

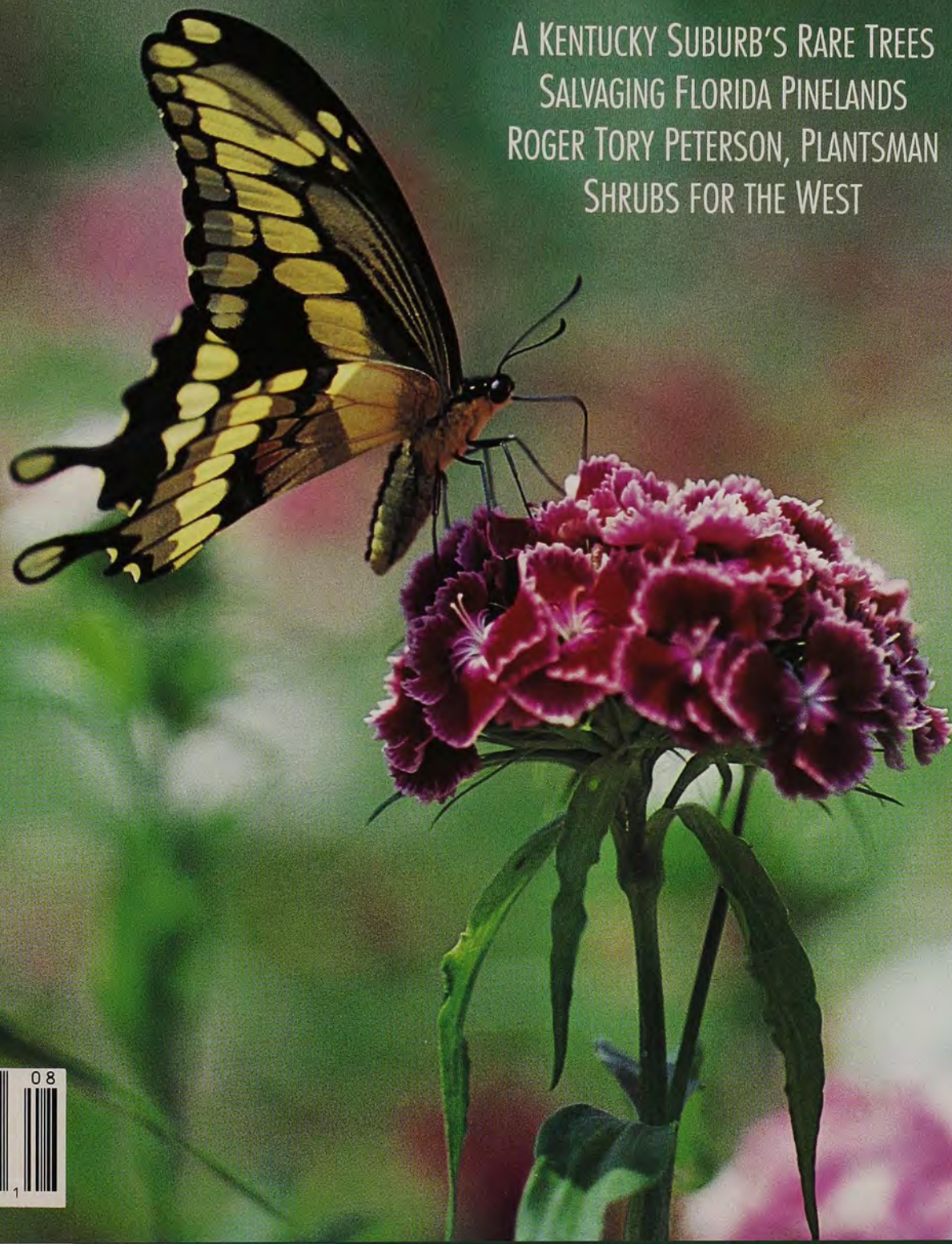
# American Horticulturist

August 1995

A Publication of the American Horticultural Society

\$2.95

A KENTUCKY SUBURB'S RARE TREES  
SALVAGING FLORIDA PINELANDS  
ROGER TORY PETERSON, PLANTSMAN  
SHRUBS FOR THE WEST





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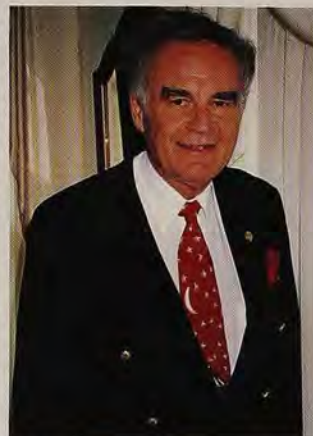
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# COMMENTARY

One of my first gardens involved planting a dozen each of several cultivars of tulips. One day, as I was preparing to paint watercolors of the various flowers, a strong wind, followed by a brief downpour, swept through my Carolina garden. On returning to the garden I found that stems of nine of the 12 double-flowered 'Mount Tacoma' tulips had snapped, while all of the turban-shaped 'Clara Butt' were intact. Even as a teen-ager, I was learning that different plant varieties have differing abilities to survive the elements.



Two feature articles this month describe the impact of violent storms on plants and people. In one, Michael Hayman tells how his life changed when a windstorm struck his bedroom community of Seneca Gardens, Kentucky, leaving trees more than 60 years old smashed and mutilated in its streets. Although employed full-time as a newspaper photographer, he was appointed by the mayor to lead an all-volunteer project and given partial funding to replant the 300-home suburb. The only requirement was that the trees restore the peaceful feeling of the neighborhood. What could have been a chore became an education when Hayman, who says he didn't know an oak from a maple, began reading basic books, then consulted local experts, and finally traveled to meet national authorities. Just as in a traditional barn-raising in rural America, knowledge and material—scions, cuttings, and seedlings—flowed in, transforming the community into an arboretum of new and rare cultivars. Enjoy his story and wonderful photographs, and know that our spirit of volunteerism is still working in America.

In our second storm article, we hear about the restoration of two gardens in Florida. The two couples, both sensitive to the natural environment and interested in wildlife, nevertheless took very different approaches to the way that they rebuilt after the devastation of Hurricane Andrew. One took advantage of increased sun to add a pond and plants for butterflies, while the other is trying to restore the original pinelands. Knowing the site, and knowing what plants will survive there, is extremely valuable, yet the possible combinations of the right plant in the right location are almost endless.

From Kentucky and Florida we go to Colorado, where Robert Nold suggests some shrubs that will succeed in the cold, dry conditions of our American West. California bulb expert John Bryan tells us about *Scadoxus*, a South African plant unknown to most of us. Also unknown to most as a plantsperson is Roger Tory Peterson. His field guides to birds were daily companions for me when I was a teen-ager in North Carolina, and like him, my love of plants and art began at an early age. Like most of us, his love of nature embraces both flora and fauna.

Common threads of expressing our love of plants in art—whether in writing, painting, photography, or the art that is landscape design and horticulture itself—and choosing those plants that will survive our climatic conditions—from Colorado drought to Florida hurricane—bring us all together as gardeners, again and again. *H. Marc Cathey, AHS President*





# OFFSHOOTS



BILL FIRESTONE

## Plant Societies

by Christine M. Burton

An avid gardener once told me that as far as she was concerned, plant societies serve no purpose, since they exist to teach you more than you need to know on a single subject and less than you need to know about everything else. That is far from the truth. Plant societies have taught me a lot—and not all of it is about plants. Better yet are all the things that plant societies inspired me to learn on my own.

At one time, I knew next to nothing about geography. Sure, I had studied the subject in grade school and was even good at it then, but by the time I was out of school the entire global map had changed—even the boundaries of my own country had expanded to include two more states.

Since then it seems schools have given up teaching geography. A friend of mine called one evening to tell us that her husband had been transferred to New Jersey. She want-

ed to know, "How big a city is New Jersey?" When I told her New Jersey was a state, not a city, she said I must be mistaken. Ann Landers, in her advice column a few years ago, printed a letter from the then-governor of New Mexico, who complained of the grief he'd been subjected to by the Internal Revenue Service for failing to report the part of his income earned in a foreign country, i.e., New Mexico.

If your geographical knowledge isn't all it could be, don't despair. Join a plant society and learn geography for the first time or all over again. All plant societies have members from around the world. Volun-



teer to help maintain society records or join a robin—a group participating in a round robin letter. You'll get to know people in all or as many different states as your time and interest allow. People in robins have found such contacts invaluable when they are transferred from one state to another or when they retire to another, warmer state. It is a great comfort to know that where you're going, you'll find someone with common interests. One woman I know has found

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# American Horticulturist

Volume 74, Number 8

August 1995

## ARTICLES

### A Canopy for Connoisseurs

by Michael Hayman ..... 18

Eight years after a vicious windstorm, the front lawns of Seneca Gardens, Kentucky, boast a tree collection that any horticulturist would envy.

### Their Piece of the Rock Ridge

by Linda Thornton ..... 26

Even before Hurricane Andrew, there was little left of south Florida's rock ridge pinelands. Here's how owners of two properties responded to the storm's devastation.

### Roger Tory Peterson: A Birder Looks to the Ground

by Lauren Brown ..... 32

The man who taught the country how to watch birds without collecting them has always been a plant lover.

### Tough Shrubs

by Robert Nold ..... 38

In our desert West, a plant may be cold hardy and still not pass muster.

### Scintillating Scadoxus

by John E. Bryan ..... 44

Their glowing stamens and bold foliage make these South African bulbs worth growing indoors or out.



## AUGUST'S COVER

Photographed by David Cavagnaro

The swallowtails are the largest of our American butterflies and among the most striking in appearance. They can be found throughout most of the eastern half of the country, into southern Arizona and Mexico. Here a giant swallowtail, *Papilio cresphontes*, feeds on a sweet William, *Dianthus barbatus*. Butterfly gardeners make an appearance in two of our articles this month. Beginning on page 26, you'll read about Roger and Lisa Hammer, who created a garden for butterflies when Hurricane Andrew brought more sun to their south Florida garden. In the feature that begins on page 32, you'll learn about butterfly gardens created by Virginia Peterson, wife of bird expert Roger Tory Peterson.

## DEPARTMENTS

Commentary ..... 4

Offshoots ..... 5

Gardeners' Information Service ..... 8

The Urban Gardener ..... 9

Natives at Risk ..... 11

Natural Connections ..... 12

Planting the Future ..... 14

Book Reviews ..... 15

Classifieds ..... 46

Pronunciations ..... 47



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plant society members in European countries helpful in tracing her family tree.

One's reading can be made more enjoyable by things learned in a plant society. A few years ago I was drawn to a novel on the supermarket rack. I don't remember the title, except it had something to do with singing, my first love. The story itself was not much to my liking. The characters weren't overly bright and indulged in too much sex that did nothing to further the plot. The author, however, had lived in Borneo, Java, and Irian Jaya (all part of Indonesia), where the greatest numbers of *hoya* species are native. The book described the topography, the geography, and the natives (human, plant, and animal) in great detail, as well as the native customs, taboos, superstitions, and farming and hunting practices. How exciting it was to see a place name mentioned and know that a favorite *hoya* had been first discovered there! There was even mention in the book of the Ann Archbold Expedition, a plant-hunting trip sponsored by someone I had known from my youth, that resulted in the discovery of several of my favorite *hoyas*. Thanks to my activity in the Hoya Society International, I thoroughly enjoyed a book I'd otherwise never have finished.

Although it is still far from perfect, my grammar has improved tremendously as a result of belonging to a plant society. I did not get my job as editor of a plant society bulletin because of my literary skills but because there was no one else to edit or even to write something to edit. I got the courage to write from membership in the Remontant Iris Society. The editor of that society's bulletin (the late Edwin Rundlett) saw something of worth in the letters I wrote to him and asked permission to use them as articles. At first I felt a bit foolish seeing my letters in print, but before long I decided it was quite exciting! Even though most plant societies don't pay for articles, the experience they gave me eventually led to articles in magazines such as this one, *Horticulture*, *Flower and Garden*, and *HousePlant*. But nothing will ever match my first for-pay article, in *Guerney's Magazine*. It was only a couple of paragraphs on plant societies and a list of plant society names and addresses. But *Guerney's* paid for it, and no check was ever received more joyously. You could do the same.

Not every society is as hard up for knowledgeable writers as the Hoya Society. But even those with scores of members who know a lot about their subjects sometimes find themselves out of good articles. Plant society bulletins, therefore, are wonderful media for aspiring writers to get

writing practice and résumé fillers.

Plant societies can also benefit stamp collectors, especially if they join a robin with an overseas member. With a common interest, it's very easy to obtain pen pals in most every country in the world. I don't collect stamps myself, but by asking overseas members to stamp their letters with a different issue each time I have been able to keep those friends who do collect stamps well supplied.

The most useful skill I have acquired as a result of plant society memberships is the ability to solve plain old arithmetic problems that no school teachers were ever able to teach me. In school, I got high grades in all other subjects, but the only mathematics course I passed the first time was eighth-grade algebra. In fact, I got all A's, but not because I knew the subject. I had the misfortune, also for the only time, to be the teacher's pet. In the eyes of Miss Alley, I could do no wrong. I got 100 percent on tests that a mathematical genius neighbor—who was then the head of General Electric's power transformer works lab—said didn't have a single right answer. I learned to balance a checkbook and even keep complicated business books, but only with an adding machine.

When I joined a plant society, I bought a lot of plants labeled simply as "species" and learned that others were misidentified. The only way to correctly identify plants is to find original plant descriptions and/or herbarium specimens and make comparisons, and the first thing you run up against is measurements, most using only the metric system and many in multinomial decimals. How is a dummy who can't even add to comprehend the size of a flower or a leaf if she can't do decimals? I hightailed it down to Oxford Books and bought an old-fashioned arithmetic book—illustrated with pictures yet, just like those in the old "See Dick Run" series. I figured nothing was too basic for me, although when the checkout clerk commented on it, I pretended I was buying it to help my grandson with his homework. The clerk snorted at my pretense.

What fun I had with that book! I worked every problem in it and when I was done, sat right down and translated all of those plant descriptions into inches and fractions of inches. My conclusion is that if I'd had a reason to want to know decimals when I was in grammar school, I'd have learned decimals in grammar school.

Plant society membership has also improved my photographic skills. Learning to take photographs of my flowers has made me better at taking pictures of my family members. Needing to submit photographs



with articles to be published has made me more aware of what I need to do to take still better pictures. This is something a lot of other plant society members have told me over the years, and some have been even more successful than I. One woman I know now sells her flower photographs to an international market.

The last but not the least of the benefits of plant society memberships is, of course, learning all you need to know about the plants promoted by the societies. You'll find information about native habitat, soils, climate, pests, diseases, cures, and the names of dealers or individuals from whom you can obtain unusual varieties. You'll probably learn that there are a lot more species and cultivars of your favorite plants than you ever dreamed. One Hoya Society member wrote that when he joined he'd thought he already had every hoyia because the labels on his hoyias matched every hoyia listed in L.H. Bailey's *Cyclopedia* (the forerunner of *Hortus*). He was shocked to learn that Bailey's list of a dozen or so species was short by more than a hundred. He was further shocked to learn that the labels on every single hoyia he owned were wrong.

Membership in a plant society can be a mini-education for those who join and really participate. It makes learning some useful lessons a lot more fun by giving us a reason to want to learn them. All of us are constantly looking for ways to make learning more fun for our children. Getting them interested in growing plants might give them a reason for wanting to learn, not only about plants, but about history, geography, and mathematics. Most plant societies have children's divisions. For the next gift-giving occasion, why not give your child a membership in the society devoted to his or her favorite flower? There's no telling where it will lead.

*Christine M. Burton is the founder of the Hoya Society International, Inc. For a list of plant societies, send \$2 to the AHS Gardeners' Information Service.*

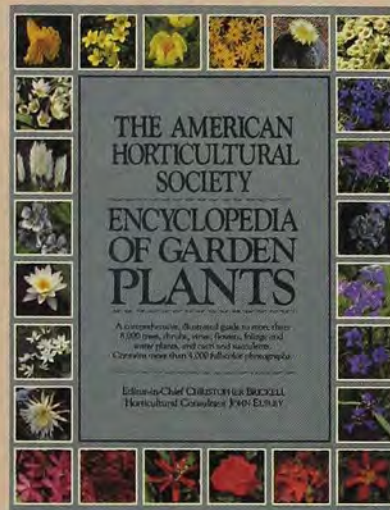
## CREDITS DUE

We failed to give ample credits on three photographs in the June issue. Two photographs of coneflowers on page 18 were taken by Washington, D.C., photographer Jessie M. Harris, and a lotus photograph on page 40, taken by Hal Horwitz, was provided by the Auburndale, Massachusetts, agency Photo/NATS.

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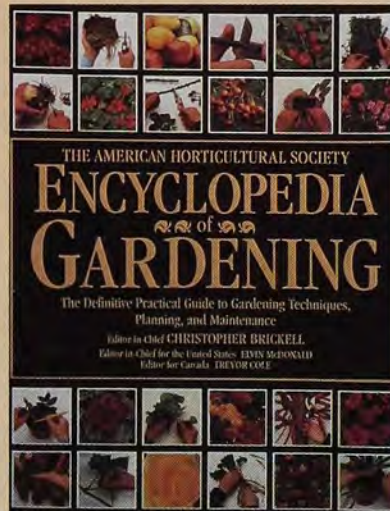
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# GARDENERS' INFORMATION SERVICE

**Q:** *The leaves of my English boxwood have turned a reddish bronze. I first noticed the condition last fall, and it seemed to get progressively worse. Will the newly developed leaves also turn bronze?*

—D.R., Richmond, Virginia

**A:** Some bronzing of boxwood foliage is a normal response to winter burn, but spring foliage should emerge a healthy green. If not, the problem likely stems from one of two causes. The first is stress caused by poor drainage or drought. Bronzing caused by drought can be reversed by giving boxwoods adequate water throughout the growing season, especially in late fall. Poor drainage is harder to remedy, but it might help to mulch around the plant.

A second cause of bronzing is a disease caused by the *Volutella* fungus. Scott Aker, Integrated Pest Management specialist at the U.S. National Arboretum, says this is more commonly seen in boxwood cultivars that have a tight growth habit. Thinning interior branches and removing infected stems will slow the progress of the disease.

