

PREMIERE ISSUE: *For Avid, Earth-Conscious Gardeners*

THE AMERICAN GARDENER

A Publication of the American Horticultural Society

May/June 1996 \$3.95



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On the cover: In permaculture, most plants serve dual roles. Daylilies have edible tubers and can help reduce erosion. Photo by Lee Klopfer



American Horticultural Society

7931 East Boulevard Drive
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(703) 768-5700

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commentary

Welcome to *The American Gardener*. It was input from you, our members, more than a year ago that steered us in a new direction for our publications to make them more inspiring and your gardening experiences more successful. We are all the American Horticultural Society, but it is our individual readers who are the gardeners—the American gardeners—we serve.

If you have been a member for a decade or more, you will know that this is not our first change in style and concept. And while some may believe the name change means we are abandoning our history—the Society will celebrate its 75th anniversary next year—*American Horticulturist* is only 22 years old, having been preceded by *The National Horticultural Magazine* and then *The American Horticultural Magazine*. All you have to do is find an old copy of your hometown newspaper in the attic or review other long-time favorite magazines to realize that change—orderly change to a newly defined goal—is part of our age of communications. I urge you to let us know what you think. Only together can we serve your best interests. (Note: Although this issue was printed in April, we are calling it May/June so that we will end the year without overlapping a calendar year. This year as always you will receive six issues of our color magazine—but five of them will be bigger and better!)

The American Gardener has been designed with more prominent captions, sidebars, source boxes, and other features to help you obtain information more quickly. You will find all of the features you are used to seeing in both our magazine and News Edition. The feature section of the News Edition, highly praised for stories on such topics as invasive non-native plants, is now called Focus, and can be found this month beginning on page 46. News Edition departments such as the popular Mail-Order Explorer are here as well, now with color photographs. In most issues, you will find a short feature on using that most modern tool, the computer, in your gardening.

In our feature section, Texas writer Andy Wasowski describes alternatives to the traditional turf lawn, including natives seldom used for that purpose. And in response to a reader's request, we share ideas from three experts about a wide array of plants for hedges. Both stories are intended to open your eyes to many more possibilities. Vines are just one way to create a landscape screen, and a third feature highlights some little-known ones: our native clematis, with delicate flowers and delightful persistent seed heads.

Finally, we visit two gardens designed around the philosophy called permaculture, which uses terracing, harvesting of rainwater, drought-tolerant plants, and other techniques to create gardens in concert with the environment.

We hope this magazine shows how AHS has accepted your challenge: to gather as much information as possible and give it back to all sections of our country.



H. Marc Cathey

H. Marc Cathey, AHS President



members' forum

LOSS OF A GOOD THING

The decision by the Board of Directors to incorporate the News Edition into the magazine halves the primary benefit of my AHS membership and is contrary to "our mission (which) is to supply informational resources within the expanding horizons of horticulture..." (H. Marc Cathey, *American Horticulturist*, December 1994). Nor is it what I was led to expect to be the outcome of the September 1994 member survey in which no forthright statement of intent to go bimonthly was presented, so no feedback on this topic was honestly elicited.

Most bimonthly publications cost less than half AHS dues. Hmm. I was not given a choice to save the News Edition by increasing my dues or cutting back elsewhere (e.g., River Farm). Nor was a fundraising campaign attempted. Why not?

The manner in which this decision was made disenfranchises me and the entire membership. It also reflects badly on the leadership of a society whose basic nature is nurture—a society of gardeners who I believe generally attempt to save and preserve a good thing.

Chris M. Smith
Newburgh, New York

Your letter illustrates our "split personality." Readers wouldn't expect publishers of other garden magazines to consult them about plans to change formats (which many of the other magazines are doing). Yet there is a sense of ownership in regard to the *American Horticultural Society* because it is a membership organization, not just a publication. Therefore, members' dues support other activities such as our Seed Exchange, Gardeners' Information Service, Youth Gardening Symposia, and other lectures and workshops. (Upkeep of our River Farm headquarters is supported to a large extent by local activities, such as our annual Gala and rentals.)

And there is in fact a fundraising campaign every year that helps offset all AHS expenses including the magazine—our Annual Appeal. Our publications are only

partially supported by advertising, and recent increases in paper and postage brought us to the decision point, as they have many others. Had a majority of our members said they preferred the News Edition, or if the preference had been 50-50, our resulting publication line-up might have been fewer magazines and more News Editions, which were much less expensive to produce. But most members, forced to choose, clearly like a color magazine. By eliminating the redundancies—covers, contents pages, classified ads—we have been able to give readers only 24 fewer pages a year, plus what we hope is a more readable publication.

We were pretty fond of the News Edition ourselves, and we hope that you see some of its spirit reflected in our Focus section.

BIASED REVIEW?

You have done the American Horticultural Society and its members a disservice when you allow someone as biased as Sara Stein to do your book reviews (*The Wild Lawn Handbook* by Stevie Daniels, December). I'm not sure where she obtains the figure of "10,000 gallons a season for an average lawn," but did she realize that the trees in the lawn usually "drink" (lose through evapotranspiration) a lot more water than the lawn does? I have photographs of turf thriving without water when the invading roots of trees and shrubs are cut. A properly maintained lawn will go dormant during a drought and recover nicely when the rains return.

As to lawns not being able to "hold their water either," I would agree that they are not as good as ground covers, shrubs, and properly maintained trees, but her statement of "95 percent of rain is lost as runoff over a lawn's shallow sod" is ridiculous. She must have taken her data from a compacted grammar school playground.

She then gives us that old garbage about the runoff from lawns being "a rich brew—if you like your drink spiked with pesticides, topped with fertilizer suds." I would like to see some scientific research that supports that. And don't waste your

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The Winners Are...

