful, with red, orange, pink, and purple flowers among its 80-some species. The half-dozen species of *Dietes* are either white or yellow, albeit with splashes of other colors. Both genera are often mistaken for irises.

The word *Dietes* is derived from *di*, meaning "twice," and *etes*, meaning "an association," describing the link between this genus and *Moraea*. The name was proposed in 1812 by the English botanist R. A. Salisbury, who suggested that the plant known then as *Moraea iridioides* might belong in a separate genus. Salisbury had a penchant for pointing out differences between genera, as he also separated plants now in *Gynandriris* from *Iris* and *Moraea*. Unfortunately, he did not provide generic descriptions.

The irislike flowers of *Dietes* are held in a cluster. The outer petals—actually tepals—are generally broader than the inner. The latter are erect in the opening flower and then spread outward, but are never as flat as the outer petals. The style has three erect branches and is petal-like, so that the flowers have a very full look.

Flowers of some of the *Moraea* species last only a day, and the same is often said of *Dietes*. While *D. iridioides*' full glory may be that brief, and others may fade if exposed to scorching sun, I have tagged *D. grandiflora* flowers in my California garden and they lasted three days or more. Although this is still not a long time, a seemingly endless formation of laterals makes it appear that these plants are always in bloom during the summer months.

*Dietes* have an unusual characteristic: They form flower buds (these can even show a little color) that may stay unopened for many days. Just what makes them open is not known. I have watched them in my garden over several days of apparently identical weather, but have been unable to detect any change in temperature or light on the morning when, for no apparent reason, they decide to open. This must cause problems for anyone planning an exhibit of these plants for a specific date and might explain why they are seldom seen at flower shows.

While they do not make good cut flowers, they are excellent as container plants, seeming to thrive on neglect. The only apparent drawback of the genus is its inability to withstand cold. Where temperatures fall below freezing, they should either be grown in containers and moved

to protected areas when frost arrives, or be lifted and stored over winter in a frost-free location. They are tough plants and few (if any) die from being so handled, even if not handled with skill. Perhaps this is the perfect plant for those who claim to have a "black thumb."

In fact, it is the very robustness of *Dietes*, together with an apparent immunity to pests and diseases compared to *Moraea*, that makes them such a valuable addition to a garden. (In wet weather, *Moraea* leaves will become mildewed, and the corms of winter- and early spring-flowering species will rot.) *Dietes* grow well in full sun, even when exposed to reflected heat, but do not object to a location in part shade. Although more magnificent when given fertile garden soil, they will tolerate poor soil and need no ongoing feeding program. They require good drainage and like moisture during the growing season,

but are drought tolerant once established.

The rhizomes should be planted just under the soil surface, from six to 10 inches apart for the smaller species to twice or even three times that for the larger ones, and firmed in well. They multiply quickly and soon will form colonies of considerable size. This may be a disadvantage in the small garden—they need dividing every three or four years—but not in highway plantings, where they should be used even more extensively than they are.

Only a few species of these plants are readily available. One is *Dietes bicolor*, a native of the eastern Cape Province that was introduced into cultivation in England near the end of the 19th century. This sturdy plant reaches two feet in height, holding its light cream to pale yellow flowers on a many-branched stem above its fan-shaped foliage. At the base of each broad outside petal is a well-de-

ANITA SABARESE







*Dietes vegeta*, left, so closely resembles *D. iridioides* that it is now considered just a smaller form.

finer brown blotch that helps guide pollinators to its nectaries. Rather than fading as so many pale flowers do, the petals drop cleanly and the foliage is attractive during the brief period in late fall and winter when the plant is not in bloom.

Perhaps the loveliest flowers in the genus belong to *D. grandiflora*. The outer petals are white and spoon-shaped with a little point at the apex. In the center, mirroring this shape, is a golden yellow area with brown flecks, which are even more pronounced on the lower parts of the small inner petals. There is a slight gap between inner and outer petals. The petal-like styles are distinctly clawed and joined at their bases to form a short but distinct tube. They are a pleasing sky blue with just a hint of purple—or is it pink?—seemingly applied by the most delicate brush.

*D. grandiflora* can reach four feet in height, with leaves three feet long and three

inches wide. It is not unusual for a single, well-established plant to bear 20 or more of the four-inch-diameter flowers at a time.

Quite similar is *D. iridioides*, the principal difference being that the flowers are a little smaller, the plant is rarely more than two feet high, and the styles are a little more purple. This is the most widely distributed species, found from eastern Cape Province north into the subtropics of southern Africa. The tough and leathery foliage, which can be up to four inches wide, is often woven into mats and used to make skirts.

*D. vegeta* so closely resembles *D. iridioides* that it is now considered just a smaller form. It is about six inches shorter.

Rare in cultivation is *D. robinsoniana*, which is at home only on Lord Howe Island, between New Zealand and Australia. The species name is an apt one for an island plant, conjuring visions of Robinson Cru-

## Sources

### THE BANANA TREE, INC., 715

Northampton Street, Easton, PA 18042. (610) 253-9589. Catalog \$3. Seeds of *Dietes vegeta*.

**LOUISIANA NURSERY**, Route 7 Box 3, Opelousas, LA 70570. (318) 948-3696. Catalog \$3.50 (ask for daylily, iris catalog). *Dietes bicolor*, *D. vegeta*, *D. 'Lemon Drop'*.

**THOMPSON & MORGAN**, P.O. Box 1308, Jackson, NJ 08527-0308, (800) 274-7333. Catalog free. *Dietes grandiflora*, *D. iridioides*.

soe or the Swiss Family Robinson. It is by far the largest species, reaching six feet tall with leaves several inches wide. The pure white flowers are carried on many-branched stems, but despite the plant's height, they are not much bigger than the four-inch flowers of *D. grandiflora*.

*Dietes* seeds are freely produced and should be stored and sown in spring. Using flats and a soil mix containing a generous amount of organic matter, barely cover the seeds and keep the medium moist but not wet. The seeds should germinate in three or four weeks, and seedlings can be transplanted when they are big enough to handle, in about another eight weeks. By the end of the first full growing season, they may be large enough to set out, and they will occasionally bloom by the second. It's best to plant them in the spring so that they have many growing days with warm temperatures to help them become established.

While a number of hybrids of *Moraea* have been developed, I have not read anywhere that any breeding or hybridizing has been done with *Dietes*. Since members of this genus bloom so early in their lives, it would seem that a breeding program could be a profitable venture. Especially if bloodlines of *Moraea* could be introduced, this would give gardeners a wider range of colors on these most accommodating plants. Although I doubt that even the most complex breeding program could overcome their susceptibility to cold, few genera are equal to *Dietes* when it comes to ease of culture, freedom from pests and diseases, and the total number of flowers produced in a season, which on well-established plants seems almost endless.

*Among John E. Bryan's books is the two-volume Bulbs. He was the first American named a Fellow of the Institute of Horticulture in London.*



# from seed to shining seed

**Plants have  
lots of tricks  
for moving  
their progeny  
to new homes.**

b y P e t e r L o e w e r

**Anyone who has ever had to brush a long-haired dog** after its late autumn tramp through woods and field knows how some seeds travel. Seeds become affixed to pants, skirts, and jackets, using hooks, barbs, gluelike substances, and even natural “Velcro” systems to guarantee their dispersal around the country—if not the world. But seeds travel in many ways in addition to hitching a ride on an animal.

## ***Dispersal by Wind***


Small seeds often use the wind to blow them from place to place. Some of the smallest are those of the pernicious and parasitic witchweed (*Striga asiatica*). Each plant produces hundreds of thousands of seeds that, because they are only 0.0078 inch long, can literally blow for miles. The wind also disperses the seeds of many grasses, which are light and aerodynamic.

The seeds of most orchids are as fine as dust, enabling them to be wafted through the jungle canopy. Because an orchid seed must have

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Generations of children  
have been fascinated  
by the helicopterlike  
samaras of maples.



precise conditions to germinate and mature, each flower must produce a prodigious amount of seeds. A scientific count of a capsule of a *Cynoches chlorochilon* reached the fantastic total of 3,770,000.

"Drifting along with the tumbling tumbleweed" goes the song that tells the story of this unusual seed spreader, familiar to anyone who has spent any time in our West. When ripe and dry, tumbleweed (*Amaranthus albus*) plants are torn loose from the soil, dropping seeds as they pass.

Plumed seeds like those of fireweed (*Epilobium* spp.), some bromeliads like the tree-dwelling tillandsias, dogbanes (*Apocynum* spp.), thistles, and dandelions (*Taraxacum* spp.) use their silken plumes to fly through the air like badminton birds.

In all of my gardens, I've grown either the giant field milkweed (*Asclepias syriaca*)—which can grow to six feet tall—or the smaller butterfly weed (*A. tuberosa*). Milkweeds produce large pods crammed with hundreds of seeds, each seed attached to a plume of white silk. As the pod dries, it splits, and the plumes emerge seed first, each waving about in the summer air. With a final tug at the pod, the plumes fly off like the characters in the "Waltz of the Flowers" from the movie *Fantasia*. During World War II, children gathered plumes of the common milkweed to stuff what we cheerfully called Mae West life preservers, used by the armed forces.

Some fruits—the plant's seed-bearing organ—have wings that let them glide through the air. Those of maples (*Acer*), ash (*Fraxinus*), and elms (*Ulmus*) are all classified as samaras, with thin wings that send them spinning through the autumn air like helicopters. The seed produced by an East Indian cucurbit vine (*Macrozamia macrocarpa*) has a three-foot wing on either side and turns in a 20-foot-wide spiral as it falls to the ground.

Most of the rock cresses (*Arabis* spp.) have long, narrow pods that release elliptical seeds, each bearing a marginal wing for easy flight. The horseradish tree (*Moringa pterygosperma*, also listed as *M. oleifera*), which grows throughout India, bears curious three-angled, winged seeds that are discharged from a large ribbed pod about 15 inches long, ready to float on the winds.

Gardeners who have watched the spread of the purple-flowered Asian tree called the paulownia or empress tree (*Paulownia tomentosa*) know its prolific nature. Its leathery, ovoid capsules contain hundreds of small seeds, each of which has two or three



ANITA SABARESE (THIS PAGE), BILL JOHNSON (OPPOSITE)



Seeds that use water for dispersal include those of marsh marigold (top left), sedges such as *Carex crinita* (top right), and the nefarious purple loosestrife (right). The seeds of such plants as papyrus (above left) and water lettuce (above right) tend to be spread in sudd—dense clumps of vegetation that block water channels.













The seeds of many *Geranium* species, left, can be thrown up to 10 feet by tension-filled "springs." Another plant that gives its seeds an explosive send-off is *impatiens*, top, which has fleshy capsules in which pressure builds as seeds mature. Other plants, such as beggar-ticks, above, use barbs to hitch a ride on animals.

wings capable of bearing it for miles.

Various seeds have a coat covered with woolly hairs that help carry them aloft—for example, willows and poplars (*Salicaceae*), cotton (*Gossypium*), kapok (*Bombax*), and anemones (*Anemone*).

Long before I read Henry David Thoreau's description of them, I knew about white pines and white pine seeds from firsthand experience. Autumn winds would toss the pine branches about with such ferocity that the cones would often fly many feet from the tree that grew them. Yet invariably, the cones would be empty. The oval seeds bear one long wing, and when the lid of each seed chamber lifts, the seed quickly blows away in a stiff wind or, on a calm day, gently twirls to the ground.

### Dispersal by Water

Many seeds are distributed by water, whether by ocean, creek, or even rain. Very small seeds, especially if they are light in proportion to their size, will easily float on the smallest rivulet. Corky seeds, like those of the carrot family, will stay afloat for weeks, while the thick-walled fruits of the silverweed (*Potentilla anserina*) have been recorded as floating in streams for as long as 15 months, thus distributing the weed along riverbanks and swampy meadows throughout the Northern Hemisphere.

Similarly, the flat, corky seeds of the beautiful-flowered but deadly jimsonweed (*Datura stramonium*) are carried downstream by floodwaters and deposited on riverbanks or along the edges of roads. Many sedges (*Carex* spp.) have seed pods that contain air pockets, so they easily stay on top of the water, sometimes for months.

Wetland plants often have corky seeds. Some, such as marsh marigold (*Caltha palustris*)—native to much of this country as well as Eurasia—never seem to make pests of themselves, while others, such as purple loosestrife (*Lythrum salicaria*) from Asia, are particularly difficult.

In the tropics, especially in areas of heavy rain, the periodic rush of water from the mountains can be awesome, transporting millions of seeds from the heights to germinate in the plains below. Most rain-driven seed migrations are governed entirely by chance, but a few plants are particularly adapted to these conditions. The seeds of pearlwort (*Sagina* spp.) and miterwort (*Mitella* spp.) are contained in open cuplike capsules, from which they are easily dislodged by raindrops.