**Q:** *I purchased, by mail-order from Ireland, a shamrock plant (along with a piece of Irish turf). How do I take care of it as a house plant?* —M.L., Buffalo, New York

**A:** Although the shamrock was first used as the Irish national emblem in 1681, no one plant has unquestionably been identified as the original symbol of the Christian Trinity and good luck. In 1893, Irish botanist Nathaniel Colgan asked residents of all counties of Ireland to send him specimens of "true shamrock." Among the responses received from 26 counties were three clover species and a medic: small hop clover (*Trifolium procumbens*, also sold as *T. dubium*), white clover (*T. repens*), red clover (*T. pratense*), and the two-spotted medic (*Medicago arabica*). More recently, wood

sorrel (*Oxalis acetosella*) has also been suggested for the honor. But the plant with three leaflets supposedly used by Saint Patrick to illustrate the concept of the Trinity—and presumed to be the "true shamrock"—was found on the rocky, exposed landscape of the Irish Hill of Tara, and wood sorrel grows only in cool, heavily shaded woodland. Red clover has been ruled an unlikely candidate because it is more delicate than white and small hop clovers. Because white clover may not be native to Ireland, the distinction of being the "true shamrock" may fall to the yellow-flowered small hop clover, which readily colonizes poor, stony ground.

Clovers need long exposure to full sun and should be grown in porous, well-drained soil. They should be kept evenly moist and fed every three to four weeks. Wood sorrel also needs a light porous soil. These rhizomatous, white-flowered plants do well in an eastern or southern exposure. Keep the soil evenly moist and feed the plant every two weeks during the growing season, but cut down on watering and stop feeding to provide a period of dormancy after flowering.

**Q:** *Late last summer, despite ample water, the leaves on several limbs of my Japanese maple suddenly began wilting. Can I save the tree?*

—D.R., Bellevue, Washington



**A:** What you describe is a typical symptom of *Verticillium* wilt, a soil-borne fungal disease that affects the vascular systems of Japanese, Norway, silver, and sugar maples, as well as many other plants. Leaves will often turn yellow or brown and entire branches will die. In *Diseases and Pests of Ornamental Plants*, author Pascal P. Pirone states that in the early stages of the disease wilt symptoms are usually confined to single branches or to one side of the tree.

Small plants or trees may die within a single season, but larger, mature trees may live for many years, or even recover from the disease under optimal conditions. Trees showing widespread and severe infection are unlikely to be saved. In cases where only a few branches are affected, the tree may be helped by regular watering and the application of a slow-release fertilizer around the base of the tree early in the growing season. Regular applications of fertilizer stimulate rapid growth and may result in the formation of a thick layer of sapwood that seals off the infected tissue. Diseased branches should be cut off well below the affected section and destroyed. Plants that are susceptible to *Verticillium* wilt should not be planted in soils known to be infected with the fungal disease.

**Q:** *I am trying to control a wireworm problem, but I don't want to use chemicals. Do you have any information on control by organic means?*

—L.F.  
(via the Internet)

**A:** Wireworms are the larvae of snapping or click beetles (*Agriotes* spp.). The yellow to golden brown grubs are one to two inches long with shiny, leathery skin and six legs near the head. They live in the soil and feed on roots, bulbs, and crowns of plants and can damage seedlings. *The Complete Manual of Organic Gardening*, edited by Basil Caplan, indicates that egg-laying click beetles are especially attracted to weedy sites or pasture. Wireworms are most often a problem when such ground is newly cleared. Consistent weed control will help diminish the problem. Cultivate around plants and between crops to expose the grubs to birds and other predators. Or, prior to planting time, set a food trap by burying half a potato spiked on a stick. Check the potato at regular intervals and remove and kill any wireworms.

—Neil Pelletier, Director  
Gardeners' Information Service



# THE URBAN GARDENER

## A Comfort Garden

by Diane M. Calabrese

There are many well-kept secrets in northwest Pennsylvania, that part of the Keystone State that stretches to Lake Erie. Some of them are beautiful, large-scale natural habitats, such as Presque Isle State Park and Wintergreen Gorge, which can become serendipitous destinations for those who venture from the beaten path.

There are small-scale, manmade wonders as well.

Four blocks from the busy bayfront of the town of Erie, Chris Chmielewski has established a tiny retreat, where 50 plant varieties—and counting—mingle in just 600 square feet. The vernal equinox ushers in the traditional flowers of anemones and daffodils, and those of *Pieris* and heath follow in early April. By midsummer, extensive cushions of bedstraw (*Galium* spp.) wend around taller plants and, at summer's end, invite contemplation in the August twilight.

"I've been gardening ever since I was a kid," Chmielewski says. "I lived with my grandparents for years. Early on I had my own patch—10 feet by 12 feet—of cucumbers and squash, coriander and lavender. I started reading gardening magazines when I was nine. During college, I missed gardening. Post-college, I lived in England and Germany, and all I could do was visit and study gardens."

When she finally had her own home, releasing all of that pent-up energy might have resulted in chaos, but Chmielewski worked methodically, reclaiming one section of her yard at a time. As a first step, she eliminated tenacious weeds by cutting off their light supply with black plastic.

In only three years, Chmielewski replaced what she describes as unkempt shrubbery and clumps of grass with diverse layers of perennials. "The first year, I found a lot of bricks when I was turning over sod,



PHOTOS BY DIANE M. CALABRESE



Pots of herbs, above, help provide a focal point in the small, sunny garden of Chris Chmielewski of Erie, Pennsylvania. Chmielewski, left, lined a path along her perennial beds with bricks she found while converting an unkempt back yard into a garden sanctuary.

so I decided to make a path. At about the same time, I fell in love with witch hazel [*Hamamelis vernalis*], and I planted a lot for privacy. Then I started to fill in with plants that were not too expensive. In many ways, the garden designed itself."

While that may be true, Chmielewski's hands and resourcefulness deserve some credit.

For example, she salvages plants such as yarrow (*Achillea millefolium*) and butter-and-eggs (*Linaria vulgaris*) from construction sites and gives them a new home. She likens these saves to adopting pets from the Humane Society.

When she does spend money on plants, she chooses them carefully, selecting species and cultivars known for their disease- and pest-resistance. These include two yarrows, *Achillea* 'Summer Pastels' and *A. millefolium* 'Red Beauty', cone-flowers, mountain bluet (*Centaurea montana*), anise hyssop, the Siberian pea shrub (*Caragana arborescens*), and rose-of-Sharon (*Hibiscus syriacus*). Not wanting to fight slugs, she says, "I don't grow English daisies [*Bellis perennis*], even though I am fond of them."

Many of her plants are chosen for their interesting histories—soapwort (*Saponaria officinalis*) was used as both a clothes





and body soap in colonial times and is used today to wash museum textiles. Sweet woodruff (*Galium odoratum*), once used to flavor traditional May wine, serves as a ground cover under her shrub roses—purple 'Reine des Violettes', pink 'The Fairy', and the trademarked Pink Meidiland. In among heirloom plants, Chmielewski weaves wildflowers, which she feels still don't get the respect they deserve. "Some people think of evening primrose (*Oenothera biennis*), yarrow, and flax (*Linum perenne*) as weeds. I like to show how beautiful they are."

When pressed, she admits that she still has some problem plants. "Comfrey takes over when it's encouraged with any hospitality. I have to train it," she says. "And I pamper delphinium, which is temperamental, but I don't mind going out of my way for such a beautiful flower. On the other hand, I do not love bee balm or tea roses enough to indulge them, so I live without."

Even though her space is extremely limited, her sun is not, and she takes advantage of it to grow not only herbs but raspberries and strawberries. "People are amazed how well the fruits do in a small area," she says.

In fact, surprise is a predominant theme in this little garden. Chmielewski spent a decade in advertising, and her experience in design gave her an eye for symmetry, color, and placement of objects to change depth perception. She uses miniature objects—statuettes, a straw mailbox—to create focal points and a sense of surprise at ground level. She uses herb-filled pots to raise the eye toward her front steps.

Concrete creatures aren't the only kind welcome here. Chmielewski attempts to learn all she can about anything found crawling or flying through her tiny refuge. "I once found a caterpillar feeding on fennel," she relates. "Someone told me it was a tomato hornworm. If I had believed them, I would have missed seeing a beautiful swallowtail emerge." Although two birdbaths do their part to bring avian visitors, Chmielewski also wants to attract the likes of dragonflies and amphibians, so in March a small pond became the garden's newest feature. Her dog Pumpkin, eight pounds of white fluff, is still skeptical about this body of water and backs away from it as though it were an alien invader. Future plans call for some ornamental grasses. She thinks it may be worth taking on the eight- to 12-

foot-tall ravena grass, *Erianthus ravennae*, which she hopes will hide a street sign from view. She wants the three-foot-tall northern sea oats, *Chasmanthium latifolium*, for dried arrangements.

Some people garden to keep up with the neighbors or to produce a harvest for dining table or vase. Chmielewski calls hers a comfort garden. "It's a place where I can relax and feel secure in a world that's constantly in flux." In fact, the comfort she finds in being around plants has resulted in a big career change. After obtaining her Master Gardener credentials, Chmielewski left the fast-paced, highly competitive world of advertising to become a manager of a wholesale nursery specializing in ground covers and perennials.

This ability to see opportunities, rather than limits, may be one reason that Chmielewski's garden gives her so much pleasure, in spite of its small size. "In Europe, even though green space is at a premium, peaceful and relaxing places are found everywhere," she observes. That attitude is a secret worth sharing.

Diane M. Calabrese is an entomologist and a free-lance writer in Columbia, Missouri.

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# NATIVES AT RISK



MARYL

## Prairie Fringed Orchids

by Mary Beth Wiesner

Orchids native to the continental United States have a quiet beauty that, to me, surpasses that of hot-house orchids. Finding a native orchid amid prairie grasses or among the mosses of a sphagnum bog is like discovering an unexpected treasure.

There are seven members of the orchid family on the U.S. Fish and Wildlife Service's list of endangered and threatened plants. Two listed as threatened are the eastern and western prairie fringed orchids. The federal ruling on the fringed orchids lists them as *Platanthera praeclara* (western) and *P. leucophaea* (eastern), but most sources classify the plants as *Habenaria*.

The closely related prairie fringed orchids are known as a species pair. The orchids grow from Oklahoma north to Manitoba, westward through Nebraska, and east in a narrow peninsula through the Great Lakes states to Maine. *Platanthera leucophaea* is mostly found east of the Mississippi River; *P. praeclara* is only found west of the Mississippi.

Both species need full sun and usually live in tallgrass, calcareous silt loam, or subirrigated sand prairies. The eastern orchid also grows in calcareous wetlands, fens, sedge meadows, marshes, and bogs.

Prairie fringed orchid tubers are dormant in winter. Winter prairie fires and high precipitation seem to encourage the plants to flower. Without rain, they can be dormant for up to two years. Leaves usually appear in May, and the large white flowers, which are sometimes tinged with green, bloom in June or early July.

After sunset the flowers send out waves of fragrance to attract night-flying hawk-moths. "The moths must work to get at the nectar, which is buried in the flower's long hollow tube or spur," Rose Houk writes in *Eastern Wildflowers*. Pollinators of the eastern species find their long proboscises filled with pollen. Most moths that visit the western species, except for the long-snouted tomato and tobacco hornworm hawk-moths, come away with the sticky stuff covering their eyes. Prairie fringed orchid seedlings need a complex combination of mycorrhizae and other soil fungi to become well established.

Prairie fringed orchids have declined significantly throughout their ranges. Other, often alien, species are encroaching on the lowland habitat of *P. leucophaea*. There are about 52 populations in Illinois, Iowa, Maine, Michigan, Nebraska, Ohio, Virginia, and Wisconsin. The plant has disappeared from Indiana, Missouri, New Jersey, New York, and Pennsylvania. *P. praeclara*, which has been eliminated in South Dakota, is known from only 37 populations in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and Oklahoma. Most of the orchids' prairie habitats have been converted to cropland, and the plants



are threatened by overgrazing, intensive hay mowing, drainage, and fire protection. Mowing removes the seed capsules before natural seed dispersal occurs. Since pollination is necessary for the prairie fringed orchids to set seed, any threat to the hawkmoths (such as insecticides), their habitats, or their food plants is also a threat to the orchids.

Mary Beth Wiesner is a free-lance writer living in Woodbridge, Virginia.



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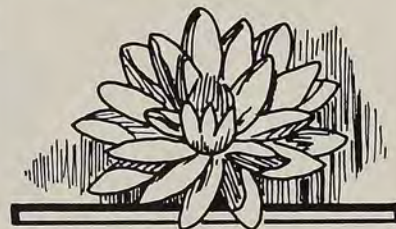
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# NATURAL CONNECTIONS

## Sweet Gum and the Luna Moth

One of the most spectacular and well-known moths in North America, the luna moth (*Actias luna*), has been reported to be in decline in urban areas over the last few decades. The moth is sometimes offered as an example of the damage caused by gypsy moth spraying programs and other pesticide use, but entomologists say its decline may be linked more to street lights, which distract the night-flying moths from their mating flights and make them an easier target for predators.

The pale green moth has long tuxedolike tails on its hindwings, small ringed eye-spots on both front and hindwings, and, often, a narrow purple margin around its wings. It inhabits the deciduous or mixed forests of eastern North America, ranging from Nova Scotia to Florida and west to Saskatchewan, Nebraska, and Texas. In its larval or caterpillar stage, it feeds on a wide variety of host plants, preferring white birch (*Betula papyrifera*) in the North and various deciduous hardwoods, including sweet gum (*Liquidambar styraciflua*), in the central and southern part of its range.

A favorite host plant of the moth, sweet gum is a striking tree native to eastern North and Central America from Connecticut west to southern Ohio and Illinois and south to Florida, Texas, and the mountains of Mexico and Guatemala. It grows up to 120 feet tall in the Southeast, but is more commonly seen as a 20- to 50-foot tree in the northern and eastern part of its range. It has glossy star-shaped leaves that turn a wide range of hues, from yellow to red to a winy purple, in autumn. Its fall color is not temperature dependent, so it provides a fine display of color even in warmer regions. In late fall and winter its gray bark and distinctive gumball-shaped seed capsules also make a nice show, although in cultivated settings the spiny gumballs can be a nuisance when they drop off the tree in spring and litter the ground.



Truly a tree for all seasons, sweet gum has beautiful star-shaped foliage in spring and summer, offers spectacular shades of fall color, and has spiny, gumball-shaped seed capsules that hang on the tree to provide winter interest.

A member of Hamamelidaceae, or the witch hazel family, sweet gum boasts a rich botanical and cultural heritage. Only two other distinct species now exist in the genus, although more than 20, dating back more than 60 million years to the late Cretaceous period, have been identified from the geologic record. The other surviving species are *L. formosana*, native to southern China and Taiwan, and *L. orientalis*, native to Turkey. In the words of the seldom prosaic author Donald Culross Peattie, "Such a disparate distribution bespeaks a long story of spread over the planet, then a history of tragic extinctions."

Early Spanish explorers of the Americas recognized sweet gum through the similar-

ity between its fragrant resin and that of the Asian species, which had been known to Europeans for many years. An account by an eyewitness to the 1519 meeting between Spanish soldier Hernando Cortés and the Aztec Emperor Montezuma described the smoking of pipes filled with a mixture of tobacco and sweet gum resin. Another Spanish explorer listed sweet gum among the trees he saw in 1528 near what is now Apalachicola, Florida.

Like the Europeans, American settlers quickly found many uses for sweet gum. The translucent amber resin that exudes from wounds or scrapes in the bark has a sweet, balsamic fragrance and was used as a treatment for sores, chest colds, and even dysentery.

It also was made into a type of chewing





*Its translucent green wings illuminated by a shaft of sunlight, the luna moth, above left, rests on a branch. An attractive ornamental tree with glossy green foliage and a conical habit, sweet gum, above right, is a favorite host plant for the larvae of the moth.*

gum and, with a nod to the Aztecs, used to flavor tobacco. Americans also discovered that its wood was attractive and could be polished or stained to resemble more expensive woods such as walnut or mahogany. It still holds an important place in the United States hardwood timber industry. As of 1992, sweet gum ranked sixth among hardwood growing stock on timberland in the eastern United States with 46 billion board feet of timber, mostly in the Southeast and the Carolinas.

The luna moth's main attraction to the sweet gum is more basic. The tree's leaves are a food source for the moth's larvae, which must eat enough to sustain them through their one- to two-week adult lifespan. Charged with the duty of reproducing the species, adult moths burn up their stored fuel supply in mating flights and

egg-laying. Beginning as early as March in the South, adult females lay eggs on sweet gums and other deciduous hardwoods, where they quickly hatch into three-inch-long green caterpillars with a yellow stripe on either side. After feeding for three to four weeks, the larvae descend to the ground, spin a web around themselves, and enter the pupal stage in which the relatively shapeless papery cocoons lie among dead leaves on the ground. The last generation of the year overwinters in this form. In early spring the startlingly beautiful moths emerge from their amorphous cocoons to mate, lay eggs, die, and let the cycle begin again. As many as three generations or broods can develop in a year, depending on region and climate.

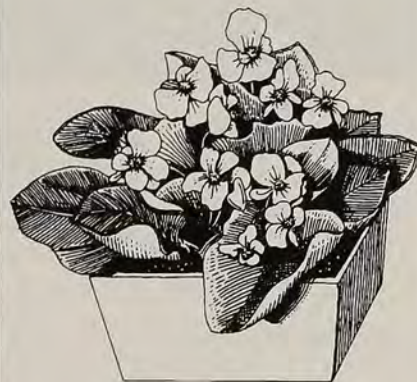
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# PLANTING THE FUTURE

## A Learning Solution

Money doesn't grow on trees, not even hydroponically. But the five winners of the student projects contest at the Hydroponic Society of America's annual meeting last April—open to students and teachers—received \$50 each as part of their prize package. In three years, the contest has grown from one exhibit to more than 30 exhibits from the United States, Argentina, and Germany.

The exhibits covered a range of experiments with hydroponics (the technology for growing plants without soil), including combined hydroponic/aquaculture (fish) systems, the feasibility of improving municipal waste water through hydroponic crops, and the use of unorthodox growing media such as recycled glass or golf balls.

One winner of the elementary school division was Evelyn Tennenbaum, a teacher of kindergarten through fifth grade at Public School 221 in Brooklyn, New York. Her students constructed their own hydroponic growing systems using such simple materials as empty two-liter soft drink bottles. Some of their experiments included a comparison of vegetables grown in soil and those grown hydroponically, and a study of the effects of aeration on lettuce roots. They also faced some of the problems that most gardeners come up against, such as insect pests and an overabundance of produce. Tennenbaum says the best aspect of the ongoing hydroponic experiments is that the children are very interested in the outcome. "I don't think they can do well unless they like what they're doing," she says. Tennenbaum says that teachers should not be reluctant to start using plants as learning tools even with very young children.