THE FIRST 20 MEMBERS who responded to our November survey and thus received a copy of the *American Horticultural Society Encyclopedia of Gardening* are:

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DAVID WILDASIN, *York, PA*

Frances Mastrata generously donated her book to New York City's Operation Green Thumb, a community gardening program, and Martha Parriott donated hers to the Frank Good Library at Botanica, the Wichita Gardens. Thanks to everyone who helped us in our search for America's 75 best gardening events, gardening books, and plants. We will highlight them in our pages during our 75th anniversary in 1997.

time sending me *Toxic Fairways* by Robert Abrams, former attorney general of New York, or *The Lawn* by Virginia Scott Jenkins. If she thinks a lot of pesticides are applied to turf, she should see what is applied to horticultural crops.

Yes, I too am biased, as I make my living helping people properly maintain some of the nation's 24 million acres of turf. Believe it or not, I also garden as a hobby. The landscaping around my house contains its share of trees, shrubs, ground covers, and turf. The turf may not attract butterflies, but it does allow children and adults to play badminton and croquet.

Douglas T. Hawes, Ph.D.
Plano, Texas

SARA STEIN RESPONDS: *The figure for the amount of water required by the average lawn came from the reviewed book. I heartily agree that the figure could be substantially reduced if only people would come to appreciate crisp brown turf in summer.*

It is true, too, that trees lose water through transpiration, as does lawn grass. But lawns in addition lose water by rapid evaporation at the soil surface and, yes, through runoff. "That old garbage" about polluted runoff from lawns is of growing concern to ecologists monitoring water quality and is reported in scientific journals.

I didn't say that horticultural crops are of less concern. I certainly wouldn't feel comfy cutting the "invading" roots of trees and shrubs to advantage a lawn, as Dr. Hawes seems to recommend. Both I and the

author I reviewed suggest—and with more good humor than grumpiness—that gardening is more fun and less wasteful of resources when the requirements of the plants we choose accord with what the land can freely support. Turf grass just doesn't answer that description.

Believe it or not, I also play croquet. But the children keep wandering off into the meadow. I can't imagine why.

EDITOR'S NOTE: *The amount of water required by traditional lawn grasses is given as 10,000 gallons a summer in a 1989 article, "A Short History of Lawngrass." It was published by the Lawn Institute, an organization dedicated to promoting the use and appreciation of lawn grass.*

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

Corrections

Angela S. Anderson of Alexandria, Virginia, was inadvertently omitted from the list of donors to the 1996 Seed Exchange Program in our January News Edition.

In our February magazine, a photograph of *Primula capitata* growing in the garden of Richard and Alice Angino was incorrectly identified.



offshoots

MAKING THOSE OWL DECOYS WORK FOR YOU

by Lori S. Archuleta

We've all seen them, hanging from tree limbs near public parking areas or suspended from a pole over someone's garden. Owl decoys. They come in a variety of styles (inflatable and molded plastic), sizes (18 inches or 24 inches tall), and costs (from \$7.99 to \$17 and up). You'll find them in lawn and garden supply centers, hardware and feed stores, and sometimes even in department stores.

I've never owned one. My only experience has been in observing the ones at the public library (near the book-drop area). Nestled under the eaves of the drive-through is an attractive and realistic-looking owl decoy. But although it was placed there to keep pigeons from gathering, I had noticed fresh pigeon droppings nearby. I pointed this out to my husband and remarked that the decoy didn't appear to be doing its job. No sooner had I uttered these words than eight little feathered heads popped up and peered at us. Huddled closely together on either side of the owl decoy, the birds seemed to think it was there to protect instead of deter them. It was an amusing scene, and it got me to thinking.

Curious about whether or not these decoys might be of some benefit, I decided to do a survey. Randomly calling area homes, I asked consumers what they thought of the seemingly popular owl decoys, and whether they worked. Some people said the decoys worked rather well in keeping grackles and other "pests" out of their gardens. Others said it took only a day or two for the birds to realize that the owl was a phony, and then it was business as usual. Those who were satisfied with the decoys preferred the molded plastic variety. Although higher in cost, molded plastic owls outlasted the inflatable ones by a considerable period of time.

It was an interesting survey, but I was concerned. What about the poor individuals who had purchased one or more decoys with their hard-earned money, only to find that they didn't work? What could they do with all of those dud decoys now?

Dissatisfied consumers, take heart! Don't add your disappointing decoys to the nation's already overburdened landfills. You recycle your leaves, your newspapers, and your milk jugs, and there's no reason you can't recycle plastic owls as well. I've come up with several creative ways to get those decoys working for you.

INFLATABLE DECOYS

➤ Deflate and tape to a wall for use as a "pin-the-tail-on-the-owl" game at

your child's next birthday party. Helpful hint: The top of an old feather duster makes a great tail! For variety try playing "pin-the-beak-on-the-owl." Or how about "pin-the-ear-on-the-owl"? The possibilities are endless.

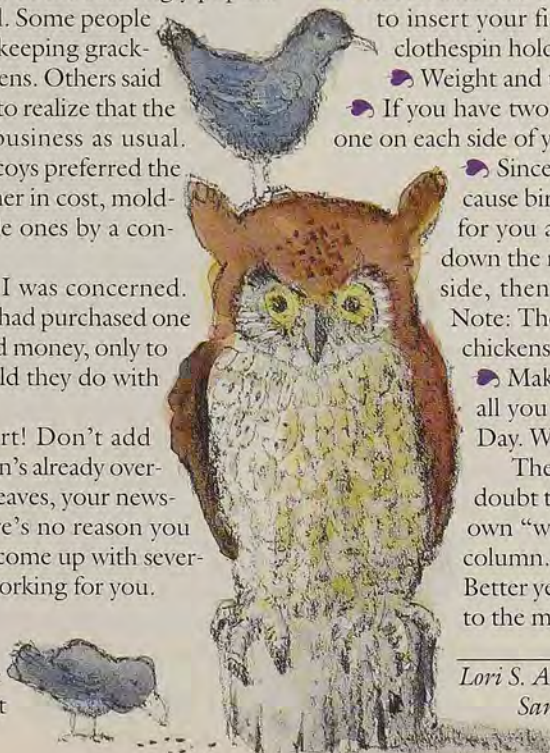
- Deflate, cut off bottom, hang on pole, and use as a windsock.
- Deflate and keep in your car. Suspend from your antenna when shopping at the mall. Your car will be much easier to spot!
- Deflate. Make a three-inch slit near the base. Insert a sandwich bag filled with three cups of sand. Sew or glue the slit closed, then use silicone to seal the seam; allow to dry. Inflate with air and use as a toy punching bag for children—they'll love it! (Adult supervision highly recommended.)
- Inflate two-thirds full. Tie twine around the neck. Put super glue on back of neck area (just over and under the twine); pinch together. Tie twine around the tail. Glue tail to the lower back area just over the twine. Decoy should now resemble a deformed duck. Glue a six-by-four-inch piece of heavyweight plastic to what is now the bottom. Make a duck's beak out of waterproof material and attach to head. Inflate until firm. You now have your own custom-made economy duck decoy...enjoy! (Makes a great gift!)
- Deflate and save as patch material for your waterproof camouflage clothing. (The pattern isn't the same, but the colors are a close match.)