The seeds of some plants tend to be

dispersed as sudd, which comes from the Arabic word *sadd*, for barrier. It originally referred to the vegetation that made the White Nile impossible to navigate. Today, it may refer to any dense clumps of vegetation that block water channels. Plants, along with the seeds, can be torn away by a flood and carried downstream, usually ending in adjacent lakes or pools. Examples of sudd plants are papyrus (*Cyperus papyrus*), water chestnut (*Trapa* spp.), water lettuce (*Pistia stratiotes*), and the infamous water hyacinth (*Eichhornia crassipes*) that has plugged so many rivers in our Deep South.

For beachcombers of all ages, there is a fascinating book called *World Guide to Tropical Drift Seeds and Fruits* by Charles R. Gunn and John V. Dennis, who describe in detail hundreds of species that use ocean currents to distribute their seeds.

Some are buoyant because of a hollow cavity, usually because the endosperm does not completely fill the seed. Seeds of the sea heart (*Entada gigas*), a pantropic, high-climbing woody vine, have reached Norway. Others, such as the bay-bean (*Canavalia rosea*), a leguminous vine that forms large tangles on tropical beaches, float because of a lightweight tissue.

Among drifting seeds, we can't overlook the black mangrove (*Avicennia germinans*), which usually drifts as a seedling, not as a seed. The embryo germinates while the fruit is still attached to the parent tree. When the seedling drops, it either roots in the mud below the parent tree or is carried out to sea on the tide.

### Mechanical Dispersal

There are several plants that depend on fruit explosions to disperse their seeds. The one that usually comes to mind is the squirting cucumber (*Ecballium elaterium*), an annual Mediterranean vine with fruit that is really an oblong berry two to three inches long. Linnaeus coined the genus name *Ecballium* from a Greek word meaning "throw," "eject," or "cast out."

The plant has a loose trailing or prostrate habit. When the fruit is ripe, it is bluish green and hangs by a stem (or peduncle) from the vine. Suddenly, the fruit will separate from the peduncle, while the fluid tension within the fruit forces the outer layers to distend under pressure. From the scar, the fluid contents—basically a semiliquid mucilage—push out through the opening, carrying the seeds



**The sandbox tree  
has seeds that  
when ripe break  
into sections and  
emit a sound heard  
throughout the  
jungle, giving it the  
common name  
monkey-pistol.**

**A dog can be a seed's best  
friend. The hitchhikers at  
right are Queen-Anne's-lace.**

with them. While not exactly attractive, the squirting cucumber certainly fills the bill as a horticultural oddity.

A popular garden plant that uses force to spread its seeds is touch-me-not, of the *Impatiens* genus. The fleshy seed capsules are often dilated at the upper end where the seeds are borne. The capsule walls are elastic, and as the seeds mature, pressure builds inside. Soon the five individual sections (or valves) are held together with only the slightest bit of tissue. Eventually they either part on their own or react to the touch of another plant, animal, bird, or human. Either way, in the blink of an eye, each of the five sections rolls back like a party favor, spewing the seeds into the open air.

Many species of *Geranium* have developed a seed distribution system based on releasing tension. Each fruit has five carpels containing one seed each. The carpels are all part of a long thin column fused together at the top. As the seeds ripen, the column begins to separate into five fibers. Building tension causes the columns to split apart and wind up to the top like five springs, throwing seeds as far as 10 feet.

Several members of the legume family distribute their seeds when the fruits dry and split into separated spirals, sending the seeds more than eight feet. The violet-flowered Chinese wisteria (*Wisteria chinensis*) has hard, rounded seeds within a stout pod. When the pods open, seeds can fly 10 feet or more. The record for flying legume seeds is probably held by the West Indian sword bean (*Canavalia gladiata*). When the large, thick pods snap open with a crack, the seeds are often thrown 20 feet.

In witch hazels (*Hamamelis* spp.), the fruit is a woody capsule with two sections or valves. When the fruit dries it splits, revealing two shiny black seeds within each valve. Finally the fruit snaps apart, discharging the seeds as far as 45 feet, a necessary distance to fall outside the perimeters of the parent tree.

The small mistletoe (*Arceuthobium pusillum*) is a parasite of the black spruce and lives in the woods of the Northeast. When its berries ripen, in early fall, the seeds are violently expelled. The seeds also have a mucilaginous surface, allowing them to stick to other parts of the bark on either the host or a nearby tree.

The sandbox tree (*Hura crepitans*), native to the West Indies and Central America, has seeds contained in round, three-inch capsules that when ripe break into sections and emit a sound heard

throughout the jungle, giving it the common name monkey-pistol.

## **Dispersal by Animals**

Animals, including humans, transport seeds in a number of ways both internal and external, depending on how popular the fruits are as food. Birds and mammals, even turtles, snakes, and tortoises, eat a number of fleshy fruits, then pass the seeds through their alimentary tracts unharmed. In many cases, the germination rate speeds up after the journey. Raspberries (*Rubus* spp.), Oregon grapes (*Mahonia* spp.), and flowering dogwoods (*Cornus florida*) are all spread after being eaten by chipmunks, mice, birds, squirrels, and all the other inhabitants of a suburban or country back yard. Both large seeds and small ones like grass seeds can survive the digestive trip.

Freshwater fish that feed on vegetation carry seeds long distances before expelling them. One curious manifestation of this method was mentioned by Darwin in *The Origin of Species*. Herons and other birds, he wrote, have eaten fish in whose stomachs were viable seeds of the yellow water lily. In this manner, the herons often carried the seeds many miles from their source.

The large garden snails of California and England have been known to move strawberry seeds throughout their range. And in southern climates, land crabs will eat fallen fruits and are known to spread the seed of the Malayan Otaheite chestnut (*Inocarpus edulis*).

The missel thrush has long been associated with the distribution of the European mistletoe (*Viscum album*) because the birds eat the berries. The berry's flesh contains a number of glutinous materials that are only partially digested. When passed from the bird, the seeds and skins of the fruit are stuck together, and the mass frequently is fastened securely to the branches of trees. Other observers have seen mistletoe seeds stuck to the beaks of birds. They rub against bark to remove them, thus putting them in position for germination.

Even the lowly earthworm has been found, upon dissection, to have a gut containing a wide variety of seeds.

## **Prickles and Glue**

One spring, after gathering some seeds for hound's-tongue or beggar's-lice (*Cynoglossum* spp.), Thoreau spent a long time removing them from his pocket. The next August, he gave the seeds to a









While the flowers of Queen-Anne's-lace, right, may be delicate and refined, its seeds are decidedly "barb"aric. Those of the butterfly pea, above, also cling to animals, using a gluey surface instead of hooks.



young woman who cultivated a flower garden, and he later wrote the following:

*[The lady's] expectations were excited and kept on the qui vive for a long time, for it does not blossom till the second year. The flower and peculiar odor were sufficiently admired in due time; but suddenly a great hue and cry reached my ears, on account of its seeds adhering to the clothes of those who frequented these gardens. I learned that that young lady's mother, who one day took a turn in the garden in order to pluck a nosegay, just before setting out on a journey, found that she had carried a surprising quantity of this seed to Boston on her dress, without knowing it for the flowers that invite you to look at and pluck them have designs on you and the railroad company charged nothing for freight. So this plant is in a fair way to be dispersed, and my pur-*

*pose is accomplished. I shall not need to trouble myself further about it.*

The adaptations that allow seeds to stick to animals are legion. Sometimes the entire seed capsule is involved as in the burdock (*Arctium* spp.), where the various projections are hooked at the tip. Many members of Compositae or the daisy clan have barbed awns that easily stick to fur or feather. The barbed bristles of beggar-ticks (*Bidens* spp.) are perfectly adapted to stick to fur or other materials. The small flat pods of tick trefoils (*Desmodium* spp.) are covered with hooked hairs. Both plants get their common names from sticking like ticks. Queen-Anne's-lace (*Daucus carota*) travels efficiently around garden and field by virtue of seeds bearing hooked bristles.

Many seed coats have adapted to travel

by having a gluey surface that will stick to almost anything. Seeds of the butterfly pea (*Clitoria mariana*), for instance, are so viscid they will adhere to any passing animal.

Some of the flaxes (*Linum* spp.) and several genera of the phlox family have seeds that, when wet, emit mucilage in fine threads. Often, these sticky seeds affix themselves to dried leaves and are blown about until they find a place to grow.

Many grass seeds have awns or stiff hairs that actually twist and turn during periods of high humidity. The awn of porcupine grass (*Stipa spartea*), a native of the Great Plains and the south central United States, has a twisted portion that coils and uncoils as the moisture content of the air changes, causing the bent arm of the awn to revolve slowly until it touches grass stems or other objects. Then the whole seed is literally screwed down into the earth. Unfortu-





**Many grass seeds have awns or stiff hairs that actually twist and turn during periods of high humidity.**

nately, the same process occurs if the florets lodge in the wool or hair of animals, often causing serious puncture wounds around the eyes, nose, and mouth.

But when it comes to grabbing hold, nothing beats the fruits of the unicorn flower or ram's-horn (*Proboscidea louisianica*), an annual native from Delaware to Indiana and south to New Mexico. The fruit lies on the ground with its six-inch claws sticking up into the air. When an animal steps on it, the fruit tips up and the claws clasp the fur or hair on the back of its leg. Then seeds are shed as the animal moves about.

One researcher has reported that fruits and seeds of more than 60 genera are carried about by ants, sometimes to a distance of more than 100 feet. Among the seeds attractive to ants are those of hellebores (*Helleborus* spp.). Carried into an anthill

and protected from the rigors of winter, they can germinate the following spring.

Harvesting ants (*Messor* spp.), native to the Mediterranean region and into the Sahara, build subterranean nests 10 feet or more into the ground and topped with a dome about two feet high. The ants forage for seeds they use to make a paste to feed their larvae. The seeds are stored in underground granaries, but if it rains and the seeds get wet, the ants take them out to dry in the sun, where some germinate.

And of course, seeds can be transported around the world by humans. For millennia, people have brought crop seeds with them as they travel, and inadvertently toted weed seeds clinging to clothing, hidden in pants' cuffs, or in mud stuck to their shoes. In *The Origin of Species*, Darwin reported a study he made of about half a pound of dried mud, which he dampened and kept

covered under conditions best for germination. Within six months, no fewer than 537 seedlings of various species appeared. In another case, he germinated 84 plants of three species from a ball of mud taken from the leg of a partridge.

Immigrant seeds frequently came to American shores in the ballast of sailing ships. Those round-bottomed boats that sailed from Europe and England frequently left with empty holds, since few people in the colonies had the money to buy much of anything. Unfortunately, when empty, the ships could easily capsize, so shipping companies filled the hulls with dirt, then hired men to dig it out after landing. Guess where the dirt went? All along the eastern shores from Boston to Charleston. And all of that dirt was full of seeds, many of which were the forebears of the alien weeds that now trouble our ecology.



# Don Shadow knows

**Preservation is a driving force for this hard-working, third-generation nurseryman.**

b y B o b H i l l

**The one certainty was** that Don Shadow would find us before we found him.

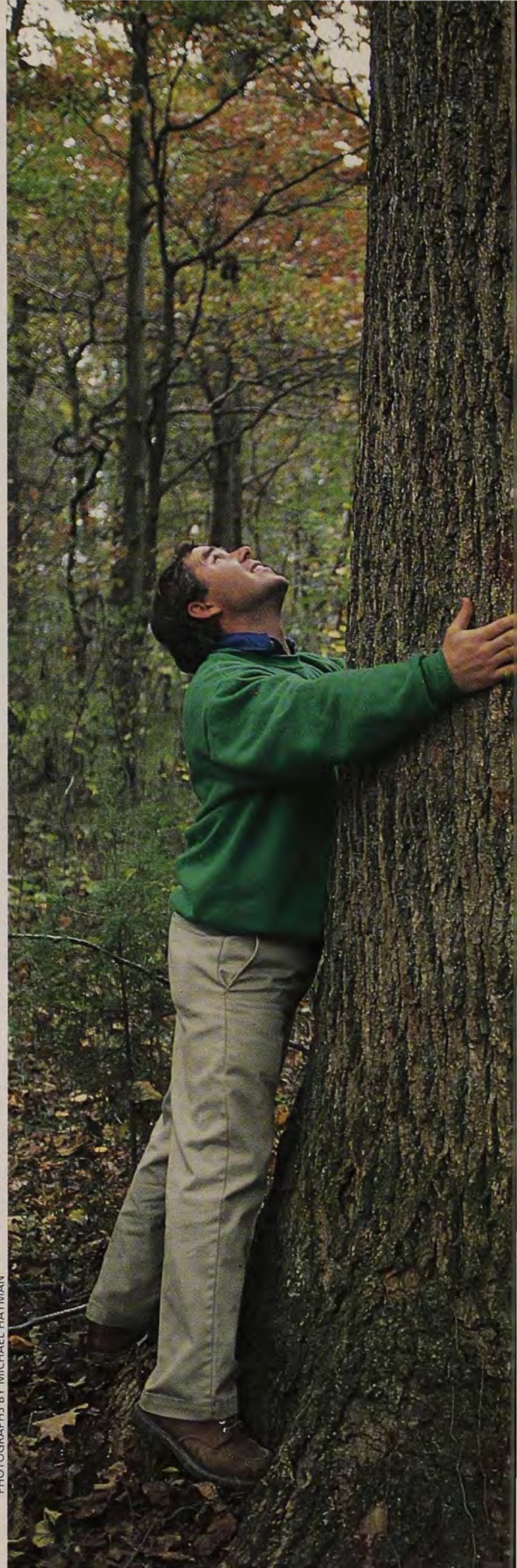
The 55-year-old Winchester, Tennessee, nurseryman, horticulturist, and collector of things new, old, rare, and endangered had been on the move since 4:30 a.m. The sign on his office wall didn't help pinpoint his location, but it offered some clue to his work ethic, perhaps even the source of his marching orders: "God put me on earth to accomplish a certain number of things. Right now I'm so far behind I'll never die."