Ann Melvin, a teacher of grades three through five at the Window Rock Unified School in Fort Defiance, Arizona, developed the other winning exhibit in the elementary division. The fifth-grade hydroponics experiment investigated whether plants could grow in discarded



COURTESY OF ANN MELVIN

*Students at Window Rock Unified School in Fort Defiance, Arizona, read up on hydroponics before beginning their experiments.*

materials such as shredded rubber tires or old marbles. The students were also searching for the best source of light for their hydroponic plants. "The students enjoyed the experiment because they could see a purpose for all the assignments, such as testing the water pH," Melvin says.

A junior-high division award went to two creative teachers from Peterson Middle School in Sunnyvale, California. Vonneke Miller and Brenda Goldstein borrowed rocket-science techniques from NASA displays at Disney's EPCOT Center in Orlando, Florida, for their ongoing project, which includes two 12-foot-long, steel-skinned simulated space capsules. Inside these modules, the students conduct high-tech experiments with hydroponic vegetables, as well as other life-supporting functions routine for a space capsule. To support these projects, Miller and Goldstein received a \$13,000 grant from Hewlett Packard and solicited some \$50,000 in labor and materials from the community.

Another junior-high division winner, Michelle Francis, a seventh-grade student at Twin Groves Junior High School in Buffalo Grove, Illinois, has had some experience with hydroponics before. She has won four science awards in the past with various hydroponic experiments. Her exhibit this year focused on the effectiveness of 10

different growing media on lettuce.

The winner of the senior-high division was Monica Duplancic, a representative of a team of students, grades nine and 10, and their teachers from the Juan B. Justo Institute in Mar del Plata, Argentina. Their exhibit examined the hydroponic growth rate of grass.

Teachers can show their students a lot of science through the study and application of hydroponics. Biology, horticulture, chemistry, physics, mathematics, engineering, climatology, and computer science may all be incorporated into classroom experiments or science fair projects. Students also learn an appreciation for resource recycling, plant-environment interaction, and process control.

Members of the Hydroponic Society of America hope this contest will continue to challenge students to think creatively about science. Otmar Silberstein, chairman of the society's education committee, says the contest will continue to grow in the future as more and more educators become aware of the teaching possibilities associated with using hydroponics in the classroom. "Teaching with hydroponic systems is a central part of the revamping of school curricula taking place as teaching methods move to more thematic, hands-on approaches," Silberstein says.

—Nikole Williamson  
Editorial Assistant





# BOOK REVIEWS

## Tasha Tudor's Garden

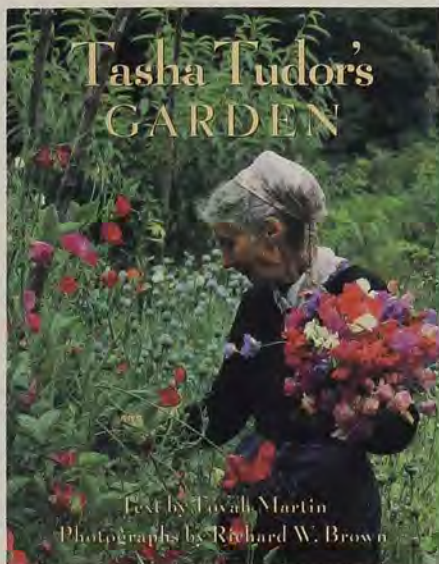
Tovah Martin. Houghton Mifflin Company, New York, 1994. 160 pages. 8 1/2" x 10 3/4". Color photographs by Richard W. Brown. Publisher's price: hardcover, \$35. AHS member price: \$31.50.

It is difficult to contemplate old age without at least one small shudder. The tendency seems to be to deny one's age rather than to revel in it. So it comes as a bit of a shock when reading Tovah Martin's *Tasha Tudor's Garden* to discover the envy an 80-year-old woman can engender. Hers is an old age one could anticipate with joy.

Tasha Tudor not only embraces old age, but chooses to live in a style that, with only a few changes, would have been familiar to her own grandparents. She banishes the lawn mower for the scythe. She raises milk goats and gathers eggs from her own hen house. But most of all, she gardens.

Oh, how she gardens. The sequence of her garden year in southern Vermont is captured in photographs by Richard W. Brown. Much of the pleasure of this book comes from looking at the fine photographs, and then looking at them again and again. Here is one of Tudor digging potatoes, one of Tudor's truly beautiful hands potting up a violet, one of Tudor tipping a bucket of manure tea into her tall foxgloves, and another of Tudor in her bare feet as she weeds. Occasionally Tudor's watercolor drawings accompany the text. For more than 50 years Tudor has been known for her illustrations of children's classics such as *The Wind in the Willows* and *The Secret Garden*. Naturally her small plant portraits are enchanting.

Wisely, Tovah Martin has chosen to write about Tudor's gardening life rather than write a biography of Tasha Tudor. As fascinating as a biography would have been, for Tudor has led an unorthodox life, the pleasure of this book is to be caught up in Tudor's everyday life. It's the present that counts—the challenge of getting this year's bulbs hidden from the chipmunks and pro-



tecting the more tender plants from the terror of a New England winter. As Martin writes, "Not a moment, not an action, not a leaf is wasted" in Tasha Tudor's garden-life.

In France, where in theory at least they appreciate older women, they have a saying, *La vieillesse est l'enfer des femmes*, which translates as "Old age is woman's hell." The French, obviously, are not acquainted with Tasha Tudor.

Tovah Martin and Richard W. Brown's book will bring cheer to anyone who reads it, not to mention change a few minds about old age. —Katherine Grace Endicott

Katherine Grace Endicott is a garden columnist for the San Francisco Chronicle.



## Field and Garden Vegetables of America

Fearing Burr Jr. *The American Botanist Booksellers, Chillicothe, Illinois*, 1994. 664 pages. 5 3/4" x 8 3/4". Black-and-white illustrations. Publisher's price: hardcover, \$35. AHS member price: \$32.50.

Sparked by the enthusiasm of groups such as the Seed Savers Exchange and inspired by the research and restoration work of mu-

seums and historic sites, heirloom vegetables and herbs are enjoying renewed popularity. Landscape architects and private homeowners are inspired to furnish their landscapes with the same attention to historic detail they have directed to interior restoration. It is only by combing the literature of the past century for elusive names and descriptions that garden historians have enabled us to select from currently available plant varieties those whose parentage and characteristics make them appropriate to specific historic restorations.

In the preface to his 1865 edition of *Field and Garden Vegetables of America*, Boston-area farmer, horticulturist, and seedsman Fearing Burr Jr. defined his purpose as providing both "the experienced cultivator" and "the beginner" with "full descriptions of the vegetables common to the gardens of this country." To this end, and with an unusually high regard for accurate descriptions of both common and obscure plants, Burr personally took the time and trouble "to plant, to till, to watch, and wait an entire season" in order to record detailed descriptions of nearly 1,100 species and varieties. Until 1988 this invaluable horticultural resource was available only to those with access to rare book collections. In that year The American Botanist Booksellers issued a facsimile reprint of the 1865 edition (the first had been published in 1863), with a preface by Kent Whealy and an introduction by vegetable historian Robert F. Becker. The 1994 reprint makes this classic even more widely available to the present generation of kitchen gardeners.

Amateur and professional garden restorers, plant historians, and collectors alike will be guided and entertained by the substantial body of information in this comprehensive text. Burr's descriptions include the common and varietal names, form, color, weight, and flavor of each variety. Fine woodcut illustrations by 19th-century botanical artist Isaac Sprague portray 98 of the varieties. Individual entries are rich in anecdotes documenting how plants were introduced and cultivated. Food historians will find directions for





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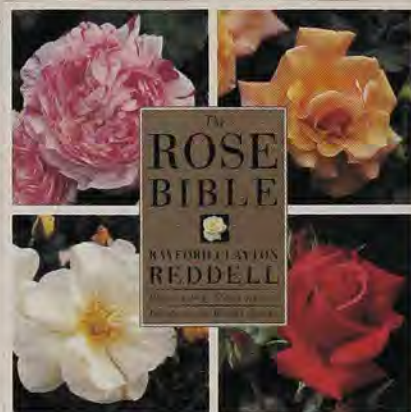
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the preparation and preservation of kitchen garden crops, with enlightening comments on the contemporary popularity of vegetables such as the tomato: "To a majority of tastes, its flavor is not at first particularly agreeable...." Forty varieties of medicinal and sweet herbs, as well as less familiar vegetables such as prickly gherkins, martynia, sea kale, and skirret, are among the selections.

Burr's descriptions are the principal criteria against which we at Old Sturbridge Village measure new-found heirlooms for inclusion in our re-created early 19th-century kitchen gardens. Sitting down with his book is the closest one can come to a conversation over the garden fence with a gardener of the 19th century.

—Christie White

*Christie White is the program supervisor for horticulture at Old Sturbridge Village in Sturbridge, Massachusetts, and a lecturer on early 19th-century gardens.*



### The Rose Bible

Rayford Clayton Reddell. Harmony Books, New York, 1994. 252 pages. 10" x 10". Color photographs. Publisher's price: hardcover, \$50. AHS member price: \$45.

This really is a rose bible! Consider this book essential as a standard, useful, and informative reference on roses. It is refreshingly original and a pleasure to read. With so many thousands of roses in the world, it is helpful to get the advice of someone like Reddell—he definitely has good taste in plants. One of the book's greatest assets is the author's extensive experience as a rose grower. His Garden Valley Ranch in Petaluma, California (USDA Zone 9), is one of the largest and most notable suppliers of roses in the United States.

Despite living in California, Reddell addresses zonal differences around the country well. I also value the cultural



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information in the book because it has an American perspective. Differences between growing roses in America and in England are explored, recognizing that many do not travel well and prefer to stay at home. Furthermore, much-needed attention is given to the realities of growing "English roses," since so many of the catalogs would have us believe that they are all everblooming and vigorous. Some are great plants—but they must be viewed as individuals and not lumped into one category.

I particularly like the section on species roses broken down by native range—a unique and informative arrangement. The treatment of old, antique, or heritage (whatever you like to call them!) roses is great, with plenty of the practical information we all need, such as their susceptibility to black spot and problems with weak necks. Appropriate space is devoted to the wonderful rugosas, Noisettes, polyanthas, hybrid musks, climbers, and shrub roses—which are appropriately recognized as some of the best garden plants. The section on "Fifty Immortal Roses" is particularly helpful in making selections for a garden. Among them Reddell includes some of my favorites: 'Iceberg' with its luscious white flowers; *Rosa* 'Mutabilis', covered in multicolored single blossoms; 'Popcorn', the delightful miniature; and the gorgeous white-flowering climbing tea 'Sombreuil'.

Also included is information on harvesting, buying, spraying, propagating, and pruning, as well as a wonderful chapter devoted to roses in the garden and a discussion of the latest developments in rose breeding programs. Whether you are a casual gardener or a serious professional, this rose book is a valuable reference and an inspiring guide to great rose growing.

—Holly H. Shimizu

Holly H. Shimizu is chief horticulturist and assistant executive director of the United States Botanic Garden, Washington, D.C., and a frequent host of "The Victory Garden" on PBS.

### A Garden of One's Own

Elsa Bakalar. William Morrow and Company, Inc., New York, 1994. 211 pages. 7½" x 9½". Color and black-and-white photographs, and illustrations. Publisher's price: hardcover, \$25. AHS member price: \$22.50.

I remember, back when I was a new gardener, admiring the vegetable garden of an old farmer. I was amazed at how he persuaded his plants to grow so well and look so beautiful. Bubbling over with enthusi-

asm, I gushed, "How do you do it?" His answer stayed with me: "Stick 'em in the ground and let 'em grow."

Elsa Bakalar's style is a little like that farmer's. As one reads her book, she becomes a favorite aunt—an older, wiser person who has lived and gardened a while and who now generously offers to walk alongside you and give you her best advice. I appreciate that. Although Bakalar would certainly admit there's more to a beautiful garden than merely letting things grow, she's a down-to-earth, no-nonsense, "don't get-upset-about-things" kind of gardener, and her book reflects it. I prefer that by a mile to the Martha Stewart, strive-for-perfection type.

A transplanted Englishwoman who lives and gardens in New England, Bakalar

loves to ramble in her garden (of which there are many gorgeous photographs) and in her writing, too. You'll often find her saying, "Now back to..." because she tends to make forays into tangential areas, getting both writer and reader pleasantly sidetracked. Although I personally like this style, it's not for those who want concise definitions or quick answers to problems. Bakalar's book is for the times when you finally relax and put your feet up at the end of a long gardening day.

She also offers lots of great tips—buy one good new tool per year, make lists of tasks you hope to accomplish, learn to identify the top 10 weeds in your area, and always compost (she thinks custody of the compost pile will one day be an issue in divorce settlements)—but many of them are things seasoned gardeners already know. For that reason, I'd recommend the book more for beginning gardeners who have not already read a lot of gardening books.

—Margery Guest

Margery Guest is a free-lance writer who lives in Grand Rapids, Michigan.

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# A Canopy for Connoisseurs

*A Kentucky suburb replaced its storm-damaged trees with arboreal masterpieces.*

STORY AND PHOTOS BY MICHAEL HAYMAN

*When a near-tornado struck Seneca Gardens, Kentucky, in 1987, 60-year-old oaks and maples littered the ground, blocking all the roads into and out of our small Louisville suburb. An unarticulated disquiet fell on our neighborhood as we saw a hundred grand old trees smashed and mutilated on our streets.*

At that moment none of us could see past the disaster. But from that devastation was born a neighborhood arboretum that may be unique in the United States.

Six months later I led a vigilante group of neighbors who bought and planted a single tree on a traffic island. When we asked our city commissioners to reimburse us for planting on public property, our request was

*The search for unusual trees to replace those toppled by a storm, opposite, led the author to specimens such as 'White Tigress' maple, right.*





initially received with displeasure.

We did not have their permission to plant a tree. We had not gone through channels. We had not sought prior approval for expenditure of city funds. All of that was true. The commissioners stalled, considering the repercussions of reimbursing us for our unauthorized public service. Meanwhile, Mayor Jim MacDonald recognized in me the one qualification required to lead a city tree-planting program.

In our community of 300 homes, most tasks are done by volunteers. If you are willing, you are qualified, and he correctly guessed I was willing to organize an effort to replace our fallen hardwood giants. The city would pay two-thirds of the cost of each tree and arrange for them to be planted.

So even though at the time I didn't know the difference between an oak and a maple, I was asked—I joked to my friends—to become the tree czar of Seneca Gardens.

The first planting of 50 common oaks and maples in the fall of 1988 went a long way toward relieving our residents of anxiety over the loss of their trees. If I had stopped right there, most of our citizens would have considered my job done.

But something happened to me that first year—I got hooked on trees.

I discovered Michael Dirr's large book, *Manual of Woody Landscape Plants*, and adopted it as bedtime reading. (If practiced regularly, the habit builds upper-body strength!) I dreamed of finding sites in Seneca Gardens for the wonderful, diverse trees it described.

Like an addict in search of a fix, I roamed nursery back lots hoping that by happy accident I might discover a new cultivar or unusual specimen. I found black gums, ginkgos, sassafras, yellowwoods, katsura trees, and American and European beeches, and offered these specimens to Seneca Gardens residents. When I explained that all they had to do was pay one-third of the trees' cost, most of them found the offer too good to resist, and uncommon trees began to appear in sites where everyone could enjoy them.

The only directive given to me by the Seneca Gardens commissioners was to replant the large trees that gave a sense of composure and stability to our neighborhood. But I hoped to rebuild the canopy with a much broader range of trees than our seedling pin oaks and red maples.

I developed standards for siting the trees. Subsidized specimens were planted in front yards, visible to all. Design rules were sim-



*One of Hayman's mentors was Kentucky nurseryman Theodore Klein, shown above with the 'Charlottae' cultivar of wild crabapple, Malus coronaria. Theodore's son Jules Klein, shown at right with a stunning sugar maple found in Tennessee, does grafting for the Seneca Gardens arboretum.*



ple. Trees should frame a pretty scene and block an ugly one, and be appropriate to the current style of each yard—informal or formal, shady or more open.

Frequently, one resident's tree fit into a larger collection on the same street. Eight varieties of tulip magnolia were planted on Meadow Road, 10 species of oak on Broadmeade Road, six cultivars of beech on Seneca Valley Road, and five cultivars of sweet gum and 15 species of evergreen trees at our park entrance.

Trees were placed where they had appropriate soil, moisture, and sunlight. They were given enough air and root space to live a minimum of 50 years. Trees were not planted under electric wires or over underground utilities.

No one was forced to accept a tree on the city's right-of-way in front of their property. We reasoned that we had enough work to do helping people who wanted trees without offending the few who did not.

Besides, I was patient. Some who at first refused to plant trees changed their minds. Others moved out and the new owners

welcomed our trees. One elderly woman insisted she would never have a tree in her front yard. Three years later I discovered that a friend of mine, a forester for the utility company, was her adored nephew. He told me, "Let me talk to Auntie." Fifteen minutes later she agreed to allow a Hungarian oak at the front of her property.

By now, I knew the difference between an oak and a maple but not much more. I looked with envy at the University of Minnesota and the North Carolina State University arboreta, which offer fantastic classes for hobbyists. I lamented that I lived in Kentucky where I could see no opportunity for an eager novice to learn.

How wrong I was.

I was to have personal tutoring from two gentle, generous giants in horticulture who live virtually in my own back yard.

The first was Theodore Klein, a nurseryman now 90 years old who has built a private arboretum of trees collected over the last half-century. I arranged to meet him for the first time on a cold January day just a week after he had had open-heart surgery.





Hayman met Don Shadow, above, by persuading his editors at the Louisville Courier-Journal to do a feature on the Tennessee nurseryman. Seven-son flower, left, was a gift from Illinois nurseryman Roy Klehm.

He was still weak from the operation but his mind was razor sharp. When our conversation turned to trees, I could see he wanted to get out into his arboretum despite the weather, but fortunately the wiser heads of his family prevailed.