MOLDED PLASTIC DECOYS

- Cut an oval hole in the center front of the decoy, large enough to insert your fist. Attach to your clothes line to use as a clothespin holder.
- Weight and use as a door prop.
- If you have two owls, you can weight them down and put one on each side of your driveway as elegant yard ornaments.
- Since they wouldn't work for you as decoys because birds weren't afraid of them, make them work for you as birdbaths instead! Simply cut vertically down the middle, head to talon. Lay each piece on its side, then fill with water. Presto...dual birdbaths! Note: These also make excellent feeding troughs for chickens or piggy pigs.
- Makes a great base for a table lamp for the den; all you need is the lamp kit. (Perfect for Father's Day. Won't Dad be surprised?!)
These are but a few possibilities. You could no doubt think of even more. We could even start our own "ways to make your owl decoy work for you" column. So go ahead, send your suggestions on in! Better yet, why not send your (friendly) suggestions to the manufacturers of the decoys instead?

Lori S. Archuleta is a free-lance writer living in San Benita, Texas.

ILLUSTRATION: BILL FIRESTONE





gardeners' information service

My wife loves house plants (I do the outside gardening) but seems to lack a green thumb when it comes to maintaining them. I think she kills them with kindness because no matter what the window's light exposure and no matter how much water they receive, the plants become wilted. Do you have any suggestions for house plants for windowsill gardeners like my wife?

—F. S., Austin, Texas



While it's difficult to diagnose causes without seeing the actual plants, I suspect from the way you word your question that your house plants are being killed with too much of a good thing, namely water. Most plants can't tolerate wet feet, yet many indoor gardeners admit they water daily if not twice a day. Overwatering deprives most plants of needed oxygen and makes them highly susceptible to root rot. The first symptom is often a wilted appearance, which is misinterpreted as a cry for water.

The urge to water plants constantly can be overcome. But if this act of fussing over plants is important to your wife's enjoyment of them, there are a few house plants that do well in wet soil.

A number of experts suggest the calla lily (*Zantedeschia* spp.), whose pots can be left standing in saucers of water when the plants are in active growth, according to Elvin McDonald, author of *The New Houseplant*. McDonald also suggests two other members of the arum family: *Acorus gramineus*, a water garden plant with iris-like leaves, and *Aglaonema modestum*, a plain-leaved species of Chinese evergreen that can be grown in water. You might also try *Cyperus*, which are sedges that like to be standing in water while in active growth and wet at other times. Best known is probably *C. papyrus*, the Egyptian paper plant.

McDonald recommends changing your soil mix to something more friable, perhaps adding perlite so that there is more space for roots to get oxygen and for excess moisture to evaporate efficiently. Use unglazed clay pots—glazed or plastic pots hold in moisture—and avoid growing small plants in big pots, another situation that can lead to overwatering.

The garden section of one of my magazines referred to a planting of tweedia. It looked beautiful, but I can't find the plant listed in any of my gardening books. Can you tell me a little about it?

—B. G., Chicago, Illinois

Even gardening books that do talk about this plant, *Tweedia caerulea*, usually use its former name, *Oxypetalum caeruleum*. It is also called southern star and blue milkweed, since it is a member of Asclepiadaceae. It is a native of South America, so must be grown as an annual in the United States. Not really a vine but more of a subshrub, it has twining stems to three feet tall. Its most spectacular feature is its flower color, described as a powder blue tinged with green that makes it almost turquoise, becoming lilac as it ages. Tweedia seeds were offered in the 1996 American Horticultural Society Seed Exchange Program, but they are probably depleted

by now and it is rather late to start them. You might try ordering seeds from Thompson & Morgan (800-274-7333) next year.

A popular Washington, D.C., restaurant has a dessert called Marion Berry, a fruit cobbler topped with ice cream. To some of us the fruit tastes like a cross between blueberry and raspberry. Is there really such a berry, or is it just a play on the name of Washington's mayor, Marion Barry?

—J. C., Washington, D.C.

Restaurants can get pretty fanciful with the names on their menus, but in this case your cobbler probably does contain a berry by that name. The marionberry is a trailing variety of blackberry, named for Oregon's Marion County, where it was developed. It has large berries that are sweet with a hint of wild blackberry flavor and vigorous canes that are easy to train because they are not as numerous as those of other trailing blackberries.

We are trying to establish a bird sanctuary, but we have a problem with stray cats and dogs. Can you suggest some thorny shrubs that grow eight to 12 feet high and might form a fence that animals can't penetrate? It would be preferable if the shrubs also produce fruit for the birds.

—J. E., North, South Carolina



Your needs are pretty specific, although you will also have to consider soil type, which you did not describe. You also did not indicate if you would prefer to plant natives, but that is what we will concentrate on here. You might consider one of the South's small native hawthorns. Parsley haw (*Crataegus marshallii*), which has foliage that looks almost like parsley and tiny red fruits, grows naturally in wet areas but will adapt to garden soil. The fruits of May haw (*C. aestivalis*) are good for jelly if the birds leave you any.