Shadow was out there somewhere, crisscrossing his almost 700 acres of trees, shrubs, perennials, and exotic animals at gray dawn in a cluttered red pickup truck, directing a work crew of 25 in filling customer orders that occasionally get written on the backs of envelopes and other odd pieces of paper. It was only 18 years ago that he started his own wholesale nursery business, working for the first three from one small shed, his office a cardboard box in the cab of his truck.

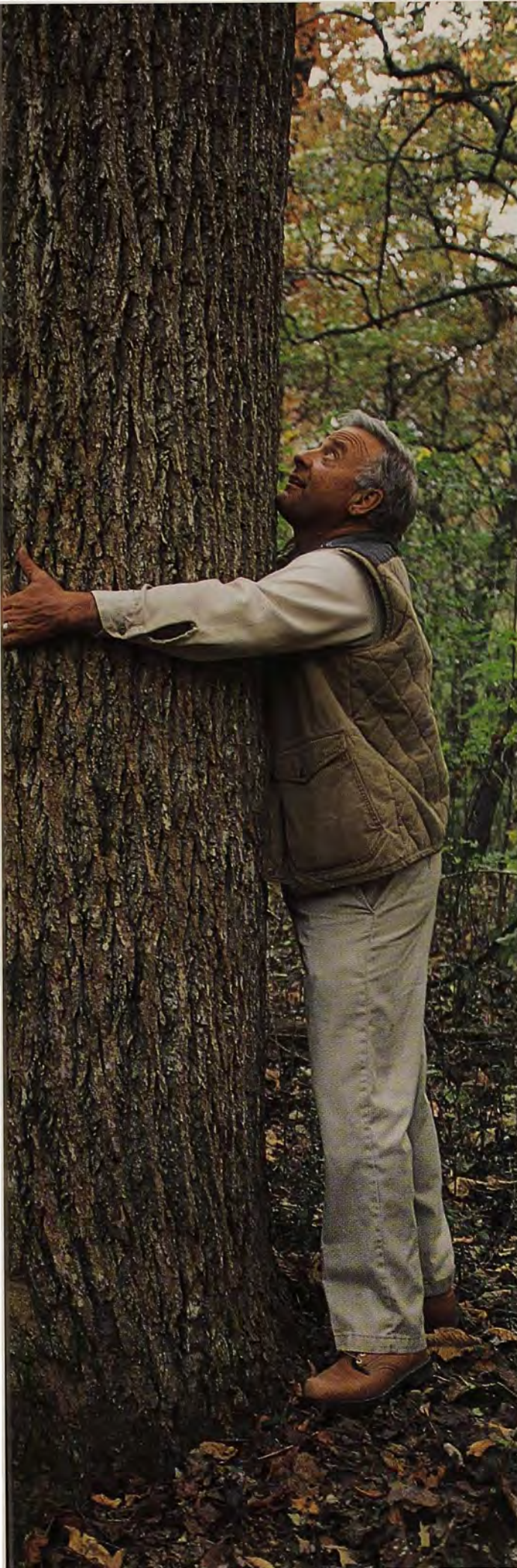
"Don Shadow," says longtime friend and fellow nurseryman Tom Dodd III of Semmes, Alabama, "is a true Renaissance man. Nobody has any idea what all that man does."

We were here to find out. Louisville photographer Mike Hayman and I—certified plant nuts and proud possessors of a southern Indiana nursery approximately 698 acres smaller than Shadow's—were going

PHOTOGRAPHS BY MICHAEL HAYMAN







**Don Shadow recently bought a 31-acre tract near his home to preserve the virgin woods it contains. Here Shadow, right, and a visiting arborist, Robert Rollins, try to embrace a 400-year-old black oak on that land.**

to spend a day with this legend. Once we found him.

All roads led to the nursery's loading dock and packing shed, so that seemed our best bet. Within 10 minutes, Shadow came roaring up. He leaned out his truck window, reading glasses perched at the far end of his nose, an all-business look on his face. "I'll be right back," he said, heading down the road. Our hearts sank momentarily, but after giving some directions to his crew, he returned to give us his full attention.

Our tour began inside his packing and cooling house, stuffed with piles of leggy bare-root shrubs and trees along with hundreds of interesting new Japanese maples that he had potted after they arrived from New Zealand. "They came in the middle of the summer," he said. "They were too tender to leave outside."

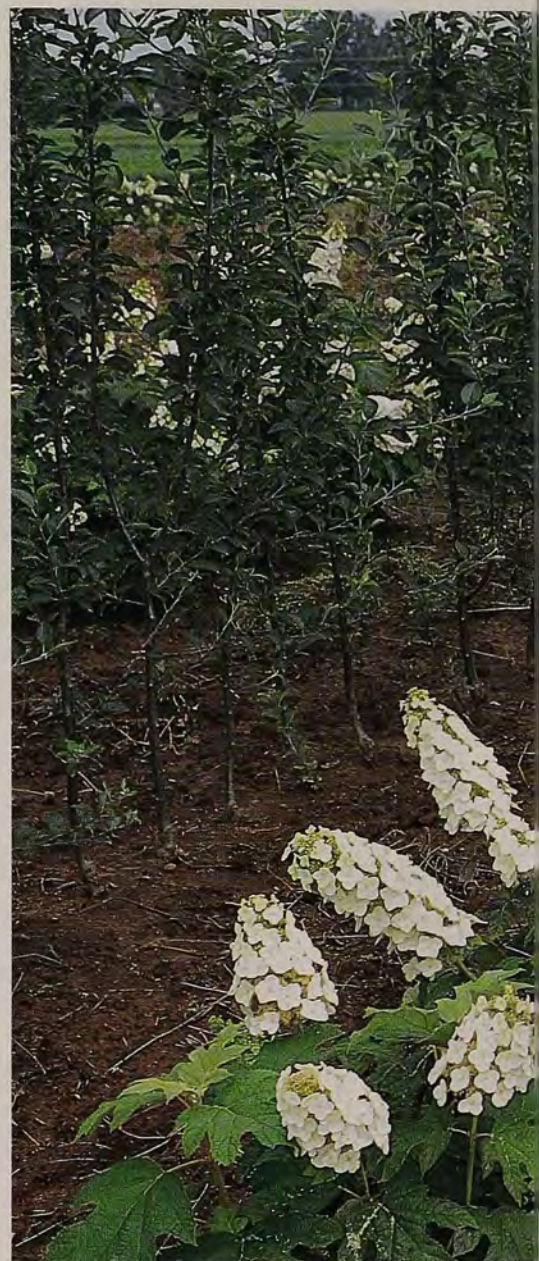
Shadow headed out the door, then turned and waved a hand to indicate the entire building. He has a distinctive, pinched southern accent that evokes good-natured comment when he lectures at plant conferences around the country—and the world—treating audiences to descriptions of plants to die for, delivered with his deadpan sense of humor.

"I've always said that in America nobody ever landscapes a packing shed," he told us. "I'm determined to do it. I'm going to make a metal frame, plant some *Jasminum nudiflorum*, put in a weeping cherry at a 45-degree angle, put some really rare dwarf conifers in there, a bog garden over there...."

His intensity is by all accounts a family trait, as are his agricultural and horticultural roots, which run three generations deep in reddish, south central Tennessee soil. It's a beautiful area, framed by the sheltering Cumberland Mountains, with a roughhewn history that goes back to Davy Crockett and a transition-area climate—USDA Zone 6b to 7—that allows Shadow to develop and sell plants suitable for both North and South.

It's a locale, a heritage, and a calling that Shadow has taken to heart. At age five he was taking cuttings from the yard, sticking them under a jar by the house. When he was in grade school he told a local farmer he wanted to buy his land. In high school Shadow made the man promise to give him first chance to buy his farm. It was a dream he held on to while earning a degree in ornamental horticulture from the University of Tennessee. (Later, at 29, he would become the





youngest trustee in the school's history.)

In 1964, a year after graduation, he bought that 163-acre farm in partnership with his father, Hoskins Shadow, who at 93 still keeps a hand in his own business, the Tennessee Valley Nursery. Hoskins is also the son of a nurseryman, Joseph Shadow, who lost his land beneath the waters of a Tennessee Valley Authority lake and dam.

Hoskins and Minnie Lee Shadow, 91, still live in the house where their son planted his first trees. The three of them walked around the yard with us, pointing out landmarks. "Don," explained Minnie Lee, "got all his energy from his father."

That Shadow energy has led to a 1,300-acre farming-nursery complex that honors

the past while cultivating the future. For 25 years Don Shadow has been collecting old farm machinery, along with heirloom shrubs, roses, perennials, and fruit trees. He also collects old breeds of livestock, poultry, horses, and swine, intending to put them all together in a working farm museum called Shadows of the Past.

"It will be dedicated to that era of life when we went from horses to steam engines to steel-wheeled tractors," he said. "I've already had a man break a pair of oxen for me." His domestic exotic animals include Dexter cattle, dwarf Nigerian milk goats, European boars, Poitou asses, Sicilian donkeys, spotted donkeys, Watusi cattle, and water buffalo. "We've got some

belted Galloway cattle from Scotland," he said. "We call them Oreo-cookie cows."

Right now his farm-museum-in-waiting is an old, graying farmhouse and equally antique barn. "Over here," he said, pointing around the yard, "is where I'm going to put a museum, a gift shop, a garden center. The old house is going to be a bed-and-breakfast."

Inside the old barn he noted the wooden pegs that have held the big timbers together for almost a century.

"It's always bothered me to think that when things become extinct, another generation won't get to enjoy the things that I have," he said. "I guess that's always been my driving force for





Opposite, top row: Shadow holds a typical beech (*Fagus grandifolia*) branch and one from a golden-leaved form that he may name 'Gold Shadow'; the deep pink flowers of a 'Waterlily' star magnolia grown by Shadow Nursery. Bottom row: Shadow directs workers in a field of 'Winter Red' deciduous hollies; some of his Sicilian and spotted donkeys playing with their water bowl. Left: The nurseryman planted 4,000 'Snow Queen' oakleaf hydrangeas to look for pink or compact forms.

collecting all these animals and plants."

Back on the road, Shadow gave directions to three men digging and burlapping root balls for delivery, pausing to mark the best 'Winter Red' deciduous hollies (*Ilex verticillata*) for a customer. Shadow grows hundreds of cultivars of trees and shrubs, thousands of some of them in large, neat plots, but says he still selects "about ninety-nine percent" of what is shipped.

"I don't care what business you're in," he said, "if you don't do quality and service you'll never be successful. I've had customers for more than 10 years that I've never met, but they know they can call me and tell me what they want and that's what they get. That way they only have one per-

son to complain to, and that's me."

The multiskilled Shadow also speaks water buffalo. He paused near a field to call to the huge brown beasts, developed in Trinidad from several strains originally from Egypt. Shadow leaned out his truck window emitting a curious, vibrating, humming grunt that he and the water buffalo seemed to understand.

Their communication has come in handy. A neighbor called him late one night, reporting that one of the buffalo was in the highway, with several others milling about on the shoulder. Shadow got out of bed, went out to the road with a spotlight. "What are you going to do?" the agitated neighbor demanded. "Lemme

think a minute," he answered. Shadow then rolled down the truck window, began grunting at the errant water buffalo, and they followed him all the way home.

Tucked away in various corners of his farms over the years have been Blesbok antelope, Chinese Muntjac deer, rhea, Damar zebra, emu, fallow deer, dromedaries, Mouflon sheep, and Masai ostriches. The latter stalk the fenced field behind his office, as incongruous a sight as you're likely to find in Tennessee. "They can break your arm or leg if they kick you," he said, "and they can run about 45 miles an hour."

But animals are a relatively recent hobby for Shadow, and he hasn't let up for a minute on his lifetime fascination with



**His shade houses, buildings, and landscape are stuffed with plant exotica he has cataloged only in his mind.**

plants. In his relentless quest for new selections, Shadow has cultivated relationships with some of the best plant people in the world. "Don and I first met at meetings of the International Plant Propagation Society," Peter DelTredici, director of Living Collections at Arnold Arboretum, told us. "He's always been incredibly generous with his time and knowledge."