Not widely known by modern horticulturists, Theodore had explored our region for plants with other great collectors of his day, such as J. C. McDaniels of the University of Illinois. He discovered a gracefully weeping katsura, *Cercidiphyllum japonicum*, in the field of an Indiana nurseryman; a variegated redbud, 'Silver Cloud', from seeds collected in Tennessee; a pendulous serviceberry, which he named 'Silver Fountain', in nearby Shelbyville, Kentucky; and an excellent glossy-leaved, bone-hardy American holly, 'Judy Evans', in a Louisville cemetery. Most of them, unfortunately, are almost impossible to find today.

He is always generous with his plants, but the most important thing I received from Theodore was an education. Since that first January day, I have visited him more than 100 times, and I never fail to learn something worthwhile, charming, or useful. He became my mentor.

His recovery from heart surgery has been complete. On a hot and humid day last summer, I could not find him until I followed the sound of a chain saw. There I found him hauling off a 30-foot beech that was crowding his arboretum. Meeting Theodore also led me to my grafter—his son Jules Klein, whose skillful work has turned so many cuttings and scions of rare trees into young specimens for our arboretum.

My second teacher was Buddy Hub-buch, who has worked more than 30 years building Bernheim Arboretum in Clermont, Kentucky, into a horticultural treasure that remains virtually unknown. His holly collection is one of the best in the world. He has preserved rare plants like the 'Rudy Haag' dwarf burning bush, a true dwarf *Euonymus alata* that grows to only about four feet high and wide. Buddy taught me about hornbeams, oaks, beauty-bushes, leatherwoods, crabapples, bottle-brush buckeyes, viburnums...and too many other plants to list.

Because Buddy and Theodore never promoted themselves, they weren't well-known outside our region despite their contributions—fortunately for me. With few other disciples at their feet, I benefited from their stories of plant failures and successes.

The Seneca Gardens neighborhood arboretum—with 350 species and cultivars



planted in the last seven years—was built on the shoulders of those two great men. Their excitement about trees after decades of work pulled me deeper into this addiction.

But finding these trees was another matter. Time and again, after Buddy extolled the virtues of a beautiful specimen, he admitted he knew of no source where I could buy that tree.

So I went directly to great plant promoters and was amazed at how accessible they were.

I attended a half-day new plant seminar at North Carolina State University Arboretum in Raleigh, as much to meet its director, J.C. Raulston, as to learn about plants. I spent two days in Raleigh and acquired so many plants from gifts and purchases that I had to go to Kmart to buy the biggest suitcase I could find to carry my new treasures home.

Frequently, I called up Michael Dirr at the University of Georgia and found that he would talk to me, an unsophisticated but enthusiastic hobbyist. In a careless moment, Mike invited me to visit him in Athens and I accepted on the spot.

That trip was heaven for a plant lover. For 24 hours, I was in a whirlwind as we visited the university arboretum, his greenhouses, and local nurseries. We talked plants until we couldn't keep our eyes open that night and the next morning picked up where we had left off.

As time for my plane's departure approached, we ran through his greenhouses gathering rare and choice specimens—gifts to me—and throwing them in garbage bags. I arrived too close to my plane's departure, and to my horror, wasn't allowed to carry my treasures on board. I reluctantly returned most of them to Mike. Nevertheless,

*Hayman learned about hollies such as *Ilex verticillata* 'Winter Red', below, from mentor Buddy Hubbuch of Bernheim Arboretum in Clermont, Kentucky. Bottom, Hayman plants 'Winter Red' in Louisville's Seneca Park, at the entrance to his suburb.*



it was a once-in-a-lifetime experience.

My wife says that I have once-in-a-lifetime experiences at the rate of once a week, and maybe she's close. Another occurred when I was visiting Bernheim Arboretum and met Roy Klehm, a nurseryman of legendary generosity. Roy manages three family nurseries in Illinois and is one of the rare nurserymen equally adept with both herbaceous and woody plants. At the end of the day Roy offered to "fill up a truck" of donations to Bernheim and Seneca Gardens. Since then, Roy has donated three truckloads of plants to our arboretum including fringe trees, serviceberries, lilacs, azaleas, and rare magnolias.

I heard of the Winchester, Tennessee, grower Don Shadow from many sources. People spoke of him in revered tones. In a calculated move to meet him, I suggested to the editors at the *Louisville Courier-Journal*, where I am a staff photographer, that we do a story about how Don was supplying unusual exotic and native plants to our local nurseries.

Don is a horticultural genius who spits out Latin plant names in a heavy Tennessee twang. Rustlers of his dogwoods have found themselves dodging hot lead. Fortunately for me, I got on his good side. He needed a photographer to record his choice woodies, and I was happy to oblige. One time, I drove the nine hours round-trip between Louisville and Winchester just to spend one hour photographing his compact, pink-flowered seedlings from 'Snow Queen' oakleaf hydrangea.

In exchange, Seneca Gardens received rare dogwoods, European beeches, hardy southern magnolias, viburnums, and hydrangeas. I keep a notebook in which I list trees I want to acquire. An entire page is



PAM SPAULDING





devoted to Shadow selections.

We expect the giants of the industry like Raulston, Dirr, Klehm, and Shadow to offer a lot of new trees every year, but I was surprised to find how many choice woodies have been found by small nurserymen.

While scouring a small-print listing of new acquisitions at the North Carolina State University Arboretum, I noticed several new cultivars of lacebark or Chinese elm (*Ulmus parvifolia*) coming from Sunshine Nursery in Clinton, Oklahoma. Those notations led to my meeting Sherry and Steve Bieberich, who must grow the toughest trees in America.

They are nursery pioneers in western Oklahoma where trees are not naturally inclined to grow. Temperatures may swing 80 degrees in one day. Summers are hot, dry, and windy. Trees that succeed for them will grow in sidewalk cuts, parking lots, and along urban freeways in Kentucky. The Bieberichs supplied our little arboretum with a fruitless, thornless osage orange (*Maclura pomifera* 'White Shield'), which displays glossy, heart-shaped leaves, as well as a tough yellow-leaved lacebark elm to which the Bieberichs have unofficially given the name 'Aurea'.

Jules Klein, my grafter, led me to Gary Lanham, who runs a small nursery in Lebanon, Kentucky. Gary has developed



*Don Shadow has been generous with his selections, such as dragon's-eye pine (*Pinus thunbergii* 'Oculus-Draconis'), top, but Hayman has a whole page of other Shadow trees on his wish list. Above is a still unnamed purple-foliaged sumac selected by Gary Lanham of Lebanon, Kentucky.*

an amazing number of promising plants in the last year alone. These include a sumac (*Rhus copallina*) with purple foliage, a purple-leaved nandina, and a beehive-shaped dwarf Norway spruce. These selections are being tested by Bailey Nurseries in St. Paul, Minnesota; Michael Dirr in Athens, Georgia; Princeton Nurseries in Princeton, New Jersey; Iseli Nursery in Boring, Oregon... and the Seneca Gardens arboretum.

The list is endless. Just a sample of promising plants offered by small breeders and nurserymen includes: mountain laurels and 'Ruby Spice' pink clethra—Richard Jaynes, Broken Arrow Nursery, Hamden, Connecticut; six cultivars of dwarf *Itea virginica*—Richard Fiest, Hummingbird Nursery, Burlington, Kentucky; pink yellowwoods and Asian witch hazels—Harald Neubauer, Hidden Hollow Nursery, Belvidere, Tennessee.

Maples—Lanny Rawdon, Arborvillage Farm Nursery, Holt, Missouri; weeping redbud and 'White Tigress', a selection from a hybrid of the green striped-bark maple (*Acer tegmentosum*)—Tim Brotzman, Brotzman's Nursery, Madison, Ohio; stewartia and kousa dogwoods—Jon Arnow, Alpine Distributors, Fairfield, Connecticut; cultivars of bald cypress and oaks—Earl Cully, Heritage Trees, Inc., Jacksonville, Illinois.



An upright, compact Turkish hazelnut and a dwarf ginkgo—Bon Hartline, Anna, Illinois; ‘Mountain Charm’ sourwood and two versions of variegated umbrella pine (*Sciadopitys verticillata*)—Jim Monroe, Greenbrier Nursery, Talcott, West Virginia; ‘Butterflies’ yellow-flowered magnolia hybrid—Phil Savage, a hobbyist in Bloomfield Hills, Michigan; and Japanese maples—from the collection of the late J.D. Vertrees, Roseburg, Oregon.

I had many phone conversations with J.D. Vertrees. He was always helpful with information that went beyond his classic book, *Japanese Maples*. When I heard he had acquired a yellow-foliaged striped-bark maple, I called to ask if he might send me some scion wood. He told me frankly he could not. He had terminal cancer and would die within months. Everything in his collection would remain there.

One week later, three little scions of *Acer rufrinerve* ‘Winter Gold’, a cultivar developed in New Zealand, arrived in the mail. My grafter was successful with one of the scions. Two years later that little plant remains protected in a back corner of my garden. It may not prove to be a valuable ornamental tree, but because of its origin—J.D. died within a month after giving it to me—it is one of my most precious.

As the pace of my collecting accelerated, it became increasingly difficult to find sites for all of these trees. I tried to tuck them in among my garden beds, but I have only a normal-sized city lot, and my beds soon looked unkempt and ragged. The Louisville and Jefferson County Metropolitan Parks Department offered me temporary use of a field, but the soil was shallow and rocky, a bog in the spring and rock hard in the summer. A 93-year-old neighbor let me clear three honeysuckle hedges from her yard and store my rarities among her new plantings until she died and the house was sold.

A long-term solution occurred when Bob Hill, a columnist at the *Courier-Journal*, offered his five acres as a site for a partnership nursery, Hidden Hill Specialty Trees. Bob had always liked trees, but had about decided they weren’t worth spending money on since so many of his purchases—maples from a discount store—had died. Since that time, I have unloaded literally hundreds of trees on Bob, putting him in the awkward position of caring for all sizes and shapes of trees he’s never heard of.

With a leap of faith, Bob has provided good care and good dirt and has been rewarded each season with surprises, from



*The Daimyo oak, Quercus dentata, above, produces ornamental nuts and foot-long leaves. Hayman collected its seeds at the University of Kentucky. ‘Golden Desert’ ash, opposite, introduced by Edward Scanlon of Olmstead Falls, Ohio, has black buds, lime-green leaves that turn gold in July, and golden bark.*

the billowy pink seed pods of seven-son flower (*Heptacodium miconioides*), to six weeks of the bright red samaras of the Amur maple (*Acer tataricum* subsp. *gin-nala*) ‘Red Wing’.

We have the most inefficient nursery in the country. Lined out in the same small field are twos and threes of dwarf river birch, pink kousa dogwoods, Asian witch hazels, Florida silver bell (*Halesia diptera* var. *magniflora*), cork-barked elms, dwarf ornamental elderberry, black gum cultivars, and European and Asian buckeyes. Trees and shrubs are laid out as orderly as Bob can make them with my irregular and unpredictable drops. Boxes of labeled, immature trees show up unannounced in the back of his truck at work. “Little orphans,” Bob calls them. He doesn’t know what they are, but he knows where they come from.

My lack of space wasn’t the only reason I had to become a partner in a specialty nursery. Most of my tree acquisitions arrive as young grafts, cuttings, or just scion wood. It doesn’t matter how rare the specimen is or how much I rhapsodize on its golden future; it’s almost impossible to get Seneca Gardens residents to accept, let alone care for, a tree that looks like a dead stick. Bob turns these ugly ducklings into

swans that Seneca Gardens residents are happy to have in their landscapes.

We have a splendid cooperative arrangement with the parks department, which owns the land at Seneca Gardens’ grandest entrance. I was pleasantly surprised when Bob Howell, the parks department forester, agreed to take out a tangled mess of honeysuckle, hackberry, and dead willows at this site. I kept the honeysuckle from returning and replanted the area with river birch, ginkgo, and a bed of gently undulating liriope large enough to look good from passing cars.

When I spotted 20-foot-high piles of flat rocks next to some roadwork, I asked Bob if he would move these stones to the liriope beds, suggesting it would take just one day. In fact, it took four days to gather the flat boulders and as many days to piece them together into a meandering path. Some of the stones were seven feet in diameter; one was so large it tipped the winch truck as it was laid in place.

Last January, Bob Howell and I drove to Athens, Georgia, to pick up trees donated by Select Trees Nursery. The shipment included large specimens of ‘Athena’ and ‘Allee’ lacebark elms, both selections by Mike Dirr from the species he predicts “will provide some of our most beautiful shade trees in the years ahead;” ‘Rose Hill’ English oak (*Quercus robur*), a mildew-resistant form; and ‘Princeton’ elm, an American elm resistant to Dutch elm disease.

My friend Mike Glenn donated these trees at my request. The truck and trailer we used to get them belonged to the parks department. Kingsley, Kentucky, a city bordering Seneca Gardens, paid for two trees to defray some of the trip expenses. The trees were planted in visible sites on our three contiguous properties. In a county where there are dozens of fractured governmental units, we provided a first-class example of cooperation that left all of us richer.

The arboretum idea has been well received in Seneca Gardens. Twice, we have rented a trolley and filled it to overflowing for a tree tour of our little city. I offer talks to our Block Watch Clubs to show residents the special trees on their block.

When I am working in a public area, I have learned to allocate half my time to talking with neighbors who pass by. In a small community, that one-on-one contact is an effective education tool. A couple of years into the program, a city commissioner who had originally opposed it changed

*continued on page 45*











# Their Piece of the Rock Ridge

*Two couples were doing their best to maintain remnants of a once-vast Florida ecosystem. Then came Hurricane Andrew.*

BY LINDA THORNTON

*Throughout most of the year in south Florida, the sun is warm, the sea is calm, and the wind is gentle. Those who plant gardens do so without serious challenge. Vegetation, whether cultivated or not, grows riotously and in abundance. The land is blessed with a yearlong growing season and, for the most part, sufficient water.*

But such natural munificence does not come without a price. There is a restless bargain between land and sea here that makes horticulture a tentative prospect at best. And in August 1992, the debt came due, when a powerful hurricane named Andrew plowed through Dade County and changed the landscape forever.

*Battered by Hurricane Andrew, slash pines in south Florida were then vulnerable to fatal attack by bark beetles.*

TED LEVIN



Nowhere was this change more dramatic than in the Redland, heart of the region's agricultural zone and one of the last uncongested pockets of a county exploding with population and development. Bordered on the south by Everglades National Park and on the north by rampant suburbia, it is a place where tomato farms and avocado groves abut secluded residential plots overgrown with lush vegetation. It was also Ground Zero for Hurricane Andrew. The devastation to the natural and planted environment was almost beyond reckoning. Trees were uprooted, snapped in two, or bent into grotesque shapes by the hurricane's tornadic blasts. Shrubbery and understory plants were swept away. Lawns turned brown from the salt-laden winds.

Like most of their neighbors, Dade County Parks Department naturalist Roger Hammer and his wife, Lisa, a horticultural consultant, had no idea what they would find when they stepped out of their home the morning of August 24 after passage of the storm. It would take two weeks to clear their 1.2-acre property of the ruins of 26 uprooted avocado trees and eight toppled royal palms. Once it was done, the Hammers pondered their alternatives.

The avocado grove had helped save their house by deflecting some of the airborne debris that was hurtled about by the 200-mile-per-hour gusts, but only briefly did the couple consider putting it back to rights.

"I could have propped up the avocados," says Roger. "It had been done before in another hurricane. But I realized they'd just fall again in the next storm." The Florida peninsula is composed of a layer of oolitic limestone, deposited 100,000 years ago when shallow Pleistocene seas retreated from the shore. The topsoil, such as it is, never amounts to more than a few inches in most places. To plant a sizable tree, most people pay for an augered hole, but after the hurricane, Roger noted that even trees growing in augered holes had not held on well.

Although the Hammers knew it would be judicious to replace the avocados with another kind of tree, when they surveyed the banyans and other ficuses that lay battered and broken in their neighbors' yards they concluded that such tall and dense-canopied exotics were not an option. The obvious choice was the native hardwoods found in the high hammocks—scattered "islands" a few feet higher than the surrounding sawgrass prairies of the Everglades. While many of the hammock trees are West Indian in origin, they have been



ROGER L. HAMMER



AIXI MONTERO





AIXI MONTERO



ROGER L. HAMMER

*Unusual trees on the Hammer property include the native gumbo-limbo, opposite top, which develops lustrous red bark. Among plants that bring butterflies to their garden are the Dutchman's pipe, opposite bottom, a vine native to Brazil, and a hedge of golden dewdrop, left, which produces yellow half-inch fruits. While this nectar source is said to be native to the Florida hammocks, Roger Hammer, above, a naturalist for the Dade County Parks Department, says that he has never found it growing in the wild.*

growing on the Florida peninsula for many centuries, their seeds probably brought there by wind and birds. They are not impervious to hurricanes, but they tend, on the whole, to have at least a fighting chance for survival in a big blow.

In his soft-spoken way, Roger Hammer was among the first local advocates to push for saving what was left of the region's dwindling native plant communities. He has taught classes on natives, led native plant tours, and lectured and written extensively on the topic for many years. Says Roger: "I was born in Florida, and where your roots are is where you want to preserve." While the motivation was personal, his job gave him some influence on governmental policies. In 1980, he won the first Marjorie Stoneman Douglas award

for preservation of native plants.

Even before the storm, several threatened or endangered south Florida plants had already found refuge on the Hammer property—an avocado grove Roger acquired in 1981. Shade inhibited the extent of his planting, however—until Andrew arrived and cleared the way.

Among the trees the Hammers have planted since the storm are some of the rarest on the North American continent. There is gumbo-limbo (*Bursera simaruba*), a tree with a shiny reddish trunk that will root from a sawed-off section or limb. They have planted poisonwood (*Metopium toxiferum*), a handsome member of the sumac or cashew family that gives generous shade but is, as its name suggests, unwelcome in suburbia. All its parts, especially the

resinous sap, can cause a painful contact dermatitis in susceptible individuals. The berries of this tree, however, are relished by the endangered white-crowned pigeon and other birds. Then there is the very rare Biscayne prickly ash (*Zanthoxylum coriaceum*), a regionally endangered member of the citrus or rue family and a food plant for the larvae of the giant swallowtail butterfly. A fearsome young tree of unremarkable aspect is the manchineel (*Hippomane mancinella*), a member of the spurge family with sap so caustic that it was used as a means of torture by Native Americans, who are said to have tied their enemies to the trunks, where they would writhe in agony.