The American holly (*Ilex opaca*) may eventually outgrow your height limit, but it grows slowly and its spiny leaves may discourage wayward felines. There are endless cultivars and hybrids to consider that offer shinier leaves. You will generally need both a male and a female shrub for berries. University of Georgia horticulturist Michael Dirr likes two called 'John Morris' and 'Lydia Morris' that perform well in Georgia, are 15 feet tall and 10 feet wide, and have shiny, brutal-looking leaves.

Aralia spinosa can grow up to 20 feet and is not very attractive in winter, but its prickly stems will form thickets. It has interesting white flowers in midsummer and then forms a purple-black drupe that is popular with birds.

The ultimate spiny plant is of course *Poncirus trifoliata*, or trifoliolate orange, from China. While the long thorns are about as welcoming as barbed wire, the fragrant fruits aren't as bird-friendly as the berries on the other shrubs we've mentioned.

—Neil Pelletier, Director
Gardeners' Information Service



conservationist's notebook

AN OASIS IN NEVADA

by David J. Ellis

Within a hundred miles along the diagonal border between California and Nevada, a hardy traveler can visit the lowest point in the United States—282 feet below sea level at Death Valley National Monument—and climb Nevada's 11,918-foot Charleston Peak. Here in the harsh terrain of the Mojave Desert, a complex series of geologic and climatic conditions have conspired over millenia to create a botanical oasis.

In the Ash Meadows National Wildlife Refuge, an unusual cluster of endemic plant and animal species has established an ecological niche in a network of marshes and wetlands fed by a vast

underground aquifer. This water, which finds its way to the surface at Ash Meadows through seeps and springs, is highly alkaline "fossil" water from glaciers that melted some 10,000 to 12,000 years ago. At that time the meltwater formed a widespread system of lakes and streams over much of the West and Southwest. All that remains is an underground reservoir north of Las Vegas, about 90 miles southeast of Ash Meadows.

The region's status as a unique natural preserve was first officially recognized in 1952, when the National Park Service incorporated Devil's Hole—an area in the northeast part of Ash Meadows where natural springs well to the surface—into nearby Death Valley National Monument.

The area remained relatively pristine until the 1960s, when a section of Ash Meadows known as Carson Slough was mined for peat. Subsequently, non-native fish, amphibians, plants, and other creatures were introduced both accidentally and deliberately. In the 1970s other wetlands and some springs were pumped nearly dry in an effort to modify the area for agriculture, and developers purchased land for home sites. These combined stresses likely caused the extinction of three endemic species—a small fish called the Ash Meadows killifish, a snail, and the Ash Meadows vole.

To protect it from further degradation, in 1984 the Nature Conservancy purchased a large portion of the land slated for development. The land—about 20,000 acres—was sold to the U.S. Fish and Wildlife Service (FWS) and designated a wildlife refuge in June of that year. In 1987, Ash Meadows was included among four wetlands in the United States deemed to be of international significance under the Ramsar Convention, an agreement that supports conservation of important wetlands around the world.

Since then, six Ash Meadows plants have been listed as threatened and one as endangered under the federal Endangered Species Act (see sidebar). Recognizing the complex interrelationships between species and their habitats at Ash Meadows, the FWS in 1990 approved a recovery plan that focuses on the entire ecosystem rather than individual species. The FWS plans to return stream channels that were diverted for agriculture to their natural courses and to remove non-native vegetation and animals, especially salt cedars (*Tamarix* spp.), largemouth bass, and crayfish. Critical habitat is being fenced off to preserve the flora and wetlands from grazing and trampling by feral animals, and offroad vehicles are prohibited. Swimming is restricted to one site in the refuge.

But conservation-conscious recreational use of the refuge is encouraged. Walking trails and environmental education programs are being developed to allow visitors to better experience and understand the unique nature of this Western oasis.

For more information, write to the Ash Meadows National Wildlife Refuge, P.O. Box 2660, Pahrump, NV 89041, or call (702) 372-5435.

Unique to this Refuge

ENDANGERED PLANT

AMARGOSA NITERWORT (*Nitrophila mohavensis*), a member of the goosefoot family that grows one to four inches tall with light green leaves and rose pink flowers from April to June.

THREATENED PLANTS

ASH MEADOWS MILK VETCH (*Astragalus phoenix*), a mound-forming member of the pea family with fuzzy, grayish leaves and pink to purple flowers.

SPRING-LOVING CENTAURY (*Centaurium namophilum*), a pink-flowered member of the gentian family that grows to 20 inches.



Ash Meadows sunray

ASH MEADOWS SUNRAY (*Enceliopsis nudicaulis* var. *corrugata*), a clump-forming member of the sunflower family with yellow flowers and fuzzy, grayish green leaves with ruffled margins.

ASH MEADOWS IVESIA (*Ivesia eremica*), a member of the rose family with white flowers and mounds of fuzzy, grayish green leaves that bear a curious resemblance to mouse tails.

ASH MEADOWS BLAZING STAR (*Mentzelia leucophylla*), a yellow-flowered plant in the loasa family with Velcrolike leaves.

ASH MEADOWS GUMPLANT (*Grindelia fraxino-pratensis*), a two- to three-foot-tall member of the sunflower family with yellow flowers and leathery, dark green leaves covered with a sticky resin.

PHOTO: JOHN AND KAREN HOLLINGSWORTH/COURTESY OF ASH MEADOWS

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



natural connections

QUIRKY GALLS

by Guy Sternberg

We often notice odd-looking growths on the trees and other plants around us. Accounting for many of them are organisms that live in association with the host, such as fungus cankers, lichens, epiphytes, insects, and parasitic plants such as mistletoe (see “Natural Connections—The Popular Parasite,” December 1995).

Distinct from all these other growths are galls—deformities that are part of the host plant itself, formed when the number or size of plant cells increases in response to an outside stimulus. Many plants support galls, each unique to the organism that provides this stimulus. But perhaps no other plant group supports so many different types of galls, over such a broad geographic range and in plain view of more people, as the genus *Quercus*—our familiar oaks.