Shadow's 60-page nursery catalog highlights numerous dogwoods, the crop that pays the bills. These include hybrid dogwoods (*Cornus kousa* × *C. florida*) developed by Elwin Orton Jr. at Rutgers University—"Aurora", 'Celestial', 'Constellation', 'Ruth Ellen', and 'Stella Pink'—which have proven resistant to dogwood borer and anthracnose. He offers *C. florida* 'Cherokee Brave', a chance seedling found by Commercial Nursery Company in Decherd, Tennessee, with burgundy red new growth. His own introductions include *C. florida* 'Autumn Gold', an orange-twigged white-flowering dogwood found by Manuel Statham at Commercial, and *C. florida* 'Sterling Silver', a white-and-green-variegated dogwood found by Bill Sisk of Green Hill Nursery in Winchester that does not burn in full sun as other variegated dogwoods tend to do.

He also offers 19 crape myrtle introductions (*Lagerstroemia* hybrids) developed by Donald Egolf at the U.S. National Arboretum before his death in 1990. "Dr. Egolf was one of the top woody plant breeders in history," said Shadow. "He developed all those crape myrtles, viburnums, so many things."

The real joy—and constant surprise—of the Shadow Nursery is that so many of the plants he is working on are not in his catalog. His shade houses, buildings, and landscape are stuffed with plant exotica he has cataloged only in his mind. It takes him five or even 10 years to release new cultivars, first selecting them for unusual characteristics, then watching them over several seasons to make sure those characteristics are consistent. Finally, he has to build up enough of a supply to sell.

For example, he planted out 4,000 seedlings of *Hydrangea quercifolia* 'Snow Queen'—first developed by Princeton Nursery—to look for a few that would bloom in pink or be more compact. Then there's the plant sent to Shadow's father years ago by a man from the John Gray Egyptian Nursery in Illinois, which appeared to be a *Euonymus alatus* but partic-

ularly tough and with interesting corky wings. "It knocked around here for years," Shadow said. "I began propagating it and sent it to the Arnold Arboretum for identification. They said it was a separate species, *Euonymus phellomanus*."

He led us past long rows of fall-flowering witch hazel (*Hamamelis virginiana*) that he had planted by the hundreds to find a better plant. One seems to have more thickset, fragrant yellow flowers. If it holds up, he may call it 'Tennessee Beauty'.

Walking the Tennessee hills near his home has led to other discoveries that could eventually find their way into his catalog and American gardens: a yellow-leaved American beech (*Fagus grandifolia*) and a tall, very narrow sweet gum (*Liquidambar styraciflua*). Recently Shadow helped fund the transplanting of a marvelous, spreading *Cotinus coggygria* 'Pink Cloud' discovered by my fellow nurseryman, Mike Hayman. Scheduled for sacrifice to the expansion of a Louisville restaurant, this eye-catching smoke tree can now be propagated by Shadow and saved for future generations.

His preservationist spirit goes well beyond that. He recently purchased a 31-acre tract of forest near his home containing some of the last virgin woods in the area. Among its treasures are a 400-year-old black oak, a tulip poplar with a trunk 44 inches in diameter, and a sassafras tree as tall and straight as a ship's mast.

As the afternoon sun slanted through trees that rose above us like cathedral columns, he explained how the farmer who sold him this site won his undying respect. "The woods has about \$150,000 worth of timber on it," Shadow said. "Frank Syler was working in a gas station. He needed the money. But he wouldn't sell it for timber. Now a lot of people will get to see it."

Our day ended where it began, at the Shadow Nursery loading dock. It was dusk, the surrounding hills slowly disappearing into the darkness. The forecast was rain, our mood one of controlled urgency.

Shadow climbed into the bed of a waiting truck, directing his workers to spread straw among the root balls to protect them, pitching in to help with the task. Lights came on around the dock, adding more time to the already long workday. When we left in the dark, Shadow was loading a truck, still trying to accomplish a certain number of things.

*Bob Hill is a columnist for the Louisville Courier-Journal.*



# focus september/october

# mulling over mulch



PHOTOS COURTESY OF AGRICULTURAL RESEARCH SERVICE, USDA

## **MOST OF US CAN RECITE THE MANY BENEFITS OF MULCH:**

*weed suppression, moisture retention, moderation of soil temperature, prevention of erosion and compaction. Trees that are mulched may grow better than trees surrounded by turf, and are less likely to get whacked with a lawn mower. And when it comes right down to it, a lot of us use mulch because we like the way it looks. According to the National Bark and Soil Producers Association, Americans buy some 85 million bags of mulch each year. It's hard to beat commercial mulches for appearance, but getting enough to do the job can be an expensive proposition.*

*Here are some ideas for less traditional mulches that are free or cheap—use them by themselves or under a layer of the pretty stuff—a report on new ways with old news, and the latest research on colored mulches and cover crops.*

## homemade mulch

A lot of gardeners never buy mulch. They either mulch with what their plants produce for them, or they find free sources. After all, nature mulches just fine without our help. Purchased mulch may be more aesthetically pleasing, but the fuel used to ship it long distances and the plastic used to bag it may outweigh its potential environmental benefits.

Using homemade mulch requires the same sort of thrifty techniques as composting, except that you can use some of your yard trimmings without mixing them or waiting for them to break down.

**Above:** USDA researcher Aref Abdul-Baki examines mulch made of hairy vetch.



There are a few do's and don'ts:

☛ Remember that fresh woody material may rob the soil of nitrogen. Let it age for several weeks before applying.

☛ Watch out for toxic plants. Trees such as black walnut, black locust, and, to a lesser extent, eucalyptus produce allelopathic substances that will sicken or even kill many plants. "Black walnut leaves and wood can make a good weed control around a well-established plant," says Frank Gouin, professor emeritus of horticulture at the University of Maryland, "but they can completely wipe out a bed of annuals."

☛ Try to vary the kind of mulch you use from year to year. Some trees, such as sweet gum, tulip poplar, and tupelo, contain especially high levels of manganese that can build up in the soil, according to Gouin.

☛ Avoid diseased plants if at all possible, or compost them thoroughly. Karel Ja-

smelly if it's thicker than an inch or two, however, and is only moderately good for weed control. And remember that your lawn needs the clippings, too, so don't remove them every time you mow.

**Leaves.** Run over them with a lawn mower or compost them a bit so they're less likely to blow around or mat down.

**Prunings of shrubs and trees.** Chipped woody trimmings will look more like purchased mulch than grass or leaves, and will last longer. A chipper isn't cheap, however, or easy to use. Some community groups buy a chipper that can be shared.

**Newspaper.** An effective weed stopper, it's not pretty but can give you added layers under more attractive mulch. Avoid colored ink, which may contain toxins.

**Cardboard.** This heavy-duty stuff will smother the most determined perennial weeds if left for several months. Rodale's

## the cypress controversy

Whether or not to buy cypress mulch, says Jim Grubbs, is pretty much an emotional issue. Mulch isn't a subject that everyone gets emotional about. But many people feel that harvesting this wetland native tree (*Taxodium distichum*) to make our landscapes more attractive—and drought resistant—is misguided logic.

Grubbs, the state land coordinator for the Division of Forestry in the Florida Department of Agriculture and Consumer Services, says statistics show that the amount of wood produced by Florida's cypress trees each year is actually greater than the amount removed. "According to the latest U.S. Forest Service survey, Florida currently has over 808 million cypress trees with over 57.3 million cubic feet of annual growth. Commercial removal of cypress—including harvesting for mulch—amounts to roughly 31,870,000 cubic feet annually, resulting in a net annual increase in growing stock of 25,430,000 cubic feet."

Yet those trying to discourage the use of cypress mulch don't think the statistics tell the whole story. One of them is Jerry Kidder, an Extension soils specialist with the University of Florida's Institute of Food and Agricultural Sciences in Gainesville.

### CLEAR-CUTTING COMMON

"Cypress is a slow-growing tree," he says. "At first the mulch was just a waste product from cypress harvested for lumber, but then it took on a life of its own." Because gardeners heard that cypress mulch was longer-lasting than pine and other mulches, its popularity skyrocketed. While trees cut for lumber average around 50 years old, those harvested for mulch are often much younger trees, and clear-cutting is a common practice, Kidder and Grubbs agree.

There appears to be little solid research about the impact of this clear-cutting. Cypress provides habitat for woodpeckers, wood storks, wood ducks, several owl species, opossums, and bobcats, and help purify water, according to conservationists. Yet clearing small areas of cypress groves might have some benefits to wildlife, suggests Grubbs, as does natural clearing of woods by a fire or windstorm.

"We need studies that will suggest the best method of management, so that we're not overharvesting," he says. "In some

## If you can't produce all the mulch you need, there are many sources of mulch that is free for the hauling.

cobs, research plant pathologist at the Morton Arboretum in Lisle, Illinois, says certain tree pathogens are adapted for prolonged survival in bark and wood. She is launching a study of a redbud canker, a red oak root rot, and cedar-hawthorn rust to see how long these pathogens survive, and how they can be killed. She recommends mixing the wood with manure to attain a temperature of 130 degrees for two weeks—not easy for the weekend gardener.

If you can't produce all the mulch you need, there are many sources of mulch that is free for the hauling. Municipalities often offer free leaf mold and chipped tree trimmings, and arborists are usually happy to dump their trimmings, rather than pay to haul them to a landfill (compost the latter, since there's no way to know what's in it). Depending on where you live, there may be industrial and agricultural by-products, such as spent brewery hops, seaweed, apple pomace, or pole peelings from a lumber mill. Here are a few other possibilities to which most of us have access:

**Grass.** Collect clippings in a bag while you're mowing. They're ideal for delicate plants, such as asparagus, and they add nitrogen to soil. Grass can become slimy and

*Low-Maintenance Gardening Techniques* recommends overlapping the pieces of cardboard and topping them with eight to 10 inches of spoiled hay or straw.

**Carpet.** Okay, so you don't exactly recarpet every spring, and if it's orange shag you're ripping up, do you want the neighbors to know? But should you obtain some carpet made of natural fibers such as cotton or wool it won't hurt your plants and may keep weeds out of the tomatoes for more than one season.

**Living plants.** You should have little need for other mulch if you plant your vegetables, annuals, or perennials close together. You'll need some mulch around them until they fill out, but you can use finished compost knowing that you won't have to replenish it later in the season. Using this approach with perennials, of course, means that you will have to divide them more often.

**Snow.** One use of mulch is to moderate soil temperatures. In winter, mulch can keep plants from being heaved out of the ground by alternate freezing and thawing, and can keep borderline-hardy plants alive. Snow provides a natural mulch in those regions where it is likely to remain on the ground for a while.



## Love Thy Enemy

**M**ake mulch, not war. Use your weeds to reduce erosion and retain moisture. Rodale's *Low-Maintenance Gardening Techniques* suggests leaving non-invasive weeds like chickweed or clover alive to cover ground between plants. You can use dead weeds, too, as long as they haven't gone to seed. The book suggests trying lamb's-quarters, jewelweed, plantain, pigweed, and pokeweed. Bad choices would be Bermuda grass, bindweed, crabgrass, nutsedge, purslane, or anything else that reproduces from root sections.

If you have herbs that don't seem to know their bounds, such as mint, artemisia, velvet sage (*Salvia leucantha*), and yarrow, whack them back and use the tops as mulch that will be both fragrant and help repel insects, the book adds.

Florida gardeners can get revenge against that state's ultimate weed—the melaleuca, which is gobbling up the Everglades. Since 1983, Forestry Resources in Fort Myers has been harvesting the dastardly “punk tree” to make mulch. The company harvests 150,000 tons—or 2,000 to 3,000 acres—annually.

President John Cauthen describes the product as somewhere between shredded and chipped in texture, and similar to chestnut in color. It's sold as Floramulch to landscapers of public institutions, and marketed in home improvement stores as Enviromulch. So far, it's not widely available—shipping adds greatly to the cost of what is otherwise a very low-cost product, says Cauthen—but there's a chance a distributor will rectify that next spring.

The melaleuca is known for its amazing power to regenerate from seed and stump, but Cauthen says a 120-day curing process means “we've never had a single seedling.” After his company cuts the trees they use herbicide on the stumps and replant the areas with native vegetation. “I see the melaleuca as an advancing army,” he says. “But I believe it can be stopped.”

The eucalyptus, a troublesome plant in California, is also often sold as mulch, but researchers say fresh eucalyptus has an allelopathic effect that sickens some plants.

cases where large trees have been cut, the stumps sprout so that you have a pure cypress stand. In other cases, the area will regrow as a mixed forest, and this has to do with such things as water levels and the time you harvest, and probably other factors.” He notes that all commercial cypress harvest is on private land. Cypressess on state forest lands are cut only for research.

“We feel that we can't safely harvest cypress stands, like we can pine, because we don't know how to manage them,” he says.

Susan Vince, a visiting assistant professor in the University of Florida School of Forest Resources and Conservation, doesn't believe that cypress mulch is superior to other wood chips, because the mulch is made not from the heartwood of mature trees, which contains chemicals that act as preservatives, but from their soft edges and tops, or from young trees.

Some studies show that when cypress mulch is used in full sunlight, it can form a crust that reduces the amount of water getting to plants. Nor is it necessarily any more eye-pleasing than other mulches. Gary Brinen, horticulture Extension agent for Alachua County in Florida, asked landscapers and homeowners to compare 15 different mulches over a six-month period and found that mixed hard-

wood chips, pine bark, and pine straw were rated as highly as cypress in durability and appearance.