The Hammers' property is part of the extensive rock ridge pineland that once covered south Florida. Prior to the hurricane, they had planted a small pineland, replete with Dade County slash pine (*Pinus elliotii* var. *densa*), saw palmetto, pineland allamanda (*Angadenia berterii*), pineland croton, and coontie (*Zamia pumila*), a cycad that is food to the Florida atala butterfly, once endangered, but now on the rebound. During the hurricane, an airborne shed sheared off the pine trees and flattened the other plants, and the Hammers decided to abandon this effort.

"What we were doing was an attempt to create a pineland—not a restoration," says Roger. "The soil was too rich for the understory and grasses to do well because of the debris accumulated from decades of avocado growing. What we had was a collection of pineland plants. It wasn't natural."

For all his obvious love of natives, Roger is scarcely a purist on the subject. At Jelly Acres (so named because the cinder-block house where the Hammers live used to be a factory producing 267 kinds of tropical fruit jelly), the hammock trees and understory natives mingle amicably with curious exotics, ferns, orchids, and bromeliads that Roger has found in mail-order catalogs and out-of-the-way nurseries. The result is something quite rare for south Florida, where most people who bother to garden at all make do with the limited offerings of the local nursery. There is no coddling here, so all must be low maintenance and xeric. Much of what is planted offers something in the way of food or shelter to wildlife.

"Really, there's nothing wrong with just planting natives," Roger says. "But if you're looking at butterfly gardening, you'll find that butterflies favor a lot of exotic plants. Exotics are all right if they don't become invasive."





Lisa Hammer echoes this opinion, adding, "A lot of people think natives are pest free. That's not true. Many have their own pests. We favor a mix of exotics and natives. As a result, we never have a pest problem, never have to spray."

To fully take advantage of their new bounty of sunlight, the couple added a 4,000-gallon pond with water lilies, parrot's feather (*Myriophyllum aquaticum*)—not to be tossed in a river or pond where it can escape, warns Roger—lizard tail (*Eriophyllum staechadifolium*), bulrush, and swamp hibiscus. He stocks the pond with exotic goldfish, fantails, gourami, and such natives as stump knockers, dollar sunfish, sailfin mollies, flagfish, and channel catfish.

Along the northern border of their property, they've replaced the royal palms with a tall, free-growing hedge of golden dewdrop (*Duranta repens*), a tremendous attractor of butterflies. The plants grow abundantly, providing privacy from the main road, and bloom year-round. Some references list golden dewdrop as native from southern Florida and the Keys south to Brazil, and the plant is often sold as a native. But Roger is dubious about its origins because he has never seen it growing in the wild in Florida.

The fences surrounding the property are covered with Dutchman's pipe (*Aristolochia gigantea*), native to Brazil, which attracts the Polydamas swallowtail, an uncommon butterfly.

The couple's stewardship of their property on behalf of the wild denizens of the Redland has been more than rewarded.

Over the years, Roger has spotted more than 120 species of birds frequenting Jelly Acres, including warblers, purple martins, thrushes, cedar waxwings, thrashers, swallows, chimney swifts, and hummingbirds, as well as peregrine falcons and numerous species of hawks. Butterflies commonly visiting Jelly Acres are the zebra, julia, queen, monarch, gulf fritillary, ruddy daggerwing, Florida atala, white peacock, red admiral, malachite, Carolina satyr, phaon crescent, and various sulphurs and skippers.

Knowing what they know about south Florida and its propensity for hurricanes, the Hammers acknowledge that all their restoration work over the past three years may be blown away in the next storm. They know that it could hit in 10 years—or this year. The only certainty is that a hurricane will surely come again. Nevertheless, they face the prospect with equanimity.

"It's something that you live with. We all need to understand a hurricane is natural, and a part of the whole cycle," says Roger. "We need to learn to accept it—and that the change it brings isn't always bad."

Such acceptance is not the immediate response of most hurricane victims, of course. Before Hurricane Andrew, Barbara and Terry Glancy's 15-acre Redland property was a living showcase of what such a south Florida forest should be. One of only a handful of rock ridge pineland sites outside of the Everglades National Park not to have been logged over the last century, it stood tall with 100- to 125-year-old Dade County slash pines. In the understory survived some of the rarest plants of subtrop-

ical Florida—a total of 330 species. After the storm had passed, that number stood at 329. The sole casualty of Andrew's fury: the pine trees. All 3,000 of them.

To find such a large, well-maintained pineland had been a near miracle. Logging of the slash pines began in the last century and continued into the 1950s, claiming more than 90 percent of the forest. The Glancys' 15 acres, surrounded by sloughs, lived on in a near pristine state because the logging companies couldn't get their heavy equipment in over the watery perimeters of the property.

Three years after the hurricane, the trunks of the slash pines stand as skeletal reminders of the storm's fury. Many of the trees initially seemed to survive the storm, but within a few months, those too began to die—victims of bark beetles. High winds damaged the trees' outer bark so severely that they needed to draw extra water to produce sap as a defense against the beetles. Unfortunately, development had lowered the water table so drastically that there was not enough for the trees to defend themselves.

The sight of so many dead trees is heartbreaking, but like the Hammers, the Glancys have learned to be philosophical. They are quick to point out that more than memories can be found here. Among the 329 species of survivors are such rare and endangered plants as pineland jacquemontia (*Jacquemontia curtissii*), silver palm (*Coccothrinax argentata*), two spurges known as Blodgett's wild mercury (*Argythamnia blodgettii*) and pineland spurge (*Cham-*





*To control exotic weeds on their 15-acre rock ridge pineland, the Glancys conduct a prescribed burn every three years, opposite. Says Barbara Glancy, left, "When we found out about the diversity of an actual ecosystem, it made urban gardening seem pretty mundane."*

*aesycy pinetorum*), and coontie. And the pines, although dead, still have a purpose, as snags for birds and other creatures. They will not be cut down, but will continue to contribute to the ecosystem as they decay.

"It's a natural habitat," says Barbara. "The absence of a species—particularly the biggest species—is always sad. But because we had knowledge of the ecosystem, it made it easier for us to understand the process and adapt to what actually happened. We didn't see the pineland as just green or just pine trees, but as an entire habitat, with all its interconnected parts."

The Glancys have known since acquiring this pineland remnant 18 years ago that preserving it would be a daunting task. Once avid gardeners in Michigan, they see this challenge as beyond the usual definition of that avocation.

"We outgrew gardening," says Barbara. "We did everything we could do in our urban back yard, and then when we found out about the diversity of an actual ecosystem, it made urban gardening seem pretty mundane. I think of what we're doing now as the highest form of gardening, even though we only have a remnant of what was."

That remnant is part of what has been called by the Center for Plant Conservation

the most endangered ecosystem in North America. Out of what used to be 185,000 acres of slash pine forest in south Florida, only a small percentage—perhaps less than one percent—survives outside of the Everglades. Those who own rock ridge pineland must help it along, or it will continue to decline. "The problem is the pineland is so fragmented it can no longer be self-sustaining," says Terry.

Most of what does survive is not being well maintained against invasions by rampant non-natives such as Brazilian pepper tree (*Schinus terebinthifolius*), woman's tongue tree (*Albizia lebbek*), and Australian pine (*Casuarina equisetifolia*).

The Glancys deal with exotics by several means. They've used herbicides and hand weeding, but find that prescribed burning works best. The burns are conducted every three years or so with the assistance of several different government agencies and are carefully planned and monitored. The Glancys' Redland neighbors, though a little uneasy when the burning began, now seem to understand the need for it, according to Barbara.

"They couldn't help but see the results—how our pineland was aesthetically pleasing, much like the Everglades, while pinelands that aren't burned con-

tinue to degrade," Barbara relates.

This past winter, the replanting of the slash pines began. Not just any slash pine seedlings would do. They had to be from the same gene pool as the tall trees they were replacing. Five hundred seedlings were grown from cones taken from the Everglades, just a few miles to the south. The newcomers are a few inches high and have been joined by young pines that sprouted in the gravel once the dense tree canopy was gone. The Glancys watched the progress of the young trees through the winter and early spring dry season like dotting parents. Barbara notes that the sparse layer of topsoil over the oolitic limestone makes this a harsh environment for a young tree. "It can be compared to growing a plant in concrete," she says.

Even watching the seedlings thrive is a bittersweet experience, for the Glancys know they will never see the tall trees again in their lifetime. "Our 15-year-old son will be my age before the trees are 10 to 12 feet tall," says Terry wistfully.

Nevertheless, their devotion to this small remnant of Florida's rich botanical past remains as strong as ever. They intend to do everything they can to ensure that their piece of rock ridge pineland survives.

"There are too few of them left," says Terry. "We can't afford to lose even one."

*For 10 years the editor of a newspaper on the Florida island of Key Biscayne, Linda Thornton is now a free-lance writer in Fort Worth, Texas.*



ROGER TORY PETERSON

# *A Birder Looks to the Ground*

*Known best for his revolutionary  
bird guides, he has been fascinated  
by flowers since his boyhood.*

B Y L A U R E N B R O W N

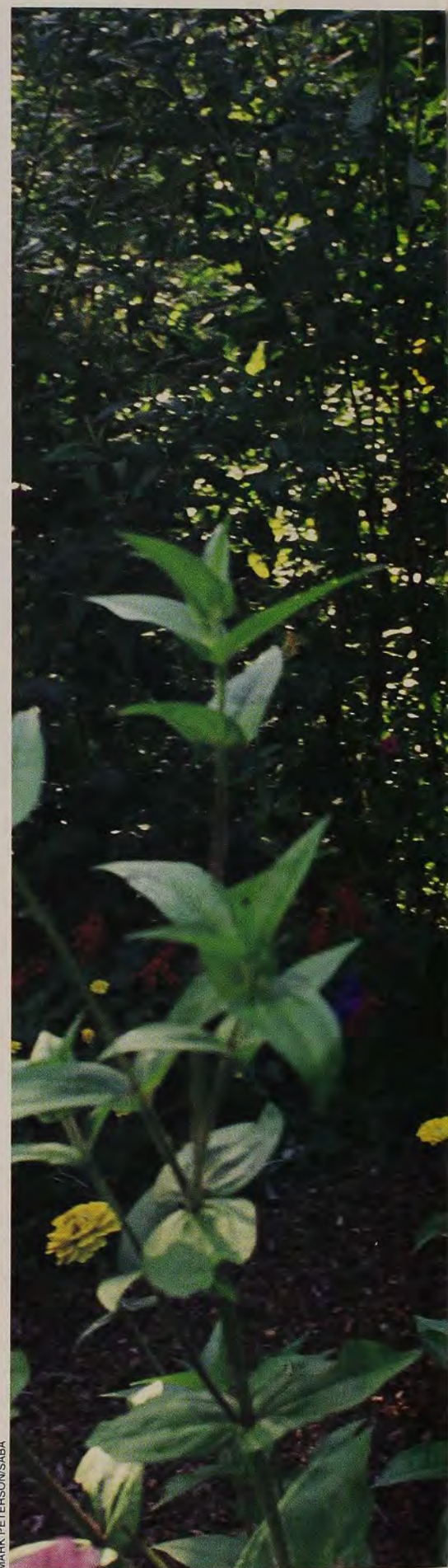
YOU'RE LOOKING OUT THE WINDOW AND YOU SEE A FUNNY LITTLE BIRD CRAWLING HEAD FIRST DOWN THE TRUNK OF A TREE. WHAT IS IT? QUICK, GRAB THE BIRD BOOK! You thumb through the pages and without much trouble figure out that it was a white-breasted nuthatch. You put the book down, pleased with having learned a new bird.

No matter where you live in the continental United States, there is a good chance the book you used was by Roger Tory Peterson, the dean of American birdwatching. Peterson first took the birding world by storm in 1934, with the publication of *A Field Guide to the Birds*. Popular bird guides existed at the time, but Peterson thought they were too wordy and poorly illustrated. He is fond of citing one description of the American robin in which every detail is enumerated, from beak to tail feathers. All a lay person needs to know, he points out, is that the bird has an orange-red breast and a brown back!

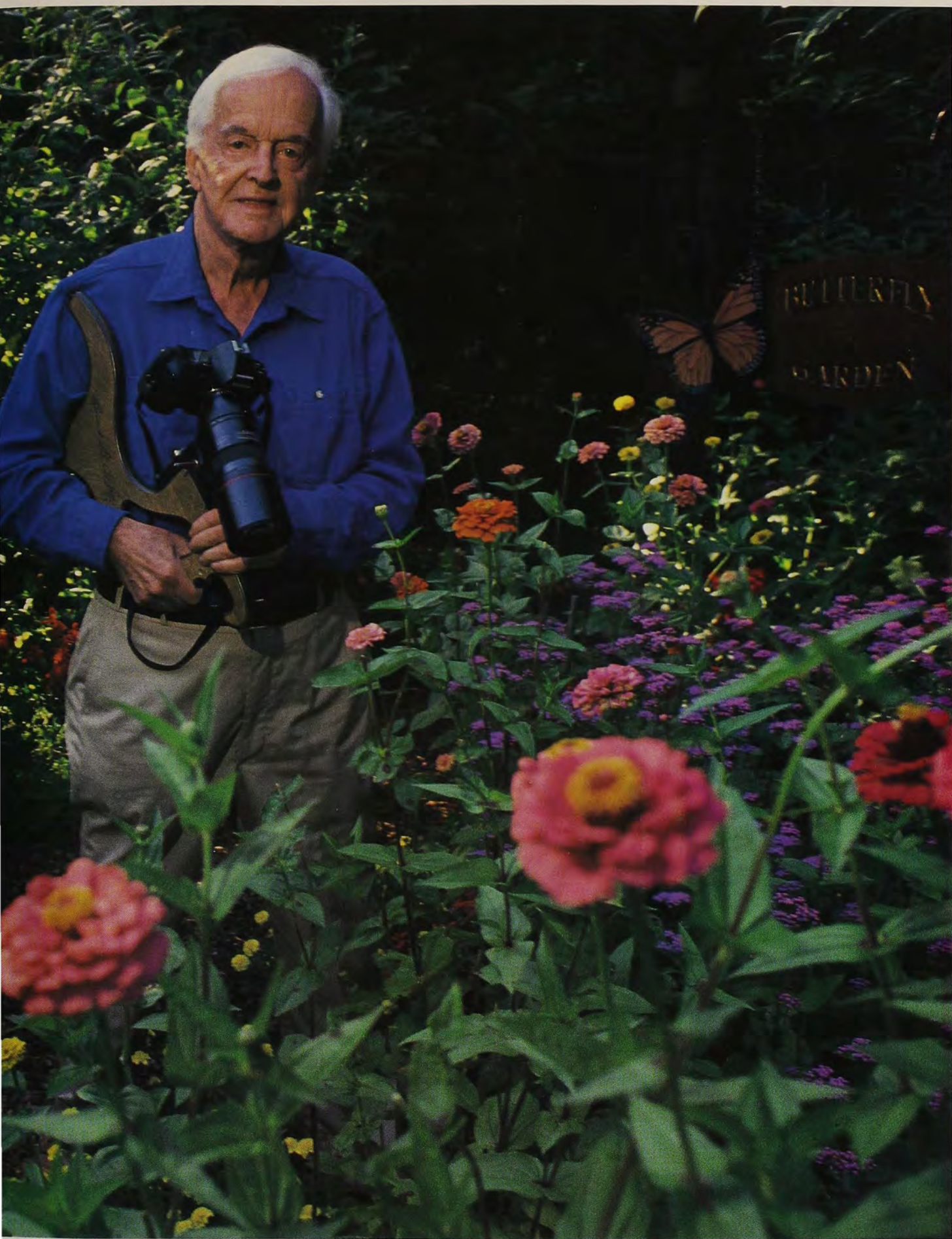
What sets his book apart from the other guides is his ability to zero in on the key characteristics necessary for identification. These are highlighted in the illustrations with arrows—Peterson's idea—and described in



*Roger Tory Peterson in his early twenties, above, and more recently, right.*











the concise text with a precision that leaves the reader in little doubt.

Other details of the bird's appearance are portrayed in the drawings but not emphasized, so that the reader won't be distracted from the most important features.

The first field guide, after being rejected by four publishers and released on a gamble by Houghton Mifflin, has sold more than four million copies in four editions. Its author went on to write and illustrate *A Field Guide to Western Birds*, *A Field Guide to the Birds of Texas and Adjacent States*, *A Field Guide to the Birds of Britain and Europe* (with P.A.D. Hollom), and *A Field Guide to Mexican Birds* (with Edward L. Chalif). He has written dozens of articles on birds and birdwatching, and his bird paintings appear on greeting cards, calendars, and porcelain plates. He has produced cassette tapes of bird sounds and a video on birding, and has appeared on numerous television shows and documentaries, scanning the horizon with binoculars as he talks.

Until the development of the Peterson System, which allowed amateur birders to readily identify birds in the wild by characteristic field marks, the only accepted means of identification was through obtaining specimens—birders were hunters, not conservationists. Charles Walcott, director of the Cornell Laboratory of Ornithology, attributes what he considers a "dramatic upsurge" in interest in birds largely to Peterson. "His major contribution," Walcott says, "has been to kindle the public's interest, imagination, and ability to identify birds. In the old days, all you had was Reed [*Bird Guide* by Chester A. Reed]. It had few pictures and

was hard to use. Nobody had binoculars unless they were very rich. The advent of better optics, and Roger's book, made birding accessible to the public."

Roger Tory Peterson is the bird man.

Yet he has a similar mastery of and passion for wildflowers, as evidenced by his *Field Guide to Wildflowers*, published in 1968. The wildflower book uses the same approach, with the arrows and the telegraphic text, as the bird books and the others in the Peterson Field Guide Series. Although some object to his grouping flowers by color rather than by family, and some readers find they prefer color photographs to Peterson's line drawings, the book has proven its effectiveness in sales: approximately 1.25 million copies.

How did the great bird-watcher let his attention be drawn from the sky to the ground? In fact, he has been fascinated with flowers since his boyhood in Jamestown, New York, a city then dominated by furniture factories that supported many Swedish immigrant families like his own. Life in Jamestown was not genteel: The winters were bitter then as they are now, and the heat that kept its citizens warm, at least in their kitchens, was produced by coal, which left a dark, grimy cloud over the city. Relationships among the various immigrant groups—in the teen-age crowd at least—were expressed in fist fights, and discipline at school was administered by the ruler. Young Peterson rose at 4 a.m. for a paper route, and after his father died, his mother worked at a hotel, making 85 beds and cleaning 85 rooms a day.