CURIOUS AND OFTEN BEAUTIFUL

Throughout the natural range of oaks—which includes most of North and Central America, Europe, Asia, and the northern parts of Africa and South America—curious and often beautiful galls can be seen as evidence of the association of the local oak species with specialized wasps, midges, flies, and other organisms. More than 13,000 gall-inducing insect species have been identified worldwide, and many of these, especially wasps, are associated with oak trees.

Each insect species stimulates the formation of its own distinctive gall. Thus a gall caused by the wasp *Andricus quercuscalifornicus* looks nearly the same whether it forms on a valley white oak

Perhaps no other plant group supports so many different types of galls as the genus *Quercus*—our familiar oaks.

(*Quercus lobata*), an Oregon white oak (*Q. garryana*), or a blue oak (*Q. douglasii*). This insect, though, will not induce galls on just any oak species. A California black oak (*Q. kelloggii*) growing next to one of these other oaks will not have *Andricus quercuscalifornicus* galls, but it might have its own array of gall-makers, each of which triggers its own signature gall formations.

Some galls are restricted to a single oak species. The marblelike galls of *Disholcaspis quercusomnivorae*, for example, are found only on Chapman’s oak (*Quercus chapmanii*). Others occur only on a few closely related species. The leafy oak gall of *Andricus quercusfoliatus* can be found on live oak (*Quercus virginiana*) and sand



live oak (*Q. geminata*). Oaks are notorious for their propensity to hybridize, and host-specific galls might appear with decreasing frequency on hybrid trees descended from a susceptible host species crossed with a more resistant one.

Oak galls may be categorized in various ways: according to the part of the tree on which they occur, such as leaf galls, stem galls, and flower and bud galls; or according to their structure, such as woody galls, fleshy galls, and cottony galls. But they all develop as a response of actively growing plant tissue to secretions of a gall-making organism in its larval or nymph stage. Galls enlarge to encase the organism as it grows, providing a protective enclosure against the weather and concealment from potential predators. Sometimes, several species of tiny creatures can be found inside a single gall, sharing the shelter with the organism responsible for

PHOTOS: GUY AND EDITH STERNBERG

its development. Predators and parasites also seek out galls, and open or invade them to eat the larvae that live there. Frequently, however, nobody is home at all, for many galls are sturdy enough to persist long after the gall-makers have matured and moved out.

Most oak galls are relatively harmless to their host trees, and many serve as decorative curiosities in the landscape and for show-and-tell at school. The wool sower gall (*Callirhytis seminator*) grows in spherical clusters, forming balls of cotton-candylike growth on white oak (*Quercus alba*). Oak spangle gall (*Xystoteras poculum*) can give a barnacle-encrusted appearance to white oak leaves, making them sparkle when the wind blows. The hedgehog



Pealike galls on a sand live oak leaf in Florida, opposite, were caused by cynipid wasps. The horned green galls on a branch of shingle oak, left, resemble a caterpillar.

gall (*Acraspis erinacei*) makes little porcupinelike balls on bur or mossy-cup oak (*Quercus macrocarpa*). Some of the strange, colorful galls that occur on tropical oaks are larger than grapefruit.

Oak apple galls, formed by many different cynipid wasps, appear as inflated papery spheres on oak leaves. If the galls are found when still green in late summer, they can be popped underfoot with a loud noise that delights young children. Oak bullet galls (*Disholcaspis quercusmamma*), found on bur oaks, were used once by my old gang for slingshot ammunition, before "Mamma" confiscated the slingshot!

HISTORIC USES

More serious human uses of oak galls have been documented for centuries. Long before European immigrants came to North America, they used the oak aleppo gall (*Adleria gallaetinctoriae*) to produce tannic acid for medicinal purposes. Sometimes another type of oak gall was used in combination with aleppo galls for tanning and dyeing. Still others were used for ink.

Many galls also provide food for wildlife. For example, Bassett's oak gall (*Disholcaspis bassetti*), which makes attractive knobby clusters on shingle oak (*Quercus imbricaria*), is eaten by squirrels, along with the wasp larva inside it. The many-lobed oak galls formed by various cynipid wasps also are consumed by wildlife, and some actually look rather tasty, like bunches of grapes. After the leaves of black oak (*Quercus velutina*) have fallen to the ground, farmyard chickens, as well as many wild birds, feed upon the minute leaf gall (*Dryocosmus deciduus*) found on them. Some of

these miniature galls can be so numerous on the leaves that to the birds they must appear to be the legendary manna from heaven.

A few gall species can become so numerous that they deform the host tree and sometimes kill it. Gouty oak gall (*Callirhytis quercuspunctata*) is one of these, occasionally becoming severe on scarlet, pin, red, and black oaks. Some leaf galls, such as the red oak leaf blister gall (*Macrodiplosis erubescens*), can deform so many leaves that the host tree appears to wilt. But the effects of even these more damaging galls seldom become really serious unless the host has been weakened by other causes. In fact, many gall-forming organisms reach harmful proportions only in the most harsh, xeric portions of their host species' range.

Healthy, vigorous oak trees rarely fall victim to fatal gall infestations. Think of oaks not as being attacked by these largely benign growths but as supporting and thus contributing to the natural web of life and to the aesthetic diversity of the landscape.

Guy Sternberg, who has grown and studied oaks for more than 30 years, is president of the International Oak Society.

The International Oak Society publishes a biannual journal, offers seed exchanges, and hosts conferences (the next one is scheduled for October 1997). Dues are \$15 per year. For more information, contact the International Oak Society, P.O. Box 310, Pen Argyl, PA 18072.

Generation Gap

More than 700 species of gall wasps are reported to occur on oak trees, but there may be fewer. Gall wasps exhibit a phenomenon known as heterogamy, or the alternation of generations, in which one generation of gall wasps may form galls different from those formed by the previous generation, but identical to those formed by the generation before that. Individuals from these alternating generations may differ enough anatomically to appear to be separate organisms. To further complicate the picture, alternating generations sometimes form their galls on different parts of the host tree. To gain a better understanding of this phenomenon, scientists are trying to determine which species now considered separate should actually be paired as alternating generations of the same species.