But the commercial harvesting of pine straw is also a matter of concern. Removal of fallen pine needles robs trees of their own natural mulch, reducing their nitrogen supply and leaving them open to stress during drought. Raking pine needles can also kill pine seedlings and other woodland plants. Pine needles are also more of a fire hazard than most other organic mulches.

Kidder encourages home gardeners to mulch primarily with yard trimmings. “Using urban plant debris for on-site mulching reduces the volume of waste placed at the curb and reduces the need for purchased mulch,” he observes.

## new mulch is old news

**N**ow that recycling is mandatory in most communities, everyone's looking for ways to use the waste we're collecting. Some commercial growers use chopped newsprint to insulate container

plants, and pelletized newspaper soaked with manure is being produced as an organic fertilizer.

A pelletized mulch made from chopped newsprint and other papers is being marketed as a mulch for turf grass seeds. Developed by George Hamilton, an agronomy professor at the Pennsylvania State University, the mulch—called Pennmulch—is combined with a starter fertilizer and formed into small, green pellets that look like rabbit food.

Hamilton says Pennmulch can be spread by hand or conventional spreaders rather than requiring special machinery as do most products for mulching grass seed. And unlike straw—the traditional mulch for turf beds—it is free of weed seeds.

### A MULCH OF MANY USES

Patented by the university, Pennmulch is licensed by a State College-based company called Technology Assessment & Development and manufactured at a facility near Buffalo, New York. This year 4,300 tons of Pennmulch were produced for sale to golf courses, landscaping companies, and homeowners. According to Hamilton, Pennmulch is now available at Agway stores and specialty garden centers throughout much of the North and East. In addition to its use with grass seed, Hamilton says Pennmulch is being evaluated for use with nursery stock such as geraniums. He anticipates broader applications as more research is done. “We've heard of people using it in all different kinds of applications, from roses to tomatoes—anywhere that weed suppression and moisture retention are important.” The color and fertilizer content of the mulch can be adjusted for specific uses, and Hamilton says an unfertilized version of Pennmulch is under consideration.

Another innovative project involves converting newspaper and telephone books into a mulch that can be amended with nutrients and applied to ornamental and container plants to reduce use of fertilizers, herbicides, and water. Jim Edwards, a researcher with the Agricultural Research Service National Soil Dynamics Laboratory at Auburn University in Alabama, says he started working on the concept about five years ago when there was little or no market for waste paper. Edwards has also experimented with a two-stage recycling process in which waste paper is first used as poultry bedding and then converted into mulch.

The mulch is produced by grinding waste paper in a mill, then compressing it into pellets a quarter-inch in diameter and



up to one-and-a-quarter inches long. Edwards says the pellets are ideal for containers, which he says "are one of the biggest control problems for the nursery industry." The pellets were pilot-tested at several nurseries last summer, and Edwards says the response of the nursery owners was enthusiastic.

## NOT-SO-HUMBLE CRUMBLE

A second version of the mulch, called "crumble," is produced by putting the pellets through a granulator. The resulting irregularly shaped material has an average diameter of about one-quarter inch, and Edwards says it can hold four to six times its own weight in water. It also has the advantage of being spreadable using a conventional fertilizer spreader.

Tascon, Inc., a Houston-based company that specializes in products made from recycled materials, plans to produce two versions of Edwards' crumble mulch. An unamended form will be sold to wholesale commercial growers and nurseries; another version with nutrients added will be sold through retail outlets under the name Enviroguard Weedstop and Soil Enhancer.

Paul Adamoli, a sales representative for Tascon, says the company envisions selling the mulch—which can be dyed various colors but will initially be offered in brown and rust hues—through home-supply chains as well as local nurseries and hardware stores.

Adamoli says the mulch is ideal for ornamentals and is being tested for use on vegetables. "It's much more than a mulch," says Adamoli. "Its main attribute is that it stops weeds without herbicides, but it also adds organic matter to the soil as it decays. When you are done for the year, you just till it back into the soil and it provides a kick-start for new growth." Adamoli says the mulch, which should be applied one inch thick, prevents virtually all weeds with the exception of nut grass.

Other studies show that newspaper can be used effectively as mulch on perennial plants without being pelletized. In the January 1 *American Nurseryman*, Norman Pellett and David Haleba of the Department of Soil and Plant Science at the University of Vermont reported on a comparison of chopped newspaper and bark mulch in controlling weeds

## Resources

### Enviroguard Weedstop and Soil Enhancer.

Call Paul Adamoli of Tascon, Inc., at (713) 937-0900.

**Pennmulch.** Call Tim Hurley of Penn Turf Products at (814) 234-2348.

**Selective Reflecting Mulches.** Call Peter Bergholtz of Ken-Bar, Inc., at (800) 336-8882.

around perennial nursery plants. In spring they applied four- and six-inch layers of the newspaper to test plots, watered it down, and compacted it with a roller. Three times over two four-month growing periods, they counted the weeds in those plots compared to unmulched plots and plots mulched with two- and four-inch layers of softwood bark. They concluded that the newspaper worked as well or better than the bark.

## after mulch reflection...

For several years, Agricultural Research Service (ARS) scientists have been illuminating us about the way plants respond to different wavelengths of reflected light. Now the first in what is expected to be a line of trademarked colored mulches—called Selective Reflecting Mulch-Red—is being marketed by Ken-Bar, Inc., a greenhouse and garden product supply company based in Reading, Massachusetts. The product was jointly developed by ARS and Clemson University. Tailored to increase yields of tomatoes, the plastic film mulch will be available this spring through seed and garden supply catalogs.

Ken-Bar president Peter Bergholtz says there is preliminary evidence that the mulch will also benefit strawberries and apple trees.

Patrick Hunt and Michael Kasperbauer, who both work for the ARS Coastal Plains Soil, Water, and Plant Research Center in Florence, South

Carolina, were the first to recognize the possibilities for altering plant growth characteristics using different colored mulches. Kasperbauer began the basic research in the early 1960s at the ARS Pioneering Research Laboratory for Plant Physiology in Beltsville, Maryland.

## A BRIGHT IDEA

In 1984 he and Hunt realized that plant growth can be affected by the ratio of far-red light to red light reflected from the soil surface upward to the plant. Because different colors absorb and reflect different wavelengths of light, the ratio can be altered by changing the color of the reflective surface beneath the plant. In 1986 Clemson horticulturist Dennis Decoteau joined the team and they began applying their findings to tomato production.

Kasperbauer, Hunt, and their colleagues found that by using different colors of mulch they could manipulate various plant characteristics, including height, shape, color, root development, yield, and flavor. "It's quite an interesting way of manipulating the growth environment of plants. I really don't know that I've run across a topic that interests people on the street more than the concept of colored mulches," says Hunt. "There's a fascination that you can change the color of the soil surface and cause a plant to grow differently." Hunt stresses that the mulch color must be exact in order to achieve the desired effect. "Not just any red will give you more and better tomatoes," he notes. Plants respond to some color differences invisible to the human eye. The researchers use an instrument called a spectroradiometer to fine-tune the wavelengths of light reflected by their experimental mulches.

Custom-colored mulch may even be useful for pest control. Michael Orzolek, professor of vegetable crops at the Pennsylvania State University, says some yellow mulches attract cucumber beetles. "We might be able to draw large numbers of these beetles to an area with yellow mulch and eliminate them with fewer pesticides than if we were treating the entire field," says Orzolek. "Silver mulch repels aphids, making it less likely they will transmit plant viruses."

To this point, most of the research with colored mulches has been on vegetables and fruits, but Hunt says the potential applications of the technology may extend to ornamentals. "In principle I think we could find places where it would work. We've shown that it's possible to change pigmentation, so it seems you would be able to bring about pigment alterations that might



This impatiens is mulched with pellets made from recycled newspapers and telephone books.





be desirable. It might also be an economical way to produce desired growth patterns in nursery stock. Now that we have the product out there, I think we'll see a lot of different kinds of uses."

## living mulch

The concept of using living mulches to suppress weeds and retain moisture is hardly new. Gardeners have been using ground covers and low-growing, clumping perennials to accomplish those tasks for years. Farmers and vegetable gardeners have long used cover crops to prevent soil erosion, suppress weeds, and restore nutrients to the soil. Now researchers have documented an instance in which the practice increased crop yield while reducing the need for herbicides and chemical fertilizers.

In field tests using tomatoes, Aref Abdul-Baki and John Teasdale, who work with the Agricultural Research Service vegetable and weed science laboratories, respectively, in Beltsville, Maryland, compared results of mulching with hairy vetch (*Vicia villosa*)—a winter-hardy annual legume—and plastic. The vetch plots had a longer harvest season and produced up to twice as many tomatoes. Vetch is also less expensive than plastic and more environmentally friendly, since it adds organic matter and nitrogen to the soil as it decays. Although Abdul-Baki and Teasdale's research is based primarily on commercial growing techniques, they say the practice can be adapted effectively by

back-yard vegetable gardeners. It appears that melons, snap beans, peppers, and eggplant may also do better when grown with the vetch mulch.

Prepared beds should be sown with hairy vetch seed in early September, about two months before the ground freezes. Young vetch plants should be several inches tall by first frost and will help prevent soil erosion throughout the winter. Vetch will come out of dormancy in early spring and grow two feet tall by May.

The day before you plan to set out tomato seedlings, mow or cut the vetch to an inch above the soil surface, leaving the chopped residue in place. Plant the tomatoes in the soil beneath the vetch, and make sure the tomatoes are adequately watered throughout the growing season.

In late summer, when the tomato plants have finished bearing, mow or lightly till them into the soil and reseed with vetch. Follow normal crop rotation practices the following spring. Teasdale says it appears vetch can be resown con-

**USDA researchers Patrick Hunt, left, and Michael Kasperbauer pioneered work on reflective mulches, which take advantage of the way plants react to wavelengths of reflected light.**

tinuously in most areas, but cautions that it may be wise to rotate vetch in the South, where the plant may act as a host for nematodes and other pests.

Teasdale says hairy vetch is the most winter hardy of several possible legume mulches. "It also provides vigorous growth under most growing conditions and has the highest nitrogen content of cover crops." For Southern gardeners, crimson clover (*Trifolium incarnatum*) is a good option, he adds, "because it produces really nice flowers in the spring, so it serves as an ornamental of sorts."

## Sources for Vetch and Clover Mulches

**Garden City Seeds**, 778 Highway 93 North, Hamilton, MT 59840, (406) 961-4837. Catalog \$1. *Clovers, other cover crops, and legume inoculants.*

**Johnny's Selected Seeds**, Foss Hill Road, Albion, ME 04910-9731, (207) 437-4301. Catalog free. *Vetches, clovers, and legume inoculants.*

**Peaceful Valley Farm Supply**, P.O. Box 2209, Grass Valley, CA 95945, (916) 272-4769. Catalog \$2. *Vetches, clovers, other cover crops, and legume inoculants.*

**Sustainable Production of Fresh-Market Tomatoes With Organic Mulches**, a free how-to bulletin on vetch mulch, is available by sending a request for Farmers' Bulletin 2279 to Aref Abdul-Baki, USDA-ARS Vegetable Laboratory, Room 210, Building 004, 10300 Baltimore Avenue, Beltsville, MD 20705-2350.





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## book reviews

🌿 *orchids*

🌿 *gardening adventures*

🌿 *long-distance gardening*

### MANUAL OF ORCHIDS

Joyce Stewart, consultant editor. Timber Press, Portland, Oregon, 1995. 448 pages. 6 3/8 x 9 1/2". Black-and-white illustrations. Publisher's price: hardcover, \$49.95. AHS member price: \$44.95.

Based on the Royal Horticultural Society's *New RHS Dictionary of Gardening*, this is one of eight volumes dedicated to specific plant groups. For orchid enthusiasts, the manual is a must-buy—I recommend it without hesitation as an excellent “one-stop” reference. With very few exceptions, it accurately describes any orchid likely to be encountered in contemporary collections.

Each orchid genus is listed with an etymology, brief description, general distribution, and recommended culture. Each species listing includes selected synonyms, a brief description, and distribution. In general, cultural recommendations are sound, but by necessity scant for very large, diverse genera such as *Dendrobium*. The format is generally easy to follow, but there are no keys to identification, and there is occasionally inconsistent placement of hybrids.