But outside of the city were woods and fields, and this was where the boy spent most of his free time, pursuing a passionate interest that few of those around him—family or friends—shared or encour-

**What sets Peterson's field guides apart is his use of key characteristics to identify species such as the pileated woodpecker, upper left, prothonotary warbler, above, larger blue-flag iris, left, and swamp rose mallow, opposite.**



aged. But a seventh-grade teacher, Blanche Hornbeck, gave focus to his love of birds when she started a Junior Audubon Club in the school. She took the students on field trips and had them copy paintings of birds. This was the point at which birds became an overriding passion, but he was also fascinated with other denizens of the outdoors: butterflies, turtles, toads, and flowers. "You know that game that beginning birders play," he asks, "of making lists? My friend Clarence Beal and I did that one day with flowers when I was 15. We had a 'botanical big day,' and armed with *Gray's Manual*, we set out to see how many plants we could find in a day. It was over 200."

This number—and the boys' attention span—are impressive enough, but equally impressive is their use of *Gray's Manual of Botany*, set in minuscule print, sparsely illustrated, and filled with technical language—used nowadays by only the most dedicated botanists.

While there were fewer books available then, however, there were more sights and sounds to inspire a budding naturalist. Peterson vividly recalls the day when, outside of Jamestown, he found a patch of about 400 showy lady's-slipper orchids, which he still considers his favorite flower. Many years later, he went back to find them, but the land had been drained for a highway and the lady's-slippers were gone.

Peterson considers his love of flowers a natural "by-product of birding. You can't help but see them," he says, "and be attracted by their beauty." Wildflowers are also another creative outlet for the artist in him. After finishing high school in Jamestown, and working briefly in one of the furniture factories as a decorative painter, he followed his life's dream and studied art in New York, first at the Art Students League and then at the National Academy of Design. Despite the phenomenal success of his field guides, he sees himself first and foremost as an artist, rather than a writer or educator.

His artistic ability and his mastery of wildflowers intersected in the late 1940s. Paul Brooks, the editor at Houghton Mifflin who had promoted the first bird guide, felt that the Peterson System could be applied to other aspects of natural history and launched the now well-known Peterson Field Guide Series, in which various special-



## TIPS ON BIRDING

ists are enlisted to write about topics from mammals to seashells. Margaret McKenny, executive secretary of the City Gardens Club of New York City, was preparing the wildflower book when the illustrator who had been hired begged off. In what Peterson, in the book's introduction, calls "an unguarded moment," he volunteered to do the illustrations. As he drew and drew, adding more and more species and writing the text to describe them, the book became his. It took 20 years to complete.

Austin Olney, another editor at Houghton Mifflin, said publishing company staff despaired from the beginning that the wildflower book would ever be finished, since Peterson was always "biting off more than he could chew.... We were constantly wringing our hands," he recalls. But one reason the book took so long, aside from the fact that Peterson was simultaneously involved in a multitude of other projects, was that he found flowers to be maddeningly variable and would not be content until he had a drawing that really looked typical. "I'd do a drawing," he says, "and then find other flowers of the same species that looked quite different. Flowers vary a lot, depending on where they're growing." Another reason for the molasses-slow progress was his commitment to drawing from fresh, live specimens. Although flowers might not fly away when approached, they perform a disappearing act of their own. Most of them bloom very briefly, and many grow in geographically isolated areas. So in the midst of all his other activities, for over a decade, Peterson traversed North America from Minnesota to Maine and Ontario to Virginia, mainly alone, slowly cruising back country roads in order to be in the right place at the right time for one or more of the 1,300-odd species that he ended up including in the book. "He'd stop by the Boston office in the spring," recalls Brooks, "and say 'I didn't quite get that one on time; I'll have to get it next spring.' And so another year would go by."

For a few plants, he eventually had to resort to photographs and pressed herbarium specimens, but most of the thistles, sunflowers, buttercups, asters, and others were drawn in

**T**o become a birder, you need three things: binoculars, an identification guide, and a little bit of patience. Beginners sometimes get frustrated but if, as with all endeavors, you start with small steps and reachable goals, you will find birding a most rewarding pastime.

It's worth the investment to get decent binoculars that are appropriate for birding; if you go out with opera glasses or extremely cheap brands, you will just be making the job difficult for yourself. Forget the automatic focus type: These will tend to focus on a limb or other close object rather than the bird you want to see.

For identification guides there is of course the Peterson Field Guide Series, as well as the National Geographic Society *Field Guide to the Birds of North America* and the Golden Field Guide *Birds of North America*.

Once you spot a bird out in the field, however, you will rarely have the luxury of thumbing through your guide before the bird flies away, so spend some time getting to know the most salient characteristics of each family—shape of tail and bill, for instance, or flight pattern. Few birds can be identified by color alone: There are about 40 species of wood warblers in the eastern United States, for example, most with some yellow plumage, and in fall they become even less distinctive.

Start with birds that you see frequently around your house. As you begin to recognize individual birds by sight, also start learning their calls; good birders rely heavily on sound for identification.

There is no substitute for hooking up with other birders. They can be intimidating, but you will always learn something from them. How to find them? Connecticut, Massachusetts, Illinois, Florida, Maine, New Hampshire, and Rhode Island all have state Audubon Societies, and the National Audubon Society has chapters throughout the country. Write them at 700 Broadway, New York, NY 10003, (212) 979-3000, to get names and addresses. You can also get *A Guide to North American Bird Clubs* by Jon E. Rickert Sr., Avian Publications, Inc., P.O. Box 310, Elizabethtown, KY 42701, (502) 769-3344. These groups, as well as local nature centers, often offer courses and walks geared specifically to beginners.

If you look upon birdwatching as an excuse to be outside, and take pleasure in your new discoveries, no matter how simple they might seem, you will soon find your eyes—and your ears—opened to a whole new world. —Lauren Brown

roadside motels at night after a day of collecting, or in the case of rare species, drawn while he lay flat on the ground on site.

While he describes the project as "slavery at times," he says that overall he enjoyed it, constantly observing and thinking about flowers in the midst of other projects. He once noted a spot in the Atacama desert of Chile, one of the driest places on earth, sometimes lacking rain for years, where a pipeline had sprung a leak.

Water had soaked the soil and plants were growing. Where did these seeds come from, he wondered, and did they stay viable in the soil for decades? In Tierra del Fuego, New Zealand, or on Macquarie, the southernmost green island in the world, his eye has wan-

dered from the skies to the ground to notice familiar dandelions, daisies, and chickweeds, and he has pondered the amazing spread of these species while wondering why other plants do not spread at all.

In the last few years, Peterson has derived great pleasure from a butterfly garden at his Connecticut home, designed and planted by his wife, Virginia.

Virginia started with meadow flowers but has expanded the garden to include a wide variety of sun-loving natives and exotics, herbs, annuals, perennials, and shrubs that attract more than 30 species of butterflies throughout the year. The butterfly garden takes up only a small portion of their largely wooded property, but Virginia stresses that the size of a butterfly garden is not important, as long as it has full sun. Butterflies need to keep their body temperatures high in order to fly.

The Petersons also have planned their landscaping to attract birds, whose visits Peterson anticipates eagerly. When asked for advice on what to plant, he replies that it isn't so simple. Attracting birds isn't so





much a matter of getting a list of species and dutifully planting them as it is of providing the birds with their basic needs for food, water, and shelter. Food comes in many forms: flowers that attract insects that birds will eat, flowers that produce seeds for winter consumption, and berry-producing trees

and shrubs. Water is not only for drinking but provides a place for birds to bathe and congregate. Shelter can be brambles, deciduous trees, or evergreens. "We've set up a dining room, a social club, and a bedroom," Peterson says.

Whether a gardener is planting for but-

terflies or for birds, Peterson is emphatic that the pesticides should stay on the shelves of the hardware store. "People don't like grubs," he says, "but how in the world can you have butterflies without caterpillars? I don't mind holes in the leaves of a plant. I think it looks better in a

## A BIRDER INSPIRED BY BUTTERFLIES

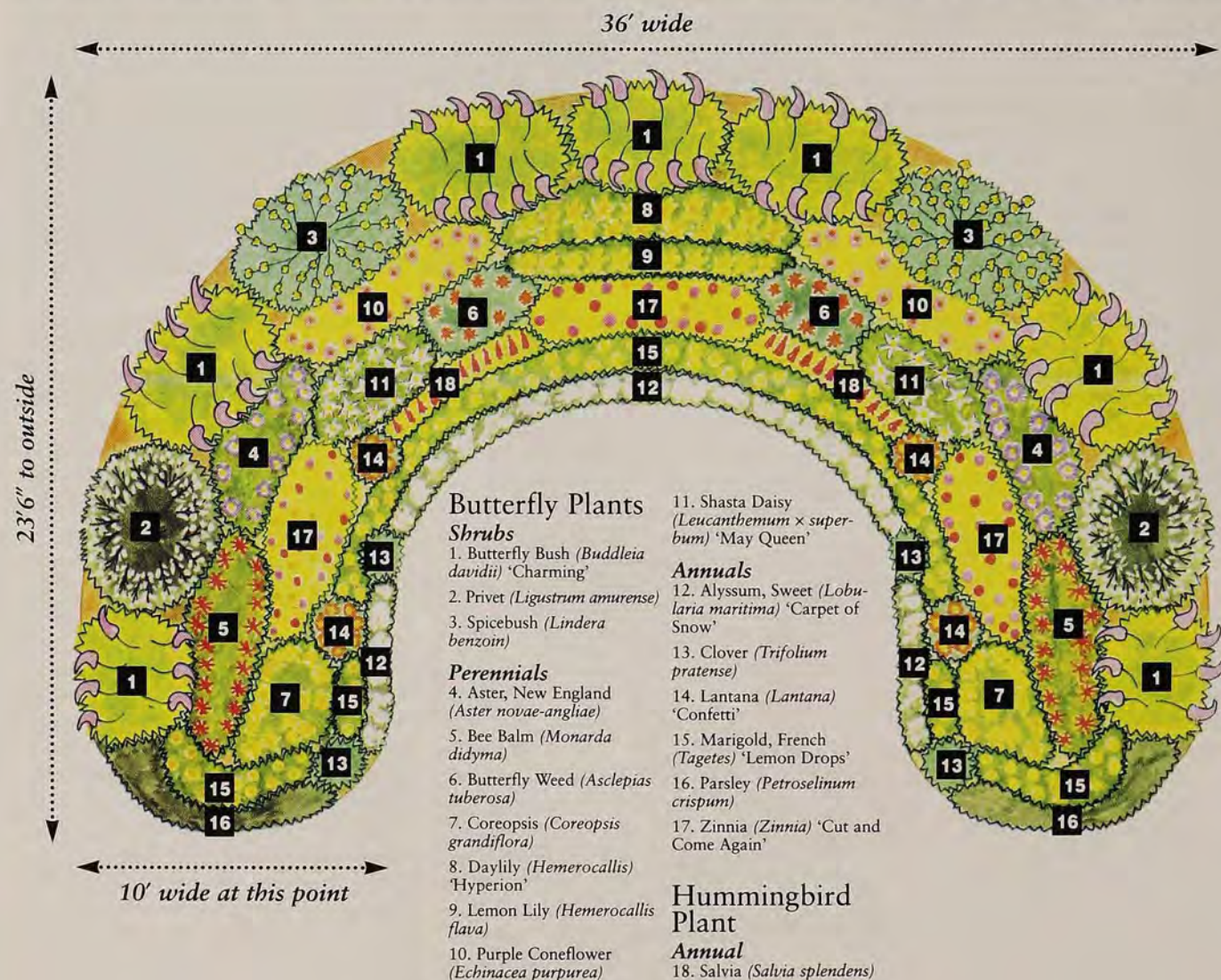
Like many writers, poets, and artists before him, Roger Tory Peterson has gone through periods when, for no apparent reason, inspiration fails. Concerned by a particularly bad case of creative block affecting Peterson in the late 1970s, his wife, Vir-

ginia, came to the rescue with her own inspiration. She designed and created a butterfly garden at the foot of the stairs to the studio where her husband works daily, at their home in Old Lyme, Connecticut. The muse quickly returned, and both Roger and

Virginia continue to derive so much pleasure from the butterfly garden that they have shared their new passion with others.

Among the ways the Petersons have encouraged others to try butterfly gardening is through the creation of public

display gardens, including the establishment last summer of a butterfly garden at the Roger Tory Peterson Institute of Natural History in Jamestown, New York. Designed by Virginia, the garden is a 36-foot-wide horseshoe-shaped bed anchored in the rear by a mix-





drawing, though some people don't agree."

At 87, Roger Tory Peterson is going strong, painting, lecturing, and working on the fifth edition to the original *Field Guide to the Birds*. His travel schedule in 1994 included Venezuela, the Antarctic, and the Falklands; Cape May, New Jersey; his

home town of Jamestown; Boston; Cleveland; New York City; North Dakota; and Hawk Mountain, Pennsylvania. "This was a slow year," says his secretary. "This is saying a lot of no's."

Though most of the recognition he receives is for his work on birds, and they

will certainly remain his enduring love, he still enjoys—as he always has—the never-ending variety of flowers.

*Lauren Brown is the author of Weeds in Winter and Grasses: A Simplified Identification Guide.*



*Peterson and his wife, Virginia, center and left, at the dedication of the Peterson Butterfly Garden at the Airlie Center in Airlie, Virginia, earlier this year. Opposite, a design by Virginia Peterson for a butterfly garden at the Roger Tory Peterson Institute of Natural History in Jamestown, New York.*

ture of butterfly bush, privet, and spicebush—shrubs that offer good nectar sources for butterflies. Fronting the shrubs are tall perennials such as New England aster (*Aster novae-angliae*), bee balm, purple cone-flower, and daylilies, all of which are nectar sources. A mixture of perennials and annuals, including butterfly weed, coreopsis, zinnias, and shasta daisies, take up the middle section of the bed. Low-growing annuals such as parsley, marigolds, clover, and alyssum carpet the front of the bed and provide a blend of food sources for larvae and nectar for adults.

Among the butterflies likely to be found in the garden are American coppers, black and

spicebush swallowtails, monarchs, and mourning cloaks, as well as various skippers and fritillaries.

In celebration of the 25th anniversary of Earth Day on April 22 this year, the Petersons attended the opening of a butterfly garden at the Airlie Center, an environmental education and conference facility and wildlife sanctuary in Airlie, Virginia.

The Airlie butterfly garden was dedicated to the Petersons in recognition of Virginia's efforts to promote butterfly gardening in the United States and Roger's lifelong contribution to the study of nature. Created by landscape architects Kathleen Higgins and Francis Krivich, the garden contains a

variety of nectar and larval food plants with an emphasis on plants native to the region.

The garden, which is situated alongside a stream, incorporates elements of both wild and formal garden design. Plants in the wild garden include eastern redbud, eastern dogwood, summersweet (*Clethra alnifolia*), fringe tree, cardinal flower (*Lo-belia cardinalis*), swamp azalea (*Rhododendron viscosum*), buttonbush (*Cephalanthus occidentalis*), swamp milkweed (*Asclepias incarnata*), and butterfly weed (*A. tuberosa*). Pickerel weed (*Pontederia cordata*) grows along the stream. The formal garden includes plantings of sage, coneflowers, phlox, asters, yarrow, obedient plant (*Physostegia virgini-*

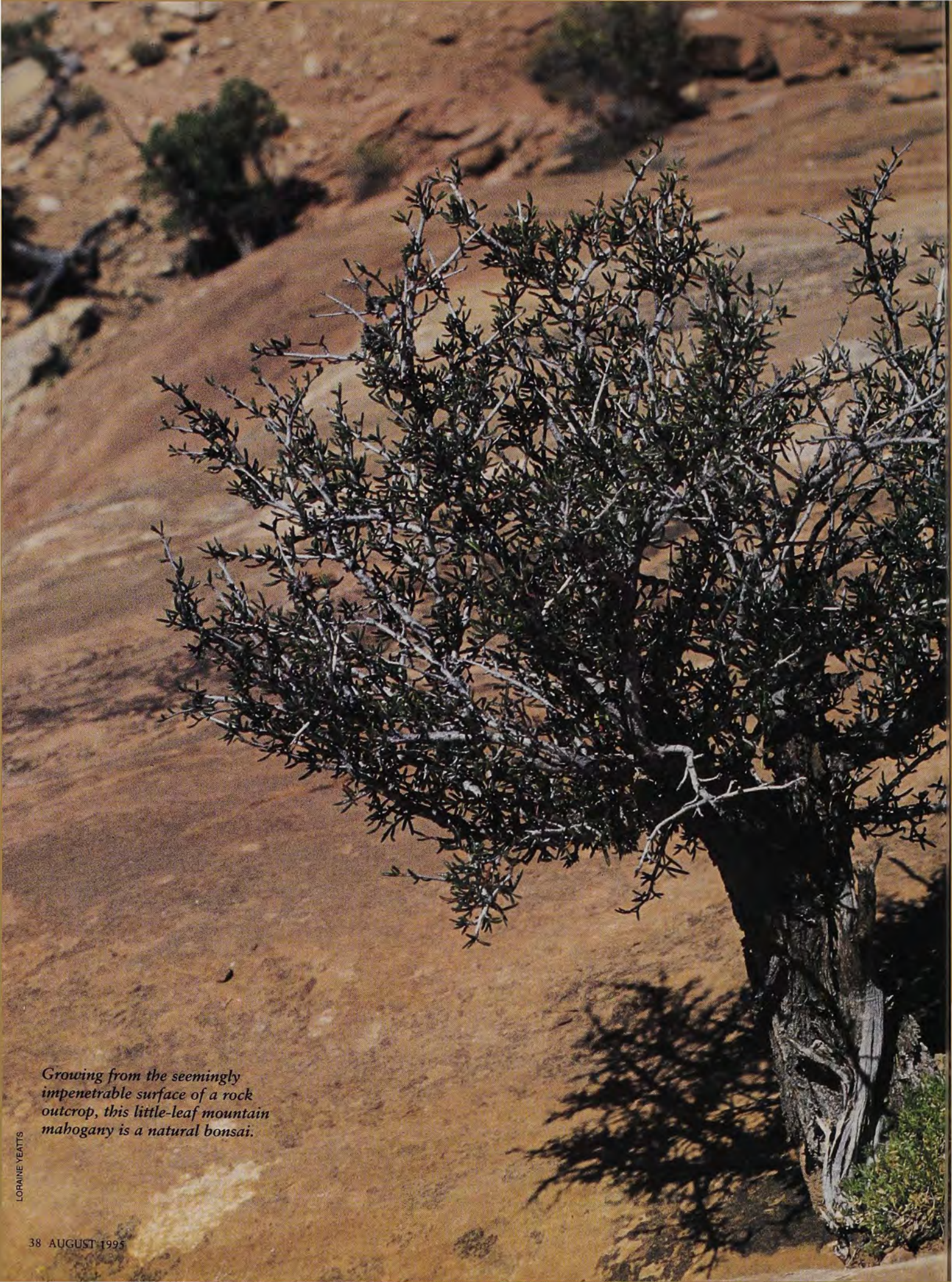
*ana*), and butterfly bush (*Buddleia davidii*).