—David J. Ellis, Assistant Editor



Oak apple galls like this spotted one can be popped underfoot when still green in late summer.



urban gardener

CHEAPER THAN DIRT

Story and Photos by Peter A. Pascaris

The admonition that “a garden is not tilled by turning it over in your mind” makes good sense as well as good Zen. Two years ago, however, when I began a new vegetable garden at my suburban Detroit home, it made more sense to stop digging and start thinking. Very quickly, I learned the literal meaning of the word “sodbuster.” The sod nearly busted me. It had grown so dense I could hardly set a spade into the ground. The entangled roots played tug-of-war with my shovel... and won. Not allowing defeat, I jumped on the shovel with both feet until I cut through the grass. The next layer of earth greeted me with a wet, squishy, sucking noise that resembled a sound I once heard a rhinoceros make. It was my best shovel, the one I bought with a credit card thinking I couldn’t heave loam without it—but I couldn’t move this stuff *with* it.

Clearly, my 30 years of back-yard gardening were being put to the test. Although I enjoy the exhilaration of physical labor, I would rather have the pleasure of working less. I also like to save money, often planting parsimony rather than parsnips. (With ambition like this it’s a wonder that I even have a garden.)

On the other hand, I delight in a challenge. I enjoy figuring out how to make nature work for me. Perhaps my background as a science teacher provides additional incentive: I want to turn “Oh, no” away from the “Ho, hum” and toward the “Aha!”

A SOGGY SLOPE

Those silly noises made by siliceous clay against my spade alerted me to heed some earlier observations. After a light rain, water would stand in puddles on the grass, obviously prevented from

**Good soil is expensive.
There has to be another way,
I thought. Something cheaper
than dirt.**

draining by the dense, nonporous clay. After a heavy rain, instead of puddles there were torrents of rivulets rushing directly over my proposed Eden. Although I knew the property sloped toward a nearby creek, I believed the incline to be minor until I saw the deluge. My prospects for a successful garden were downgraded even more when I used string, a few stakes, and a mason’s level to discover a gradient drop of more than 20 inches in less than 40 feet.

Encouraged by both experience and garden advice columns, I planned to kill the grass by covering it with newspapers and compost. The dead grass would be softened and then more easily

turned. I preferred newspapers to plastic mulch because I could simply plow the sod, compost, paper, and soil together without the need to remove and discard the plastic. Newspapers are cheaper than plastic, less toxic (when slick papers and excessive colors are eliminated), more plentiful, and biodegradable.

But while I seemed to have found a good method for killing grass, it didn’t seem as though newspaper mulch would do much to solve my other problems. I still needed more fill and I had to overcome the excessive gradient. Considering everything from doing the backbreaking work myself (Oh, no) to hiring an expensive landscaper ... er ... landscaper, I nearly decided to (Ho, hum) forget the whole idea. Good soil is expensive. There has to be another way, I thought. Something cheaper than dirt.

That’s when serendipity stepped in (Aha!). Upon seeing an article recommending “about 12 pages of newspaper” as a mulch, I read “12 inches” instead. At first, I laughed at my silly mistake. Yet the more I thought about it, the more plausible it seemed. If layered like lasagna noodles with a variety of soil amendments, the newspaper mixture could provide good retention and good drainage besides becoming an active compost pile. I pictured microorganisms using miniature spades, breaking sod and paper into smaller and smaller pieces, creating new soil. What a grand spectacle!

Driven by this and other hallucinations, I began to plot an experiment. Concerned that the slope was too great to be overcome by fill alone, I planned a terraced garden. That narrowed my testing to two hypotheses: first, that newspapers could be effectively used to eliminate the need to plow existing sod, and second, that newspapers could be effectively used as fill, in large quantities.

Over a two-year period I prepared four sections for my experiment, arranged side by side from the highest portion of the yard toward the lowest in a strip 45 feet long, tapered from 10 feet wide near the middle to six feet wide at the high end. Each section was partially terraced to accommodate the slope. I used whatever I had handy—primarily old landscape timbers—to create the terraces and a border to the entire bed. In every section, a similar soil mixture was layered between newspaper pages and spread over the top. The soil mixture consisted of sifted topsoil delivered by a nursery, grass clippings, fallen leaves, twigs, small branches, wood chips, hay, cow manure, Michigan peat, sphagnum moss, and commer-



cial compost. All of these ingredients were mixed as I spread them, rather than ahead of time.

In the first section, a thin layer of newspapers (six to 12 pages) was placed on unbroken sod and about four to six inches of soil mixture spread on top of them.

In another section, the sod was removed to the clay line. Newspapers were spread thinly on the clay, the sod turned and replaced in the bed, another thin layer of papers placed on top of the turned sod, and three to five inches of soil mixture spread on all this.

A third area was prepared like the second except that the papers were set down in thicker layers. The topmost strata were interspersed alternately with soil mixture, making a stacked layer of as much as 10 inches. Again, I spread three to five inches of soil mixture as top dressing.

The final section was at the low end of the plot. Here, I broke no sod and used very thick layers of newspaper intermingled with soil mixture and topped off with three to five inches of soil mix.

All of these areas were covered with garden fabric, left fallow for about three weeks, and watered daily, keeping the composition wet and firming the soil. Under the dark fabric, the early spring sun warmed the raised mounds, baking them like loaves of bread and enabling nature to begin her work. After three weeks, I began to set plants and seeds. I planted marigolds, splashing their dots of color among tomatoes, beans, squash, lettuce, broccoli, flowering kale, radicchio, cabbage, peas, cucumber, spinach, and

sweet basil. In the second year, I rotated crops so as not to place the same plant in the same spot two years in a row.

PHENOMENAL RESULTS

The results were phenomenal the first year and very good the second. Most important is that there was virtually no difference in the quality of the crops or the quantity of the harvest no matter where they were grown. Every section produced equally well, including the areas of unbroken sod and the areas with thick bundles of newspaper. Both harvests exceeded my expectations. To be sure, there were ordinary problems with maintenance and pests. Overall, however, I count these two years among my most successful. In 1994, I had pole bean plants seven feet high and tomatoes lasting into the late fall. Since all sections produced just as well (or just as poorly), I attribute the lower yield in 1995 to poor weather rather than any problems with my garden preparation. Therefore, I believe both my hypotheses were correct:

1. Newspapers contributed to a bountiful harvest in areas prepared without digging, and
2. Large quantities of newspapers proved to be an excellent substitute for soil.