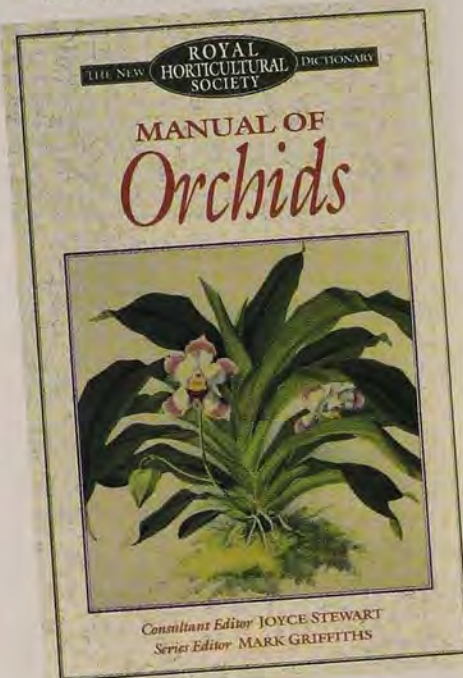
In a comprehensive text such as this, the selection of plants to be included is often problematic, but the editor of this volume, respected British orchid authority Joyce Stewart, has managed to sufficiently cover the wide range of orchids grown in the United States. Only a few are conspicuous by their absence—for instance, the Vanda

orchid *Papilionanthe* ‘Agnes Joaquim’.

For the most part Stewart has also struck a reasonable balance in nomenclature, a difficult task considering the volatile state of orchid classification. The only glaring exception is the use of *Mendoncella* over *Galeottia*, whereas botanists accept the reverse.

Overly technical language is for the most part avoided. Where it is used, it is well supported by a glossary.

Another minor criticism is that the number of species per genus is not always updated, probably because they were largely garnered from



earlier summaries. For instance, *Aerides* comprises 19 species rather than 40. These slight inaccuracies, however, in no way detract from the usefulness of the manual to horticulture.

—Eric A. Christenson

A research associate with the New York Botanical Garden, Dr. Eric A. Christenson is currently working on an encyclopedia of cultivated orchid species.

### ADVENTURES OF A GARDENER

Peter Smithers. Harvill Press/HarperCollins World, New York, 1996. 288 pages. 7 3/4 x 10 1/2". Color and black-and-white photographs. Publisher's price: hardcover, \$50. AHS member price: \$45.

A personal and intriguing account of a man and his gardens—five in all from early childhood in England to the present one in Switzerland—*Adventures of a Gardener* is a must for AHS members. The descriptions of gardens



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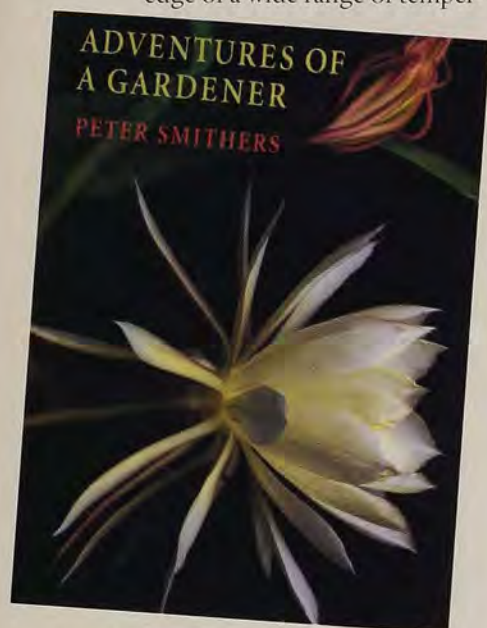
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and gardening are intertwined with reminiscences of Peter Smithers' long involvement in international politics and his wartime experiences in naval intelligence. Those situations allowed Smithers the opportunity to acquire firsthand knowledge of a wide range of temper-



ate and tropical floras, now reflected in the development of his current garden at Vico Morcote.

Smithers' exploits range from plant exploration in the David Fairchild manner to intricate breeding with nerine lilies and developing extensive collections of magnolias, lilies, tree peonies, cactuses, and orchids. He has also kept records for each plant he has acquired—more than 32,000—from childhood to the present. Today avid gardeners can contact him about his plant breeding via e-mail at 100436.163@compuserve.com.

As might be expected from an award-winning photographer, Smithers' photographs are of the highest quality; the 60 lovely color plates included in the book showcase plants from his own garden.

Descriptions of Smithers' lifelong relationship with plants make up a large part of the book. Fortunately, the array of individuals with whom he has shared plants and knowledge will make American readers comfortable, because so many of them are from this side of the Atlantic, including such leading lights as Tom Dodd, Jack Fogg, and Augie Kehr, an outstanding magnolia and rhododendron breeder who happens to live right down the road from me. And there are delightful observations on the foibles of various plants and their responses to the ecological niche at Vico Morcote.

The book was especially enjoyable to



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me because of some shared experiences. For instance, Smithers vividly recalls his success with *Daphne bholua*, which he found in Nepal on Daman Ridge in full bloom with white to dark pink flowers. In 1962, on an expedition with Francis deVos, I, too, collected plants—including *Daphne*, but from a separate location—from Daman. I was also pleased to read that he grows *Osmanthus heterophyllus* 'Gulf tide', a fine cultivar I selected and named many years ago.

Although I found little to quibble with, in the chapter on tree peonies Smithers states that "there is no book dealing comprehensively with the American tree peonies." He is obviously unaware of *The Peonies* by John C. Wister, published by AHS in 1962.

That aside, Smithers stands so tall in the field of horticulture that his book will undoubtedly be both a delight and a learning experience for readers.

—John L. Creech

*A well-known plant hunter in his own right, Dr. John L. Creech is a former director of the U.S. National Arboretum.*

### THE 3,000 MILE GARDEN

Leslie Land and Roger Phillips. Viking (Penguin USA), New York, 1996. 330 pages. 6 1/4 x 8 1/4". Color photographs. Publisher's price: hardcover, \$24.95. AHS member price: \$22.45.

It's a long way from the heart of Pimlico in London, England, to the wilds of Cushing, Maine. But this vast distance has been surmounted by these indefatigable gardeners, whose shared passion for evocative plants, productive gardens, and uncommon culinary adventures is heightened as they exchange insights on life. One senses an immediate and hearty mutual respect that warms to genuine affection as they correspond over the five years—September 1989 until November of 1994—chronicled in this collection of their letters. The book inspired a six-part public television series that aired earlier this year.

Many on both sides of the Atlantic

know Roger Phillips as a garden writer and the photographer partner in the prolific duo of Rix and Phillips, who produce a series of elegant plant reference books. He is responsible for overseeing Eccleston Square in Pimlico, a three-acre garden that is maintained by local residents and serves as a botanical oasis in this busy urban setting.

Leslie Land is food editor for *Yankee* magazine and author of *The Modern Country Cook* and *The New England Epicure*. She has carved a largely edible and ornamental flower garden from a forested wilderness about four hours north of Boston. The climatic differences, gardening practices, and experiences could hardly be more disparate. Many of the letters include discussions not only of matters horticultural, but cultural as well. Land details her composting outhouse and the benefits a well-rotted batch can have in the garden. Phillips shares his tribulations with developers, who have their greedy eyes on the land he gardens, which would be perfect for a three-story, 900-car underground parking garage.

The book is supplemented with exchanged plant lists ("Bed 6: the Camellia Bed" from Phillips and "the White Garden" from Land), rough-sketched detailing of such things as flower beds or Land's phenomenal clay, wood-burning bread oven. As one would expect from this pair, botanical names abound, the best varieties are touted, successes are flaunted, and failures are philosophical dismissed.

Through the personal anecdotes these accomplished letter writers exchange, we are provided a privileged peek into the private lives of two enormously energetic and creative souls. As in an engaging novel, it is difficult to come to the last signature and realize the personalities you have come to know so well are

making an abrupt departure from your life.

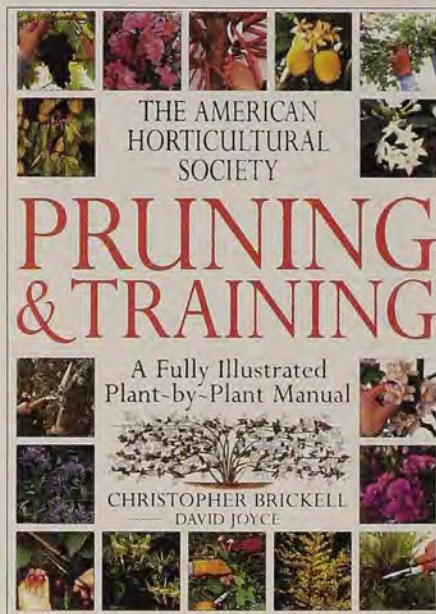
—Stephanie Feeney

*Stephanie Feeney, who gardens in Bellingham, Washington, is author of The Northwest Gardeners' Resource Directory.*

## 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 Barbara Catherwood at (800) 777-7931 ext. 36.

### GREAT REFERENCES



### AMERICAN HORTICULTURAL SOCIETY PRUNING AND TRAINING: A FULLY ILLUSTRATED PLANT-BY-PLANT MANUAL

Christopher Brickell and David Joyce. 1996. 336 pages. Publisher's price: hardcover, \$34.95. AHS member price: \$28.

With the help of more than 1,000 photographs and 700 easy-to-follow illustrations, this book gives detailed advice on how to shape more than 800 plants. Topics range from fundamental descriptions of pruning and training to in-depth coverage of specialized techniques such as renovation, coppicing, pollarding, and pleaching. The book is also broken down into separate sections on ornamental trees and shrubs, fruit trees, vines, and roses, supplemented by a useful glossary of terms.

Book code: DK 001



## CONIFERS: THE ILLUSTRATED ENCYCLOPEDIA

NEW

D.M. Van Gelderen and J.R.P. Van Hoey Smith. 1996. Two volumes (not sold separately), 706 pages. Publisher's price: hardcover, \$125. AHS member price: \$110.

Written by two top authorities on conifers, this reference greatly expands the coverage of cultivars and the number of photographs included in their earlier, acclaimed book on the subject. Also new are indices of common names and synonyms, a suggested reading list, and an essay on photographing conifers. Includes more than 2,000 color photographs.

Book code: TIM 017

## PLANTS THAT MERIT ATTENTION, VOLUME II: SHRUBS

NEW

Janet Meakin Poor and Nancy Peterson Brewster, editors. 1996. 408 pages. Publisher's price: hardcover, \$59.95. AHS member price: \$52.50.

This eagerly awaited companion to *Volume I: Trees*, compiled and expertly written by members of the Garden Club of America, is designed to introduce gardeners all over the country to useful shrubs that may be new to them. Selected are 750 native and non-native woody plants considered unusual, beautiful, pest- and disease-resistant, and tolerant of a variety of environmental conditions. In addition to descriptions and cultural information, each plant selection includes illustrations, landscape value, and gardens or parks where the plant can be seen. Includes nearly 700 color photographs.

Book code: TIM 081

## PERENNIALS

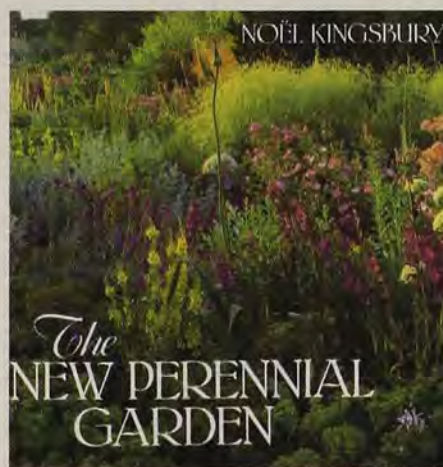
### PERENNIALS AND THEIR GARDEN HABITATS

Fourth Edition. Richard Hansen and Friedrich Stahl. 1993. 528 pages. Publisher's price: hardcover, \$49.95. AHS member price: \$42.50.

Many European gardeners and landscape designers, including Noël Kingsbury, whose book on perennials is also highlighted this month, have been influenced in recent years by the work of these German authors. Their pioneering book describes how to use perennials based on ecological rather than just aesthetic principles to achieve lower-maintenance, longer-lasting, and more natural-looking gardens. Hansen and Stahl categorize perennials according to their growth type and the conditions in which they will thrive. A thorough and impressive work

that every serious perennial gardener should have, this book includes 92 color photographs, as well as numerous line drawings and diagrams.

Book code: TIM 055



### THE NEW PERENNIAL GARDEN

NEW

Noël Kingsbury. 1996. 160 pages. Publisher's price: hardcover, \$40. AHS member price: \$36.

An innovative British garden designer and writer, Kingsbury explains how gardeners can learn from the ways plant communities establish themselves in the wild. Using site-specific plant groups, he shows how to create perennial gardens that will survive and flourish with a minimum of intervention. The resulting gardens, illustrated by more than 200 color photographs, are romantic, elegant, and dramatic. He includes planting plans and techniques, as well as plant lists for special environments including dry shade, damp ground, meadows, and many others.

Book code: HOL 001

## ASIAN GARDEN DESIGN

### ENHANCE YOUR GARDEN WITH JAPANESE PLANTS: A PRACTICAL SOURCEBOOK

NEW

Judy Glattstein. 1996. 226 pages. Publisher's price: softcover, \$25. AHS member price: \$22.50.

Glattstein, a best-selling American garden writer, offers a valuable guide to the wealth of Japanese plants available in North America. Along the way she tells the story of how they got here and explains how climate and geography have shaped the relationship between many plants from Japan and North America. From trees to perennials, from rock-garden to water-garden plants, this book provides plant-by-plant descriptions complete with nursery sources and a bibli-

ography. Included are 16 pages of color photographs and line drawings.