Tours of the Airlie Center are available by reservation only. For further information, call (703) 347-1300, or write to the Airlie Center, Airlie, VA 22186.

The Roger Tory Peterson Institute of Natural History features an art gallery, butterfly garden, and perennial garden. The institute is open to the public from 9 a.m. to 5 p.m. on weekdays; 10 a.m. to 4 p.m. on Saturdays; and 1 p.m. to 4 p.m. on Sundays. Non-members pay a nominal fee for entry to art exhibits. For further information, write to the institute at 311 Curtis Street, Jamestown, NY 14701, or call (716) 665-2473.

—David J. Ellis  
Assistant Editor





*Growing from the seemingly impenetrable surface of a rock outcrop, this little-leaf mountain mahogany is a natural bonsai.*





# TOUGH SHRUBS

*Once dismissed as "scrub," they've gained respect for tolerating drought and cold.*

BY ROBERT NOLD

**E**ver since the West was invaded by white settlers in the mid-19th century, newcomers have tried to superimpose their values and concepts onto Western realities. This struggle is revealed vividly in our landscapes and gardens.

While the southern Rocky Mountain region contains a wealth of climates (and microclimates) allowing surprisingly diverse approaches to gardening, the overall characteristics are low humidity, intense sun, strong winds, alkaline soil, and sudden and violent temperature fluctuations.

Our own garden outside Denver reflects all of these factors. Last year, we received two inches of rain and snow from the middle of May to the end of the year. Several years ago in October, the temperature dropped from 70 degrees to zero in a few hours. Our witch hazel (*Hamamelis virginiana*), cotoneaster (*Cotoneaster multiflorus*), and euonymus (*Euonymus europaea*), plus two 'Redhaven' peaches, were killed to within two inches of the ground. A few of the plants had been weakened by an earlier hail-storm that stripped off large sections of bark, so the blow was effective and complete.

Sunlight remains intense through winter, and plants adapted to cloud cover while dormant in their native habitat are fried to a crisp no matter how balmy the weather may be. (Last January and February, most of the nights were frost free.)

Thus the usual criteria for choosing landscape plants, such as USDA hardiness zones, are of little use here. The beautiful "Lights" series of azaleas from Minnesota and the 'P.J.M.' rhodo-



dendrons are all rated cold hardy for this area, and our soil can be amended to their low pH requirement, at least briefly. But if summers don't kill them—they need almost daily watering—the dry winters do.

Even Westerners can get bored looking at nothing but bare twigs all winter, and several evergreen shrubs are traditionally used here as substitutes for the holly, boxwood, yew, and rhododendrons that fare so poorly. Oregon grape holly (*Mahonia aquifolium*), from our Pacific Northwest, is attractive but demands a shady location here in order not to come out of winter looking like it had been dragged behind a truck on I-70 for a few dozen miles.

The other is the China native *Euonymus fortunei* and its various forms, which are regrettably undependable at retaining their leaves but continue to see wide use for decorating gas stations and fast-food restaurants. In the variegated forms, results after one winter are dismally predictable. The 'Manhattan' cultivar of *E. kiautschovica* is particularly popular in commercial landscapes, where plastic appearance, winter-burn down to the ground, and an astonishing ability to attract flies in summer are apparently desirable features.

It's difficult to understand why such a plant is still bought and sold at such dizzying levels, when our native green-leaf manzanita (*Arctostaphylos patula*), a larger version of the common bearberry or kinikinick (*A. uva-ursi*), has handsome evergreen leaves, beautiful reddish brown bark, needs little water, and is ignored by flies and other unsavory creatures.

I suspect the old prejudice is at work: The more water a plant needs, the better it must be. The notion of low-water landscapes makes many people wary; anything that grows without watering, they're sure, has to be an ugly weed. It should be the other way around: A plant that needs water should have less value for an arid landscape, regardless of unearthly beauty, haunting fragrance, or other delights.

Within the last decade, however, after years of denial, many gardeners have recognized that native shrubs, previously relegated to the status of browse plants or "scrub" to be bulldozed to make way for lawns, will outperform most exotics in every respect. Enthusiasm for these unthirsty plants has increased to the point where some of them sell out as soon as they're set out at nurseries. We don't even have to amend the soil for these plants. They don't grow in organic matter in the wild, and if their soil is too

moist, it can increase the chance of root rot and other diseases.

Strangers to cold-hardy, drought-tolerant shrubs will be disappointed if their preconceptions include huge, brilliant green leaves. Sorry. The path of evolution taken by natives to our region has turned toward sclerophylly—an adaptation to hard, leathery leaves usually much smaller than those gardeners are used to. But they possess a

about five feet and will form thickets.

The taxonomy of the buffalo or clove currant (*Ribes aureum*) offers a good example of how shaky the concept of a species can be. The plant is very similar to the Midwestern *Ribes odoratum*, but is described as having glabrous rather than softly hairy leaves and other distinctions of little interest to gardeners. The two may in fact represent variants of a single species—



MICHAEL S. THOMPSON

beauty all their own. In order to prevent transpiration of moisture, plants have evolved leaves covered with hairs of varying fineness, or with sticky or waxy coatings, all of which cause leaves to appear less green and more gray, blue, or silver.

There are a few desirable shrubs with "normal" green leaves. The Smith buckthorn (*Rhamnus smithii*), from extreme southern Colorado, northern Arizona and New Mexico, and western Texas, has beautiful glossy green leaves, pretty black berries, grows slowly to about five feet, and does fairly well in even excruciatingly dry soil in light shade.

The skunkbush or three-leaved sumac (*Rhus trilobata*) grows everywhere in dry parts of the West and looks less like a sumac than a dwarfed box elder gone wrong. The three lobes of the green leaves are oval, unlike most garden sumacs, and some forms become a lustrous dark red in the fall. The flowers are insignificant—minute yellow pinheads in tiny clusters. More interesting are the hairy red berries that when crushed have a pungent aroma, similar to citrus. They have been used by Native Americans as a deodorant and, dried and mixed with water, as a treatment for smallpox. The shrub grows slowly to



DAVID CAVAGNARO

**Drought-tolerant Western shrubs include green-leaf manzanita, top, with pendulous pink flowers that highlight its evergreen foliage and reddish bark, and clove-scented buffalo currant, above, which produces forsythialike yellow flowers in spring and edible black berries in midsummer.**



the clove currant on its westward march, as it were. It is recognizably a currant, about five feet tall and wide. Not only can it be grown without irrigation, but withholding water will curb a tendency to sucker. It can be used as a forsythia substitute, since every spring it produces masses of yellow tubular flowers, sometimes tinged with red, that are intensely scented of cloves. One plant will perfume an entire city garden, although the scent is strangely intermittent—now you smell it, now you don't. Some plants have no scent at all at any time, so choose any you purchase while they're in bloom. The black berries are edible and make superior raisins; birds think so, too. The deep red fall color is superb.

The rose family gives us some of the most unusual and fantastically evocative plants for Western gardens and landscapes. Among the most beautiful are the mountain mahoganies in the genus *Cercocarpus*.

The toothed leaves of true mountain mahogany (*C. montanus*) are gray-green with conspicuously fuzzy undersides and may be semi-evergreen in mild climates. The petal-less yellow flowers are almost microscopic, but the branching habit is attractive and the bark is vaguely silver. Twisting plumed seed heads, reminiscent of a clematis, are typical of this genus, but this species seems to have the showiest of all; in late summer and early fall, the shrubs look as though they're wreathed in smoke. True mountain mahogany grows about four feet tall here and gives a gray-green cast to our foothills; with binoculars, I can see several thousand from my window.

Curl-leaf mountain mahogany (*C. ledifolius*) can become a small tree. It has inch-long, leathery leaves that curl slightly at the tips, the same flowers and twisted seed heads, and ravishing silver bark that makes it a beautiful asset to a winter garden. Little-leaf mountain mahogany (*C. intricatus*) is similar but has very tiny revolute leaves, a more densely branching habit (as the specific name suggests), and does not get as tall as *C. ledifolius*. The new growth is covered with a beautiful silvery brown indumentum—a coat or covering of feltlike hairs.

The Apache plume, or feather rose, is *Fallugia paradoxa*, a genus of only one species with persistent (not quite evergreen), relatively tiny, pinnately dissected leaves and slightly arching branches that become somewhat shaggy with age. The white single flowers are produced throughout the growing season, as are the pinkish brown, feathery achenes, or fruits, that



DAVID CAVAGNARO



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A semi-evergreen shrub with twisting plumed seed heads typical of the genus *Cercocarpus*, true mountain mahogany, left, rarely grows over four feet tall. But curl-leaf mountain mahogany, above, which has silver bark, tiny yellow flowers, and the same whimsical seed heads, can grow into a small tree.



## SOME TOUGH EXOTICS

I would dispute that gardening only with native plants is more environmentally sound than gardening that includes adapted exotics. The purpose of "dryland" gardening is not to be exclusive, but to free us from dependence on irrigation—which is hard work as well as a waste of precious water that could be saved for drinking—and from excessive fertilizer and pesticide use.

A few commonly grown shrubs from homologous climates in Asia have proven equally worthy when left to themselves in Denver. And recent expeditions, notably by Czech collectors, show that central Asia is a potentially important source of untried xerophytic shrubs that would be suitable for our Western gardens.

Currently, however, cold-hardy, drought-tolerant exotics are about as hard to find in the trade as our natives. The cold, dry regions of the world have not traditionally been considered botanical hunting grounds, and most nurseries tend to offer plants from wetter climates. Shrubs usually characterized as drought tolerant often fail to make the grade in the cold, high deserts. Lilacs (*Syringa vulgaris*) are a good example. While they will not necessarily die, their blooming will be seriously affected after the first year of prolonged drought, and they are likely to produce fewer and fewer leaves with each returning spring. In my garden, they begin to wilt and eventually lose their leaves after two or three weeks without moisture.

A few familiar plants do seem to revel in very dry situations. A butterfly bush cultivar, *Buddleia alternifolia* 'Argentea', grows behind our tool shed in the worst imaginable soil, without watering, and gets better every year, as does *Cotoneaster acutifolius* on the other side. (Other cotoneasters seem both less drought tolerant and less hardy.)

The Nanking cherry (*Prunus tomentosa*) will also grow well in very dry sites. For us, however, it has the irritating habit of carelessly letting the flowers open just before the worst frost of spring, so it mostly fulfills the requirement of being a large Green Object in a space where we need one.

Pyracantha, a shrub never recommended for our climate, is also widely grown, sometimes in appalling conditions. There is an extensive planting around a bunch of car repair shops, growing in almost pure sand and mulch with glaring white river rock and windblown trash. Equally rugged but rarely planted is *Fontanesia fortunei*, the "desert bamboo" from China. It's a tall, slender shrub with narrow eight-inch-long green leaves and inconspicuous flowers. You'll stump even your botanist friends with a leaf or two of this one.

I suspect that there are many roses native to dry climates—such as the yellow-flowered *Rosa xanthina*, *R. ecae*, and *R. kokanica*—that would be drought tolerant, but I suspect they would be equally pest ridden. I grew the yellow *R. hugonis* with my dryland shrubs for a few years until it got rose-stem girdler and I chopped it down. The hybrid 'Frühlingsgold' from Wilhelm Kordes of Germany will also take quite dry conditions and is a ravishing thing in its season, but I find that most roses, watered or not, tend to attract every pest imaginable. After much agonized debate, I finally removed 'Frühlingsgold' and have not missed its curculio-perforated buds a bit.

—Robert Nold

supposedly resemble an Apache headdress. The combination of soft colors makes a very pleasant sight in the dry garden. It grows to about eight feet tall and as wide. The Apache plume has a more southerly distribution than some of these dryland shrubs—from Utah south to Mexico, and into California—and a distinct preference for very dry soil.

*Purshia tridentata*, the antelope bitterbrush, is described in references as growing to 10 feet, but is usually seen much smaller, to three feet or so, with tiny lobed leaves that are more or less evergreen. In May it produces masses of yellow flowers very

similar to those of *Potentilla fruticosa*. It's common throughout the dry parts of the Rocky Mountains and Great Basin, and is said to be very sensitive to over-watering. Bitterbrush is considered to be one of the finest plants for range forage, so gardeners planting this shrub in deer-infested areas should be advised of its delectable qualities beforehand.

Also a favorite with deer is the very similar cliff rose (*Purshia stansburiana*), which can grow to the size of a small tree under favorable conditions, but is usually seen as a six-foot shrub with evergreen leaves almost identical to those of bitterbrush. The

fragrant, pale yellow flowers are also similar, but are produced in June. The peeling reddish brown bark on older plants is a nice complement. The seed heads are pretty, too, with twisting feathery styles like those of *Cercocarpus*. The plant has had dozens of names, the most common being *Cowania mexicana*, but classifying it as anything other than *Purshia* makes no sense to me. Its native range includes Southern California, Arizona, New Mexico, into Colorado, Utah, and Nevada.

*Chamaebatiaria millefolium*, whose generic name hardly trips off the tongue, is also known as fernbush, tansy bush, and desert sweet. The leaves are very like tansy's, only tinier and pointed. Another shrub with reddish brown bark, this one grows about five feet tall and in midsummer has a profusion of tiny white flowers, a little like those of a chokecherry. The plant has a wonderful, unusual resinous fragrance, particularly after a rain. Fernbush has the delightfully odd habit of leafing out in January, when spring seems impossibly far away. Its distribution is more westerly than some of these shrubs and includes Arizona, California, Utah, Nevada, into Idaho, Wyoming, and even eastern Oregon.

The western Great Basin, in Nevada and reaching into eastern California, brings us the desert peach (*Prunus andersonii*), which tolerates cold snaps better than some commonly grown ornamentals in the same genus and is a very fine addition to the dry landscape. Desert peach grows about three to four feet tall, has smallish glaucous blue leaves, a rather twiggy appearance, and masses of pink flowers in spring. The small hard "peaches" themselves are essentially inedible.

All of these shrubs will grow—*should* be grown—without supplemental watering once the plants are established. But young dryland plants need as much water as any other garden shrubs when they're first planted. (I heard of one gardener who spent a small fortune on Western natives, planted them, and never watered them, assuming they would be fine. They were not.) Also remember to gently wash off any soil-less mix surrounding the roots, and plant the shrubs with their roots in direct contact with the native soil.

Finding sources of these native dryland shrubs is not as frustrating as you might expect. True, you don't just go into any local nursery and buy a truckload, but tracking them down is half the fun. If all else fails,





Leafing out as early as January, fernbush, above, is an aromatic shrub with clusters of tiny white flowers highlighting its delicate, lacy foliage. Cliff rose, left, clings to unlikely surfaces and produces fragrant yellow flowers in June.

you can grow them from seed. This is daunting for some people, necessitating an otherwise intolerable degree of patience, but it can be done. I am not immune to a sense of urgency and prefer to buy plants when I can. Collecting plants from the wild, even in instances where it could be done legally, is impossible. You will never find the ends of the roots—not with a mere hand shovel anyway.

Researchers are finding that many shrubs from warmer climates may have more northerly distributions than previously expected. Collections from these locations may provide us with still more hardy plants for experimentation. A good example is the desert willow (*Chilopsis linearis*). A population of this plant, usually rated hardy only to USDA Zone 8, has been found in New Mexico, and while they won't grow to the size of small trees here as they do in Arizona, they will reach about 12 feet and endure temperatures down to at least 25 degrees below zero. Although the plant has long willow-like leaves, it isn't a willow at all but a relative of the catalpa and trumpet vine. It produces clusters of beautiful pink, catalpa-like flowers in summer. In its native habitat, desert willow grows along watercourses, so it will tolerate some summer watering although it really doesn't require any.

Many of these desert or semi-desert shrubs have characteristics so evocative of their Southwestern homes that they look odd grown next to "traditional" garden plants. Effective underplantings include cacti, penstemons, and various desert daisies such as species of *Coreopsis*, *Baileya*, *Berlandiera*, and *Melampodium*. This is only a matter of personal taste, however. The English have been growing many of these shrubs—with perfect drainage, of course!—in their wonderfully eclectic gardens for more than a century.

Robert Nold is a free-lance writer living in Lakewood, Colorado.

## SOURCES

Bear Creek Nursery, P.O. Box 411, Northport, WA 99157-0411. Will send a catalog for two first-class stamps.

Forestfarm, 990 Tetherow Road, Williams, OR 97544. Catalog \$3.

Plants of the Southwest, Agua Fria, Route 6, Box 11A, Santa Fe, NM 87505. Catalog \$3.50.



# Scintillating Scadoxus

*The African “shaving brush” makes a striking statement in the garden.*



JOHN E. BRYAN

B Y J O H N E . B R Y A N

**S**cadoxus is a genus both little-known to gardeners and confusing to botanists. There are several forms that flower at different times, and even the experts can't agree on whether they grow from bulbs or rhizomes. Many sources still list them under a former name, *Haemanthus*.

The botanical details of the rootstock aren't really important in the garden, however, and no one can deny the beauty of the flowers, perhaps more correctly referred to as flower heads. *Scadoxus* is in Amaryllidaceae, so one would expect the flowers to be tubular and resemble the amaryllis. But *Scadoxus* tepals—neither distinctly petals nor sepals—are short and quite small and

not joined into a tube. The bloom's beauty is due instead to its many stamens—glowing red filaments tipped with golden pollen. Appearing on 14-inch to two-foot stems, depending on the species, the stamens are crowded together so that they give the impression of a shaving brush, which is one of the genus's common names. Others include paintbrush, blood lily, torch lily, and snake lily. Gardeners may find the pincushion cluster of stamens, which forms a globe up to 10 inches in diameter, reminiscent of an *Allium*, except that most of the flower heads are red or shades of red, with only one white form.