Problems resulting from the gradient and clay soil, such as poor drainage and water retention, were significantly overcome. While puddles still formed beside the garden, very few occurred on the bed itself and these drained quickly. Although terracing provided



The author used lasagna-like layers of newspapers, soil, and other organic matter, opposite, to kill grass, reduce runoff, and create a raised bed for vegetables. Landscape fabric helped retain moisture and heat to "cook" the mix, left, before planting, below.



some of the relief, I believe that the newspaper fill was enormously effective. When heavy rains came, much of the flow of water was diverted, skirting to either side of the raised bed as though Moses had parted the sea. Furthermore, shortly after a rain, the garden remained moist, but not wet. Throughout the season, I took core samples and discovered that the newspaper mulch remained damp and increasingly showed signs of decomposition. Nevertheless, degradation of paper is a very slow process; carrots and similar deep-growth vegetables are not recommended in the first years of a no-dig garden. The sod, paper, and soil mixture have not yet become homogenous and will not provide the loose environment necessary for uniform growth.

I look forward to my third spring, confident that the greatest part of my work is behind me. Nature is doing my spade work. If you're in the neighborhood, stop by and say hello. I'll be sitting on the patio drinking iced tea and reading the newspaper.

A chemistry teacher for more than 30 years, free-lance writer Peter A. Pascaris lives in West Bloomfield, Michigan.



mail-order explorer

HAUTE COUTURE HORTICULTURE

by David J. Ellis

Dan Hinkley and Robert Jones started Heronswood a mere six years ago. Yet in that short span the Northwest nursery has become one of the most talked about in the country. Acclaimed garden writer and Brooklyn, New York, resident Ken Druse says that two years ago, when he first encountered Heronswood, “They seemed to have all the plants I was looking for. They have a sensational plant list, currently the best in the country for new-to-America plants from places like Asia and Great Britain.” Druse was so captivated by the expansive display garden around Hinkley and Jones’s home that he featured it among other select gardens profiled in his latest book, *The Collector’s Garden*.

Jones and Hinkley were initially attracted to the five-acre Kingston, Washington, site by its partial overstory of 100-foot Douglas firs and fertile sandy loam. At the time they moved there, in 1985, Hinkley was working across Puget Sound as a professor of horticulture at Edmonds Community College and Jones was an architect with a firm in Seattle. They immediately began laying out gardens around their home.

Meanwhile, Hinkley continued to collect and propagate plants at an incredible rate. Jones half-jokingly suggests the nursery got its start as a way to defray the expenses of Hinkley’s growing collection. In 1989, serendipitously, an adjacent two-acre lot came on the market and became the site for the nursery.

Jones volunteered to take over the business side of the nursery to free Hinkley for the plant-hunting trips, lectures, writing, propagating, and designing that were taking up increasing amounts of his time. In the summer of 1994 Jones “retired” from his architecture firm to devote himself to the nursery full-time. Hinkley followed by resigning his duties at the community college last year. “We didn’t know if the nursery would support itself,” says Jones, “but we decided to bite the bullet and make it work.”

In retrospect, the decision seems a natural one. An experienced full-time staff of five, supplemented in spring and summer by five additional employees, makes their job immeasurably easier. “They are like family to us,” says Hinkley of the staff.

Hinkley says he hopes to slow the ex-

pansion of the catalog—at 220 pages the 1996 catalog is more than twice the size of 1993’s—and “move toward plants that are harder to propagate and slower to bring to mature size. We can start backing away from the more common plants and go after some of the aristocrats.”

Stephanie Feeney, a freelance writer in Bellingham, Washington, and author of the *Northwest Gardener’s Resource Guide*, first toured Heronswood six years ago. “We were in awe of what these two men had done so quickly with this piece of property,” she says. Feeney’s favorites include several forms of *Melianthus*—an evergreen shrub of South African origin “with very glaucous leaves and a strong fragrance of peanut butter, but barely hardy in the Pacific Northwest”—and *Azara microphylla* ‘Variegata’, a shrub or small tree with “very small oval, dark green, glossy leaves that in late winter gets sprays of yellow flowers with the fragrance of vanilla.”

Gary Koller, assistant curator and senior horticulturist at the Arnold Arboretum in Jamaica Plain, Massachusetts, says Heronswood’s owners “have an eye for the unusual and are good at increasing stock rather quickly and spreading new plants around so we can all test them.” Among Koller’s favorites from Heronswood are variegated mock orange (*Philadelphus coronarius* ‘Variegata’), hardy to USDA Zone 5, and a golden-leaved raspberry (*Rubus cockburnianus* ‘Aureus’) that provides winter effect with its white stems.

Portland, Oregon, garden designer and consultant Lucy Hardiman says Heronswood’s catalogs “are not really catalogs but novels.” She particularly likes Heronswood’s large selection of vines, especially *Lonicera standishii*, a bush-type honeysuckle that grows to eight feet and has creamy white winter flowers with “a fragrance that will knock your socks off.”

Feeney says she thinks of Hinkley as “a kind of horticultural Pied Piper, luring us into buying more exotic plants. He lives utterly and completely for plants. I think he is one of those people we will look back on as one of the great horticulturists of our times.”

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

To receive a catalog, send \$4 to Heronswood Nursery Ltd., 7530 Northeast 288th Street, Kingston, WA 98436-9502. To arrange a visit, call (360) 297-8321.



This view of the woodland garden at Heronswood Nursery is highlighted by the golden-leaved locust in the center.