Book code: KOD 001

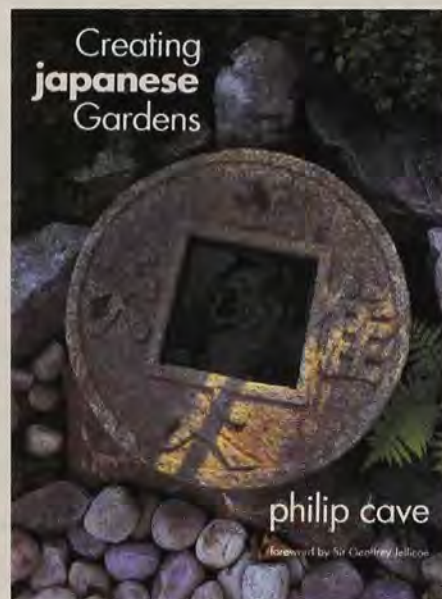
## ORIENTAL GARDENING

NEW

Kate Jerome. 1996. 223 pages. Publisher's price: softcover, \$25. AHS member price: \$22.50.

With the help of experts from seven major Asian gardens in North America as well as the Japanese Garden Society of Oregon, Jerome has produced a beautiful and useful guide to Asian garden traditions. More than 300 color and black-and-white photographs illustrate how to incorporate Asian principles into your own garden design, and highlight appropriate plants from Asia, Europe, and North America. Text boxes convey expert advice on topics ranging from mixing Oriental and Western elements to candling conifers. Included are a glossary and a list of plant sources.

Book code: PAN 001



### CREATING JAPANESE GARDENS

NEW

Philip Cave. 1996. 176 pages. Publisher's price: softcover, \$21.95. AHS member price: \$19.75.

A careful and attractive study of the essence and structure of Japanese gardens by a London-based landscape architect who has studied and worked in Japan. Cave covers the historical and philosophical roots of Japanese design, identifies the essential design elements, and shows how to incorporate them into a Western garden. The book is beautifully illustrated with color and black-and-white photographs and line drawings.

Book code: TUT 001

See next page for ordering information.



TITLE, AUTHOR	BOOK CODE	AHS PRICE
<b>ANN LOVEJOY, 1996 AHS AWARD WINNER FOR HORTICULTURAL WRITING</b>		
The American Mixed Border: Gardens for All Seasons	MAC 003	\$31.00
Fragrance in Bloom <b>NEW</b>	SAS 002	\$13.50
Further Along the Garden Path: A Beyond the Basics Guide to the Gardening Year	MAC 022	\$35.00
Three Years in Bloom: A Garden-Keeper's Journal	SAS 003	\$13.50
<b>CHARLES A. LEWIS, 1996 AHS AWARD WINNER FOR HORTICULTURAL THERAPY</b>		
Green Nature, Human Nature: The Meaning of Plants in Our Lives	UIL 001	\$13.50
<b>BULBS</b>		
Bulbs for the Rock Garden, <i>Jack Elliott</i> <b>NEW</b>	TIM 010	\$26.50
Daffodils for American Gardens, <i>Brent and Becky Heath</i>	ELL 001	\$22.45
Manual of Bulbs, <i>John Bryan</i>	TIM 046	\$44.95
<b>MIDWESTERN GARDENING</b>		
Gardening in the Lower Midwest, <i>Diane Heilenman</i>	IUP 001	\$22.45
Gardens of the Heartland, <i>Laura C. Martin</i>	ABV 004	\$40.00
Minnesota Gardens: An Illustrated History, <i>Susan Davis Price</i>	AHSP 001	\$44.00
Possum in the Pawpaw Tree, <i>B. Rosie Lerner and Beverly S. Netzhammer</i> <b>NEW</b>	PUR 001	\$13.50
<b>WESTERN GARDENING</b>		
Northern California Gardening, <i>Katherine Grace Endicott</i> <b>NEW</b>	CHR 001	\$20.65
The Botanical Gardens at the Huntington, <i>Walter Houk</i>	ABR 005	\$31.50
The Pacific Horticulture Book of Western Gardening, <i>George Waters and Nora Harlow</i>	DRG 003	\$45.00
Sunset Western Garden Book, <i>Sunset Magazine Editors</i>	STM 001	\$25.00
<b>GENERAL INTEREST</b>		
The Bird Garden, <i>Stephen W. Kress</i>	DK 012	\$22.50
Chez Panisse Vegetables, <i>Alice Waters</i> <b>NEW</b>	HAR 006	\$29.00
The Forest Carpet, <i>Bill and Nancy Malcolm</i>	TIM 022	\$17.50
The Forgotten Pollinators, <i>Stephen L. Buchmann and Gary Paul Nabhan</i> <b>NEW</b>	ISL 002	\$22.50
Garden Antiques, <i>Alistair Morris</i> <b>NEW</b>	ANT 007	\$44.50
The Garden in Autumn, <i>Allen Lacy</i>	HOL 002	\$22.50
Gardening at Sissinghurst, <i>Tony Lord</i> <b>NEW</b>	MAC 023	\$36.00
Garden Tools, <i>Suzanne Slesin, et al</i>	ABV 010	\$26.95
Growing Fruit in Your Backyard, <i>Lee Reich</i> <b>NEW</b>	MAC 024	\$17.00
Ken Druse's New York City Gardener, <i>Ken Druse</i> <b>NEW</b>	CIT 001	\$13.50
The Medieval Garden, <i>Sylvia Landsberg</i> <b>NEW</b>	NOR 001	\$22.50
The Natural History of Pollination, <i>Michael Proctor, Peter Yeo, and Andrew Lack</i> <b>NEW</b>	TIM 083	\$22.25
The Rose and the Clematis as Good Companions, <i>John Howells</i> <b>NEW</b>	ANT 008	\$35.50
Rosemary Verey's English Country Gardens, <i>Rosemary Verey</i> <b>NEW</b>	HOL 003	\$33.25
Scented Geraniums, <i>Jim Becker and Faye Brawner</i> <b>NEW</b>	INT 002	\$13.45
Seeds: The Definitive Guide to Growing, History and Lore, <i>Peter Loewer</i> <b>NEW</b>	MAC 025	\$22.50

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## regional happenings

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

### MID-ATLANTIC

**SEPT. 20-21 ■ Securing Our Future.** Mid-Atlantic Regional Meeting of the American Association of Botanical Gardens and Arboreta. U.S. National Arboretum, Washington, D.C. (202) 245-2726.  
**SEPT. 27 ■ Introduction to Permaculture.** Heathcote Community, Freeland, Maryland. (410) 343-DIRT (3478).

### NORTH CENTRAL

**SEPT. 14-15 ■ Tour of Gardens '96.** Hermann Garden Club. Visitor Information Center, Hermann, Missouri. (800) 932-8687.  
**SEPT. 19-22 ■ Fall Bulb Sale.** Missouri Botanical Garden, St. Louis, Missouri. (314) 577-9400.  
**SEPT. 27-29 ■ An Affair of the Hort.** Lectures, demonstrations, trade show, and entertainment. Inniswood Metro Gardens, Westerville, Ohio. (614) 895-6216.  
**SEPT. 28-29 ■ Orchid Show and Sale.** Show Dome of the Mitchell Park Horticultural Conservatory, Milwaukee, Wisconsin. (414) 649-9830.  
**OCT. 20 ■ Daylily Lecture by Sarah Sikes.** Olbrich Botanical Gardens, Madison, Wisconsin. (608) 246-4551.

### NORTHEAST

**SEPT. 7 ■ Harvest Fair.** Brooklyn Botanic Garden, Brooklyn, New York. (718) 622-4433 ext. 202.

**SEPT. 14-29 ■ GardenFest.** Longwood Gardens, Kennett Square, Pennsylvania. (800) 737-5500 or (610) 388-1000.

**SEPT. 19 ■ Gardener's Fair and Picnic.** Wave Hill, Bronx, New York. (718) 549-3200.

**SEPT. 21 ■ 23rd Annual Home Gardener's School.** Cook/Douglass Campus, Rutgers—The State University, New Brunswick, New Jersey. (908) 932-9271.

**OCT. 5 ■ Antique Apple Tasting.** Old Sturbridge Village, Sturbridge, Massachusetts. (508) 347-3362.

**OCT. 17-20 ■ Land Trust Alliance National Rally.** Land conservation conference. Sheraton Conference Center, Burlington, Vermont. (202) 638-4725.

**OCT. 21-23 ■ New England Greenhouse Conference.** Sturbridge Host Hotel and Conference Center, Sturbridge, Massachusetts. (401) 874-5996.

### NORTHWEST

**OCT. 3-5 ■ Japanese Gardens for the 21st Century—Places of Meaning.** Symposium. Sponsored by the International Association of Japanese Gardens, Inc., Portland, Oregon. (503) 464-8889.  
**OCT. 20-23 ■ 1996 Western Regional Master Gardener Conference and Advanced Training.** Open to all gardeners. Sheraton Hotel and Convention Center, Tacoma, Washington. (206) 924-0253.  
**OCT. 27 ■ 15th Annual Fall Festival and Mushroom Show.** Mt. Pisgah Arboretum, Eugene, Oregon. (541) 747-3817.

### SOUTH CENTRAL

**SEPT. 21 ■ Fall in the Flint Hills Field Trip.** Botanica, Wichita, Kansas. (316) 264-0448.  
**SEPT. 26-28 ■ 54th Annual Bulb and**

**Plant Mart.** Sponsored by the Garden Club of Houston. Westminster United Methodist Church, Houston, Texas. (713) 867-3953.

**OCT. 11-12 ■ Southern Garden Symposium and Workshops.** St. Francisville, Louisiana. (504) 635-4220.

### SOUTHEAST

**SEPT. 7-8 ■ 55th Annual Gourd Festival.** Cary Community Center, Cary, North Carolina. (919) 362-4357.  
**SEPT. 20-21 ■ Nature's Art: A Celebration of Art Discovered Through Flowers.** Reynolda House, Museum of American Art, Winston-Salem, North Carolina. (910) 725-5325.  
**SEPT. 21 ■ Harvest Celebration.** The Homeplace—1850, Land Between the Lakes, Tennessee. (800) LBL-7077.  
**SEPT. 21 ■ Perennials Conference.** Cheekwood Botanical Gardens, Nashville,

## New Stokes' Aster

Horticulturists at the Atlanta Botanical Garden have introduced a new variety of Stokes' aster (*Stokesia laevis*) into the nursery trade. Discovered in 1989 growing in Colquitt County, Georgia, this new variety has been propagated by the botanical garden and is now being sold under the name 'Omega Skyrocket'. The plant grows 12 to 18 inches taller than most *Stokesia* varieties and includes both white- and pale blue-flowering forms.

Proceeds from seed sales are being funneled back into the garden's conservation program and will be used specifically for the recovery of this species in Georgia.

## Put Them in Their Place

The Ohio State University (OSU) Chadwick Arboretum and the American Horticultural Society will host "Trees are Terrific: Putting Them in Their Place" on Sunday, September 15, at OSU's Fawcett Center in Columbus, Ohio. This one-day symposium will feature lectures and demonstrations designed to guide home gardeners in the selection and care of trees in urban landscapes.

Lecturers will include Jim Wilson, co-host of "The Victory Garden"; Frank Santamour, geneticist at the U.S. National Arboretum; Nina Bassuk, horticulturist at Cornell University; and Jim Chatfield, from the Ohio State University. The day's activities will also include demonstrations of OSU's Tree Research Program.

For more information or to register, write The Ohio State University, Chadwick Arboretum, 264 Howlett Hall, 2001 Fyffe Court, Columbus, OH 43210, or call (614) 292-4678.



## Rosy Wasco



In Wasco, California, 15 miles north of Bakersfield, the rose rules the economy and has put the small town on the map through its fortunate combination of sandy soil, ample water, abundant sunshine, and mild winters.

Of all the rose cultivars grown in the United States, at least two-thirds are grown in the fields of Wasco—11 major companies grow some 45 million plants. By early September, 5,000 acres of rose fields are in full, dazzling color, and the city celebrates by throwing a festival.

Approximately 10,000 rose enthusiasts and lovers of parties attend the Wasco Festival of Roses, which was started in 1969 by the city's chamber of commerce. There's a rose queen pageant, parade, rose show, carnival, art show, pancake breakfast, barbecue lunch, golf tournament, 5K and 10K runs, and a walkathon. This year's festival is September 5 to 8. The theme is "Wasco: A Rose for All Seasons," and the featured rose is 'Golden Masterpiece', introduced by Jackson & Perkins in 1954. Hybridized by Gene Boener, 'Golden Masterpiece' boasts the largest blossoms of any yellow rose at six-and-a-half to seven-and-a-half inches wide.

The festival highlight is the tour of rose fields, where each row contains approximately 2,500 rose plants. On Saturday and Sunday, there are tour buses in operation. These narrated, one-hour bus tours enable

**'Golden Masterpiece' is the featured rose of the 1996 Wasco Festival of Roses.**

visitors to see 5,000 acres of rose fields up close. The waves upon waves of color are breathtaking. Mixed with the exclamations of delight are the constant click and whir of cameras. Don't forget yours! And bring some extra cash. A wide variety of plants will be available for \$10 each, thanks to the rose growers who donate them to the festival.