The bold, light green foliage is unlike any other in my garden. The stem bearing

the flower appears alongside a false stem, formed by the curled bases of the leaves. This strong stem, rising in the garden with a purposeful air, is where this plant bears the greatest resemblance to amaryllis.

*Scadoxus* species were grouped with *Haemanthus* for more than two centuries. In 1753 Linnaeus gave them that name, derived from *haima*, meaning “blood,” and *anthos*, meaning “flower.” Records indicate that these plants were introduced into cultivation in England in the 19th century, and they enjoyed possibly their greatest popularity there during the Victorian era, when many wealthy and even middle-class families had a conservatory or greenhouse. At that time it was almost considered a patriotic duty to collect plants from various parts of the British Empire, as if growing South African species gave some moral support to troops fighting in the Boer War.

In 1976 two Swedish botanists, Ib Friis and Inger Nordal, reviewed *Haemanthus* and divided the genus, leaving there those plants with true bulbs and classifying those with rhizomatous rootstocks as *Scadoxus*. This was a reinstatement of a generic name coined by the naturalist Constantine Rafinesque from the Greek word *skiadion*, meaning “parasol,” and *doxa*, meaning “glory” or “splendor.”

A bulb is made up of leaves modified for storage, but still recognizable as leaves. A rhizome is an underground stem, also modified for storage, that grows horizontally. It is understandable that *Scadoxus*' rootstock confused scientists, since it appears to be a combination of a bulb on top of a rhizome.

**Striking flower heads make *Scadoxus* a real attention-getter.**



Another reason that Friis and Nordal split these into two genera is that while *Haemanthus* have fleshy leaves arranged in two distinct rows, often producing only two leaves that lie on the ground, *Scadoxus* have numerous thin-textured leaves with a distinct midrib, and leaf bases that often form a false or "pseudo" stem.

There are three species of *Scadoxus* native to South Africa and possibly as many as seven growing in tropical Africa, although it is impossible to find anything about the latter in the literature. I first saw *Scadoxus* in the eastern Transvaal of South Africa, but really fell in love with them when I saw them blooming in all their magnificence at Victoria Falls, which spans the border between Zimbabwe and Zambia in central southern Africa.

In my San Francisco garden I have a couple of *Scadoxus multiflorus* subsp. *multiflorus*, the subspecies that occurs at the falls. Over a period of eight weeks they add a dash of color and arouse a lot of comment because of their unusual form and bold foliage. They bloomed the first year and then skipped a season, so I concluded that as new immigrants they tried to follow the customs of home, where they would normally bloom in late September to November, which is early summer there. They made good growth and finally bloomed in June, the appropriate time in their new hemisphere.

Outdoors, *Scadoxus* appreciate shade—heavy shade in hot areas, dappled shade where temperatures are more moderate—and a humus-rich, well-aerated soil. During the growing season, they should have frequent feedings with liquid fertilizer.

The rootstocks should be planted with the necks at or just slightly above ground level, and at least 18 inches apart to give their large leaves ample room. I like to grow them among azaleas, where they add color and interest when the azaleas have finished flowering in spring.

All species are great pot plants for indoor culture—they should be planted one to a 10-inch container—but while the foliage on most will die back for one or two months after producing seed, that of *S. multiflorus* subsp. *katherinae* is evergreen, making it especially ideal as a house plant, or in a greenhouse where the temperature will not drop below 45 or 50 degrees at night.

Once they are planted, whether in a container or in the border, they should be left undisturbed for many years. They can be propagated from offsets taken when they have finished flowering, or raised from seeds that are produced inside small scar-

let berries. Here in San Francisco, however, it seems that the temperature just isn't warm enough for seeds to ripen. My plants produce green berries that, instead of turning red, just drop off.

Catalogs generally still list both *Scadoxus multiflorus* subspecies under *Haemanthus*. These bulbs are not inexpensive at up to \$10 or \$11 each, but in my opinion they are well worth every cent. I have never seen a catalog listing for *Scadoxus puniceus*, known as royal paintbrush, which I think could be one of the hardiest species. It is at home in the eastern Cape Province of South Africa, often at high altitudes, and in the Transvaal, where I have seen it above 6,000 feet. But even this species probably could not be grown outdoors north of USDA Zone 8.

It is interesting to try to fathom why certain plants have bulbous rootstocks. Most bulbous plants face, at a given period of their annual life cycle, climatic conditions that are far from ideal for their growth, and knowing what these are allows us to give them the growing conditions that will suit them best. The tulip, for instance, comes from areas in Asia Minor where the winters are extremely cold and the summers are unbearably hot and dry, so it makes sense for them to "sleep" through these difficult periods. For this reason they are not happy in Florida. Daffodils need no watering in late summer, when rain in their Mediterranean homeland is scarce.

When I first considered *S. multiflorus* subsp. *multiflorus*, I was quite honestly baffled. Here was a plant living in a mild tropical climate, with the moisture of Victoria Falls providing plenty of humidity. It finally dawned on me that the plants, subject to the constant condensation and spray from the plunging water, have too much moisture in the summer, so that it made perfect sense for them to become dormant during that period when, in addition, the canopy is so luxuriant that there is a lack of sufficient light.

One can't help but marvel at the many ways plants adapt to their habitats. Track down a *Scadoxus* of your own, and you can marvel at its fascinating flower as well.

*John E. Bryan is the author of seven books, including the two-volume Bulbs. This article is the second in a series.*

## SOURCES

McClure and Zimmerman, 108 W. Winnebago, P.O. Box 368, Friesland, WI 53935, (414) 326-4220. Catalog free.

*Canopy, continued from page 24*

his mind because, he said, "People are talking to each other again."

At that moment I realized my mission was a lot bigger than planting trees. A popular program brings people together. While we may disagree about traffic control or building restrictions, almost everyone loves the trees.

Another compliment I remember with fondness came from Theodore Klein. He told me I had "tree sap running in my veins." If I do, the sap was a transfusion from pioneers like Theodore. And it has been fortified by a hundred generous nurserymen and collectors, all feeding on each other's excitement and knowledge.

We in Seneca Gardens did not set out to create a neighborhood arboretum. We stumbled across the concept after planting hundreds of uncommon species in public view. But now that we have discovered it, we feel we have a secret that is too good to keep.

Other communities can and should do it. You do not need money or expertise to start. You don't even have to know the difference between an oak and a maple. What you will find useful are passion and persistence.

*Michael Hayman is serious. If you would like to start your own community arboretum, he will give you some pointers. Write him at 2548 Seneca Drive, Louisville, KY 40205, or call him at (502) 459-1130.*

## SOURCES

Because many of the plants mentioned in the article are still being evaluated or are new to the trade, only a few are available from mail-order sources.

Yellow-leaved lacebark elm (*Ulmus parvifolia* 'Aurea') and fruitless osage orange (*Maclura pomifera* 'White Shield'): Sunshine Nursery, Route 1, Box 4030, Clinton, OK 73601, (405) 323-6259. (Not normally mail order, but has agreed to ship these for our readers.)

Variegated redbud 'Silver Cloud': Arborvillage Farm Nursery, P.O. Box 227, Holt, MO 64048, (816) 264-3911.

'Butterflies' yellow-flowered magnolia hybrid: Wayside Gardens, P.O. Box 1, Hodges, SC 29695, (800) 845-1124.

Seven-son flower (*Heptacodium miconioides*): Forestfarm, 990 Tetherow Road, Williams, OR 97544, (503) 846-7269, and Wayside Gardens.

Green striped-bark maple 'White Tigress' (*Acer tegmentosum* hybrid): Arborvillage Farm Nursery.



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*A. uva-ursi* A. yew-vuh-UR-sigh  
*Argythamnia blodgettii* ahr-jih-THAM-nee-uh blah-JET-tee-eye  
*Aristolochia gigantea* uh-ris-toe-LO-kee-uh jy-GAN-tee-uh  
*Asclepias incarnata* as-KLEE-pee-us in-kar-NAY-tuh  
*A. tuberosa* A. too-bur-OH-suh  
*Aster novae-angliae* ASS-tur no-vee-ANG-lih-ee  
*Baileya* BAY-lee-uh  
*Bellis perennis* BEL-lis pur-EN-iss  
*Berlandiera* bair-lon-DEER-uh  
*Betula papyrifera* BET-yew-luh pap-ih-RIH-fer-uh  
*Buddleia alternifolia* BUD-lee-uh al-tur-nih-FOE-lee-uh  
*B. davidii* B. duh-VID-ee-eye  
*Bursera simaruba* bur-SAIR-uh sim-uh-REW-buh  
*Caragana arborescens* kair-uh-GAN-uh ar-boh-RES-enz  
*Casuarina equisetifolia* cass-yew-uh REE-nuh eh-kwi-seh-tih-FOE-lee-uh  
*Cephalanthus occidentalis* seh-uh-LAN-thus ahk-sih-den-TAL-iss  
*Centaurea montana* sen-TAW-ree-uh mon-TAN-uh  
*Cercidiphyllum japonicum* sur-sid-ih-FIL-lum jah-PON-ih-kum  
*Cercocarpus intricatus* sur-koh-KAR-pus in-trih-KAY-tus  
*C. ledifolius* C. leh-dih-FOE-lee-us  
*C. montanus* C. mon-TAN-us  
*Chamaebatiaria millefolium* kam-eh-bah-tee-AIR-ee-uh mih-lih-FOE-lee-um  
*Chamaesyce pinetorum* kam-eh-SY-see py-neh-TOR-um  
*Chasmanthium latifolium* chas-MAN-thee-um lat-ih-FOE-lee-um  
*Chilopsis linearis* ky-LOP-siss lih-nee-YAR-iss  
*Clethra alnifolia* KLETH-ruh al-nih-FOE-lee-uh  
*Coccothrinax argentata* koh-koh-THRY-nax ar-jen-TAH-tuh

*Coreopsis* koh-ree-OP-sis  
*Cotoneaster acutifolius* koe-toe-nee-ASS-tur ak-yew-tih-FOE-lee-us  
*C. multiflorus* C. mul-tih-FLOR-us  
*Cowania mexicana* ko-WAH-nee-uh mex-ih-KAN-uh  
*Dianthus barbatus* die-AN-thus bar-BAY-tus  
*Duranta repens* dew-RAN-tuh REP-enz  
*Erianthus ravennae* air-ee-AN-thus ruh-VEN-ee  
*Eriophyllum staechadifolium* air-ee-owe-FIL-lum stee-chad-ih-FOE-lee-um  
*Euonymus alata* yew-ON-ih-mus ah-LAY-tuh  
*E. europaea* E. yew-roh-PEE-uh  
*E. fortunei* E. for-TEW-nee-eye  
*E. kiautschovica* E. kee-atch-OV-ih-kuh  
*Fallugia paradoxa* fah-LEW-gee-uh pair-uh-DOK-suh  
*Fontanesia fortunei* fon-tah-NEEZ-yuh for-TEW-nee-eye  
*Galium odoratum* GAY-lee-um oh-doh-RAY-tum  
*Habenaria* hab-eh-NAIR-ee-uh  
*Haemanthus* he-MAN-thus  
*Halesia diptera* var. *magniflora* hal-EEZ-yuh DIP-tur-uh var. mag-nih-FLOR-uh  
*Hamamelis vernalis* ham-uh-ME-liss vur-NAL-iss  
*H. virginiana* H. vir-jin-ee-AN-uh  
*Heptacodium miconioides* hep-tuh-KOH-dee-um my-koh-nee-OY-deez  
*Hibiscus syriacus* high-BISS-kus sih-ree-AH-kus  
*Hippomane mancinella* hip-poh-MAY-nee man-sih-NEL-luh  
*Ilex verticillata* EYE-leks vur-tih-sih-LAY-tuh  
*Itea virginica* eye-TEE-uh vir-JIN-ih-kuh  
*Jacquemontia curtiisii* jah-kweh-MON-tee-uh kur-TISS-ee-eye  
*Linaria vulgaris* lih-NAIR-ee-uh vul-GAIR-iss  
*Linum perenne* LIE-num pur-EN-ee  
*Liquidambar formosana* lik-wid-AM-bur for-moh-SAN-uh  
*L. orientalis* L. or-ee-en-TAL-iss  
*L. styraciflua* L. sty-rass-ih-FLEW-uh  
*Lobelia cardinalis* low-BEEL-yuh kar-dih-NAL-iss  
*Maclura pomifera* muh-KLURE-uh pom-IF-ur-uh  
*Mahonia aquifolium* mah-HO-nee-uh ah-kwi-FOE-lee-um  
*Malus coronaria* MAL-us kor-oh-NAIR-ee-uh  
*Medicago arabica* med-ih-KAY-go uh-RAB-ih-kuh  
*Melampodium* meh-lam-POH-dee-um  
*Metopium toxiferum* meh-TOH-pee-um tok-SIH-fur-um  
*Myriophyllum aquaticum* mir-ee-owe-FIL-lum ah-KWAT-ih-kum

*Oenothera biennis* ee-no-THEE-ruh by-EN-iss  
*Oxalis acetosella* auk-SAL-iss ass-eh-toh-SEL-luh  
*Physostegia virginiana* fie-so-STEE-juh vir-jin-ee-AN-uh  
*Pieris* PY-air-iss  
*Pinus elliottii* var. *densa* PIE-nus el-lee-OT-ee-eye var. DEN-suh  
*P. thunbergii* P. thun-BUR-jee-eye  
*Platanthera leucophaea* pluh-TAN-thur-uh loo-koh-FEE-uh  
*P. praeclara* P. pre-KLAIR-uh  
*Pontederia cordata* pon-tuh-DEER-ee-uh kor-DAH-tuh  
*Potentilla fruticosa* poh-ten-TIL-luh froo-tih-KOH-suh  
*Prunus andersonii* PROO-nus an-dur-SOWN-ee-eye  
*P. tomentosa* P. toh-men-TOH-suh  
*Purshia stansburiana* PUR-sha stanz-bur-ee-AN-uh  
*P. tridentata* P. try-den-TAY-tuh  
*Quercus dentata* KWUR-kus den-TAY-tuh  
*Q. robur* Q. ROE-bur  
*Rhamnus smithii* RAM-nus SMITH-ee-eye  
*Rhododendron viscosum* roh-doh-DEN-dron viss-KOH-sum  
*Rhus copallina* RUS koh-pah-LIE-nuh  
*R. trilobata* R. try-low-BAY-tuh  
*Ribes aureum* RIE-beez AW-ree-um  
*R. odoratum* R. oh-doh-RAY-tum  
*Rosa ecae* ROH-zuh EH-see  
*R. hugonis* R. hew-GO-nis  
*R. kokanica* R. koh-KAN-ih-kuh  
*R. xanthina* R. zan-THEE-nuh  
*Saponaria officinalis* sap-oh-NAIR-ee-uh oh-fiss-ih-NAL-iss  
*Scadoxus multiflorus* subsp. *katherinae* skah-DOK-sus mul-tih-FLOR-us subsp. kat-uh-REE-nee  
*S. multiflorus* subsp. *multiflorus* S. mul-tih-FLOR-us subsp. mul-tih-FLOR-us  
*S. puniceus* S. pew-NIH-see-us  
*Schinus terebinthifolius* SHY-nus tair-uh-bin-thi-FOE-lee-us  
*Sciadopitys verticillata* sigh-ah-DOP-ih-tiss vur-tih-sih-LAY-tuh  
*Syringa vulgaris* sih-REENG-guh vul-GAIR-iss  
*Trifolium dubium* try-FOE-lee-um DOO-be-um  
*T. pratense* T. pray-TEN-see  
*T. procumbens* T. pro-KUM-benz  
*T. repens* T. REP-enz  
*Ulmus parvifolia* UHL-mus par-vih-FOE-lee-uh  
*Zamia pumila* ZAY-mee-uh PYEY-mih-luh  
*Zanthoxylum coriaceum* zan-tho-ZIE-lum kor-ee-AY-see-um







# STUDY TOURS

## TRAVEL/STUDY TRIPS FOR THE AHS GARDENER

### SEPTEMBER 25-OCTOBER 8, 1995 GARDENS OF PORTUGAL AND MADEIRA

This program begins on the garden island of Madeira, located some 600 miles off the Portuguese coast, and concludes in Lisbon. Visits along the route include Porto, Aveiro, Buçaco, Coimbra, Batalha, Nazaré, Óbidos, Sintra, and Estoril. The itinerary encompasses a marvelous collection of private gardens, many featured in Patrick Bowe's latest book, *Gardens of Portugal*. Notable collections of rare and endangered plants can be found in a number of these private gardens, including Quinta do Palheiro Ferreiro, a garden created by the Count of Carvalhal and now owned by Adam and Christina Blandy. South of Lisbon, a visit will be made to Quinta da Bacalhoa, owned by Mrs. Herbert Scoville of Connecticut, of which Russell Page wrote, "For sheer boldness and simplicity of plan, the garden is one of the most striking in all of European garden art." A selection of superb hotels is complemented by visits to historical sites. Leading this program will be past AHS Board member André Viète and his wife, Claire, of Fishersville, Virginia.

### OCTOBER 30-NOVEMBER 20, 1995 GARDENS OF SOUTHEAST ASIA

One of the exciting aspects of the AHS Travel Study Program is the opportunity to explore otherwise inaccessible areas of the world. Gardens of Southeast Asia is a perfect example. We will be visiting Vietnam and Myanmar (formerly Burma), two countries only recently opened to foreign visitors. The itinerary also includes Thailand, Malaysia, and Singapore. An overnight train excursion on the new Eastern and Orient Express will take us from Kuala Lumpur to Singapore in beautifully restored historic rail cars. Included in the itinerary will be a visit to Pagan, acclaimed as one of the greatest sights in all of Asia. Here on a plain stretching from the banks of the Irrawaddy River stand ruins of glorious temples and graceful small pagodas—all that remains of this Burmese royal city. Leading this program will be AHS Board member William Pusey and his wife, Patti, from Arlington, Virginia.

Leonard Haertter Travel Company, 7922 Bonhomme Avenue, St. Louis, MO 63105  
(800) 942-6666, (314) 721-6200 (in Missouri)

*Participants in our fall trip to Portugal and Madeira will visit the gardens of the Palácio de Queluz, which are among the most elegant in Portugal.*

PHOTO BY NUNO CALVET