For directions or more information on this year's festival events, call the Wasco Festival of Roses office at (805) 758-2616.

—Karen Dardick, special from Los Angeles

COURTESY OF JACKSON & PERKINS

Tennessee. (615) 353-2146.

### SEPT. 21-22 ■ Refining the Garden:

**The Trowels and Pleasures of Gardening.** Symposium. McElreath Hall, Atlanta History Center, Atlanta, Georgia. (404) 814-4000.

**OCT. 4-12 ■ Association of Zoological Horticulture International Conference.** North Carolina Zoological Park, Asheboro, North Carolina. (910) 879-7400.

**OCT. 5 ■ Fall Gardening Festival.** Atlanta Botanical Garden, Atlanta, Georgia. (404) 876-5859.

**OCT. 18-20 ■ Fall Plant Sale.** Mobile Botanical Gardens, Mobile, Alabama. (334) 342-0555.

**OCT. 19 ■ Bulb Workshop.** Led by Pat Linton. Daniel Stowe Botanical Garden, Belmont, North Carolina. (704) 825-4490.

**OCT. 26-27 ■ African Violet Council of Florida Judged Show and Sale.** Eastlake Square Mall, Tampa, Florida. (813) 963-7424.

## SOUTHWEST

**SEPT. 14 ■ Fall and Winter Vegetable Gardening.** Lecture. Desert Botanical Garden, Phoenix, Arizona. (602) 941-1225.

## WEST COAST

### SEPT. 3-8 ■ Annual American Ivy Conference and Topiary Show.

Hyatt Rikeys, Palo Alto, California. (415) 917-9364.

**SEPT. 23 ■ Rosemania with Bill Robinson.** Symposium. The Arboretum of Los Angeles County, Arcadia, California. (818) 447-8207.

**OCT. 5 ■ Open Day in the Gardens.** Tours, plant sales; reservations required.

Ruth Bancroft Garden, Walnut Creek, California. (510) 210-9663.

### OCT. 16 ■ The Great Irish Famine: The Potato in History and Memory.

Botanical history lecture. The Huntington, San Marino, California. (818) 405-2141.

**OCT. 23-27 ■ Gardens of Our World.** The Los Angeles Garden Show. The Arboretum of Los Angeles County, Arcadia, California. (818) 447-8207.

## Please Fence Me In

America's open suburban front lawns may symbolize democracy, but that doesn't mean we don't long for a sense of enclosure and privacy. Through January 5, visitors to Washington, D.C., can learn about the history of fences as a defining element in American landscape and culture by visiting "Between Fences," an exhibit at the National Building Museum.

By walking through a series of fences and gates, visitors can experience the ways in which we use fences to guide our interactions. A working automatic chain-link machine, a stainless steel obelisk from the U.S./Canada border, rare examples of cast-iron fencing, vintage trade catalogs, and 19th-century posters advertising barbed wire will also be on display.

The National Building Museum is at 401 F Street, NW, in Washington, D.C. For more information about the exhibit, contact the museum at (202) 272-2448.



## Where There's a Will ...

If you've been to Paris in the springtime, you've no doubt been to Bernard McLaughlin's garden. No, not Paris, France. Paris, Maine, population 4,492. Each year McLaughlin's three-and-a-half-acre garden on Main Street draws some 3,000 visitors. Once featured in *Better Homes & Gardens*, it contains 500 species that McLaughlin collected over 60 years: 96 varieties of lilacs, white forget-me-nots, yellow lady's-slippers and trilliums, flame azaleas, white and red bleeding hearts, and dozens of irises, one bearing his name.

Last December McLaughlin died at age 98, and as is often the case, there was no money to endow the garden. He stipulated that the

151-year-old home, barn, and six acres be sold and the proceeds divided among family and local charities.

### A DETERMINED SON

His closest relative is an adopted son, Richard, who had begun removing some plants in the fall of 1995 to create a 15-acre public arboretum in the nearby town of Greenwood. His father verbally agreed to this, he says. But his will made no mention of the garden. "If I do say so myself, the garden is unsurpassable," Bernard McLaughlin said in an interview a year before his death. But he added: "I can't take it with me."

Richard admits to being "a little bitter," believing the elder McLaughlin wanted to

keep the property away from him. Yet he says he wants to save the garden not for himself, but for the residents of Paris and its visitors to enjoy. Often, he says, it's the most destitute people who need gardens the most, and not judges and critics from horticultural groups.

Moving the garden was too much work and too expensive, the surviving McLaughlins quickly concluded. Richard agreed to move all of the plants back if the garden could be kept intact, and local residents mobilized as the McLaughlin Garden Preservation Committee to make that happen. In June they staged a protest to bring attention to the garden's plight, and in July, they offered \$200,000 for

the property, a bid accepted by executors of the estate.

But at that time, the group had only \$500 in the bank, and mere hours after they signed their paperwork, a New England supermarket chain bid \$400,000 for the property. The large clapboard house and adjacent land are valued by the tax assessor at barely more than \$100,000, but the asking price was \$495,000.

The group had until August 23 to raise the \$200,000. If they fail, they will have to outbid the supermarket chain or, presumably, see the house and garden razed. "It just outrages me," said committee organizer Mike Martel, "that something as beautiful as that flower garden could be leveled and nobody would even care about it."

At one point Martel suspected that a Paris car dealership had designs on the property and asked its executive secretary about their intentions. "God no," she responded. "One of our management people goes over there a lot because he loves the lilacs."

—Judith Meyer and Gail Rossi, special from Paris, Maine



Clockwise from upper left: Bernard McLaughlin six months before his death; Audrey Bressette of North Norway, Maine, drawing a map of the garden paths for a scavenger hunt; the house and grounds; Bertha Benoit of the Paris Cape Historical Society during a protest in June.



# classifieds

## a look at current offerings from the marketplace

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## pronunciations

### a simple speaking guide to plants found in this issue

*Amorphophallus titanum*  
uh-mor-fo-PHAL-lus ty-TAN-um  
*Arceuthobium pusillum*  
ar-soo-THO-bee-um pyew-SIL-um  
*Arenaria verna*  
ar-en-AIR-ee-uh VUR-nuh  
*Arisaema*  
air-ih-SEE-muh  
*Aristea ecklonii*  
uh-RIS-tee-uh ek-LO-nee-eye  
*A. major*  
A. MAY-jur  
*Asclepias syriaca*  
as-KLEE-pee-us sih-ree-AK-uh  
*A. tuberosa*  
A. too-bur-O-suh  
*Avicennia germinans*  
ah-vih-SEN-ee-uh JUR-mih-nans  
*Caltha palustris*  
KAL-thuh pah-LUS-triss  
*Canavalia gladiata*  
kan-uh-VAY-lee-uh glad-ee-AY-tuh  
*C. rosea*  
C. ro-ZAY-uh  
*Carnegiea gigantea*  
kar-neh-GHEE-uh jy-GAN-tee-uh  
*Celastrus orbiculatus*  
seh-LAS-trus or-bik-yew-LAY-tus  
*Cereus giganteus*  
SEER-ee-us jy-GAN-tee-us  
*Clitoria mariana*  
kli-TOR-ee-uh mar-ee-AN-uh  
*Coryphantha*  
kor-ee-FAN-thuh  
*Cotinus coggygria*  
KO-tin-us ko-JEE-gree-uh  
*Cyclamen persicum*  
SIGH-kloh-men PUR-sik-um  
*Cynoches chlorochilon*  
sik-NO-keez klor-o-KY-lon

*Cytisus scoparius*  
SY-tis-us sko-PAR-ee-us  
*Daphne bholua*  
DAF-nee bo-LEW-uh  
*Dietes bicolor*  
die-EE-teez BY-kuh-lur  
*D. iridioides*  
D. ih-rid-ee-OY-deez  
*Ecballium elaterium*  
ek-BAL-lee-um ee-lay-TEER-ee-um  
*Echinocereus engelmannii*  
eh-kee-no-SEER-ee-us  
en-gul-MAN-ee-eye  
*Eichhornia crassipes*  
eyk-HOR-nee-uh KRAS-si-pee-z  
*Elaeagnus angustifolia*  
el-ee-AG-nus ang-gus-tih-FO-lee-uh  
*Entada gigas*  
en-TAH-duh JEE-gus  
*Euonymus phellomanus*  
yew-ON-ih-muss fel-lo-MAN-us  
*Ferocactus wislizeni*  
fer-o-KAK-tus wiz-lih-ZEN-eye  
*Galanthus elwesii*  
guh-LAN-thus  
el-WEEZ-ee-eye  
*G. ikariae*  
G. ih-KAR-ee-ee  
*Gossypium*  
gah-ZIP-ee-um  
*Hura crepitans*  
HOO-ruh KREP-ih-tans  
*Inocarpus edulis*  
eye-no-KAR-pus ed-YEW-lis  
*Lamaireocereus thurberi*  
luh-mare-ee-o-SEER-ee-us  
THUR-bur-eye  
*Macrozamia macrocarpa*  
mak-ro-zuh-NO-nee-uh  
mak-ro-KAR-puh  
*Minuartia verna*  
min-yew-AR-tee-uh VUR-nuh  
*Moraea*  
moor-EE-uh  
*Moringa oleifera*  
mo-RIN-guh o-lee-IF-ur-uh  
*M. pterygosperma*  
M. teh-ree-go-SPER-muh  
*Olea europaea*  
O-lee-uh yew-ro-PEE-uh  
*Opuntia bigelovii*  
o-PUN-shuh big-uh-LO-vee-ee  
*O. engelmannii*  
O. en-gul-MAN-ee-eye  
*O. ficus-indica*  
O. FIE-kus-IN-dih-kuh  
*O. lindheimeri*  
O. lind-HY-mur-eye  
*Ornithogalum longibracteatum*  
or-nih-THO-guh-lum  
lon-jih-brak-tee-AY-tum  
*Osmanthus heterophyllus*  
oz-MAN-thuss het-ur-o-FIL-lus  
*Pachycereus pringlei*  
pak-ih-SEER-ee-us PRING-lee-eye  
*Peniocereus greggii*  
pen-ee-o-SEER-ee-us  
GREG-ee-eye  
*Pistia stratiotes*  
PIS-tec-uh stra-tee-O-teez  
*Populus fremontii* var. *wislizeni*  
POP-yew-lus free-MON-tee-eye  
var. wiz-lih-ZEN-eye  
*Potentilla anserina*  
po-ten-TIL-luh an-SUR-ee-nuh  
*Proboscidea louisianica*  
pro-bos-SID-ee-uh  
lew-ee-zee-AN-ih-kuh  
*Rhamnus cathartica*  
RAM-nus kuh-THAR-tih-kuh  
*Sagina subulata*  
suh-JY-nuh sub-yew-LAY-tuh  
*Sauromatum guttatum* var. *venosum*  
saw-ro-MAY-tum guh-TAY-tum  
var. veh-NO-sum  
*Senecio mikanioides*  
seh-NEE-see-o mih-kan-ee-OY-deez  
*Stenocereus eruca*  
sten-o-SEER-ee-us eh-REW-kuh  
*Stipa spartea*  
STY-puh SPAR-tee-uh  
*Striga asiatica*  
STRY-guh ay-zee-AT-ih-kuh  
*Urtica dioica* subsp. *gracilis*  
UR-tih-kuh die-o-EE-kuh  
subsp. GRASS-ih-lis

### What's in a Name: *Potentilla anserina*

A member of Rosaceae, the rose family, the genus *Potentilla* includes about 500 species of mostly perennial herbs and shrubs found in the Northern Hemisphere of both the Old and New Worlds. In reference to the medicinal properties of some species, especially their use for reducing fevers, the genus name is the diminutive form of the Latin *potens*, or powerful. The five-part leaves of most species give rise to the common names "cinquefoil" or "five-finger."

The species name translates roughly to "of the goose," apparently because the plant at one time grew in areas frequented by geese. Hence *P. anserina*, which is native to much of the United States as well as parts of Europe and Asia, is commonly known as goose grass or goose tansy.



# *Gardens of the Leeward and Windward Islands of the Caribbean*

February 8-15, 1997



WE HAVE ENGAGED THE INTIMATE M/V *Yorktown Clipper* for a voyage in the Caribbean to explore out-of-the-way places in such ports of call as St. Kitts, Nevis, St. Lucia, Bequia, Union, and Dominica, whose tropical rain forests are world-renowned among botanists. We will visit exceptional private gardens, such as Monkey Rock at River Pass, owned by U.S. Supreme Court Justice Stephen Breyer and his wife, Joanna, and the Walwyns' Lodge Estate, one of the oldest plantations on St. Kitts. Ample free time has been allotted for snorkeling and swimming along some of the finest beaches in the Caribbean. AHS President Dr. H. Marc Cathey and his wife, Mary, will lead the program, along with former AHS Board member Roy Thomas and his wife, Margaret.

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