PHOTO: COURTESY OF HERONSWOOD NURSERY

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love your garden
but hate your
allergies...**

A box of Chlor-Trimeton tablets is positioned in the center of the advertisement. The box is white with a green band at the bottom. It features the product name 'Chlor-Trimeton' in a large, bold, serif font, with a small orange pill icon to the left of 'Chlor-'. Below the name, it says 'chlorpheniramine maleate' and 'Antihistamine'. The word 'Allergy' is written in a large, yellow, sans-serif font on the green band. Below that, it lists symptoms: 'Relieves: Sneezing, Itchy, watery eyes, Itchy throat, Runny nose'.
Chlor-Trimeton[®]
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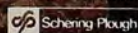
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Relieves: Sneezing, Itchy, watery eyes,
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HIGH



Two gardens, big and small,

DESERT

use one philosophy to succeed

PERMA-

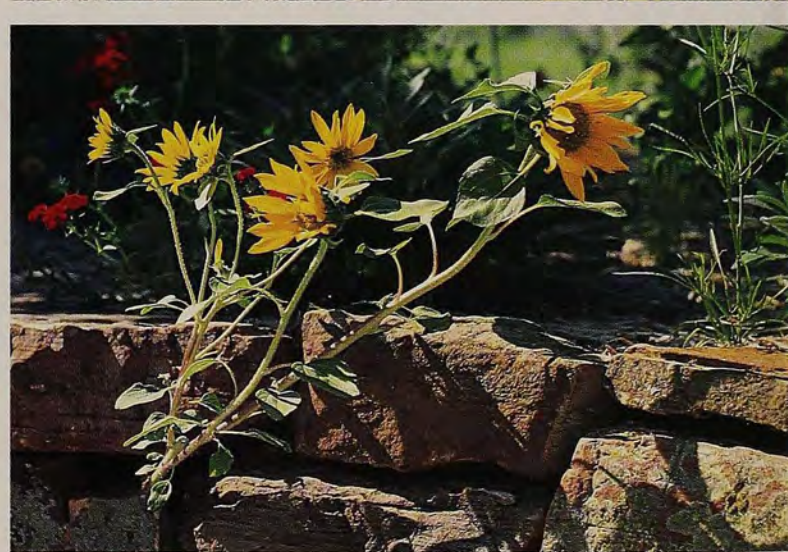
in this beautiful, brutal climate.

CULTURE

by Linda Thornton

The high desert of the Southwest works subtle magic on visitors. From the trembling of a cottonwood leaf, to a red and gold sunset splashed against a brittle blue sky, the place etches itself on the memory. In fact, of the many who come on vacation, a good percentage return to live here—thus adding to the pressures reshaping this environment. It is a place being loved to death. The suburbs are expanding into the desert at an alarming rate,

Joan Baker and Sarah Moody, left to right above, found that permaculture brought them a bountiful harvest and an increase in wildlife. Generous mulching means less watering and more time to relax on their terrace, opposite.



In a permaculture landscape, most elements serve a dual purpose. Sarah Moody, upper left, tends plants in a constructed wetland, which finishes filtering sewage water later used for irrigation. Trellises,

upper right, save space, while nasturtiums, left, are edible, and sunflowers, above, provide seeds for wildlife.

exacerbating a process begun when the Spanish arrived some 400 years ago. Through the years, settlers removed slow-growing piñons and juniper for firewood and to make way for their livestock. Cattle, sheep, and goats overgrazed the grasses and understory, leaving no vegetation to hold the moisture. Rain fled in runnels to the arroyos, and the topsoil with it. The process continues today as new buildings, streets, and parking lots consume former pasturelands.

If the high desert is not to become a wasteland, proponents of the concept known as permaculture see their approach as possibly the only hope. Permaculture (from the words “permanent” and “agriculture”) was developed by Bill Mollison, an Australian who formulated his ideas after observing the rain forests of Tasmania. Mollison saw the interconnectedness of living systems and wondered why people—even urban and suburban people—couldn’t be part of that process again. Why not build a house that both shelters its inhabitants and works in concert with its surroundings? Why not create landscapes that contribute to the environment rather than stealing from it? Mollison has been asking these questions—and supplying the answers—all over the world for a couple of decades now. He argues convincingly for such measures as sewage systems designed to return nutrients to soils; energy-efficient, affordable housing; productive and low-maintenance gardens; and erosion controls and native plant groupings to restore damaged ecosystems.

Working with Nature

Simply put, permaculture is “a view... that considers working with rather than against nature in human communities,” says Jonathan Scharfman, a project manager with Living Structures of Santa Fe, New Mexico. Living Structures has helped develop one of the more striking models of permaculture in the Southwest—the northern New Mexico home of Joan Baker and Sarah Moody, who last year fled the city life of Santa Fe for a five-acre plot in rural Arroyo Hondo.

The landscaping was designed by Santa Fe permaculturist Ben Haggard, who also designed Sol y Sombre, home of the late artist Georgia O’Keeffe and now famous a second time as a spectacular embodiment of permaculture principles. The Moody-Baker design displays permaculture concepts on a smaller scale, with its

tastefully appointed and energy-efficient straw bale home, its edible-flower and kitchen gardens, its groves and constructed wetland—a statement about how to live well while exercising wise use of the land and its resources.

Living Structures’ analysis of the site called for a number of measures to mitigate the severe erosion. Trails were built along natural contours to keep foot traffic off the land and let it recover from centuries of grazing. Swales—shallow, level ditches—were built to collect runoff and topped

Mollison saw the interconnectedness of living systems and wondered why people couldn’t be part of that process again.

with straw to reduce evaporation. Gabions—rock-filled wire baskets to control water flow at strategic locations—allowed nature to begin repairing the deeply furrowed arroyos. Shelterbelts of three-leaved sumac (*Rhus trilobata*), Apache plume (*Fallugia paradoxa*), juniper, oak, mahonia, maple, and plum serve as windbreaks, help regenerate soil, and provide wildlife habitat.

To make the most of the high desert’s scant rainfall, the Moody-Baker design called for bamboo rain gutters, which channel runoff from the house to the gardens and grounds. All sewage water is collected in a septic tank, where solids are filtered. From there, it runs through a gravity-fed pipe system to a gravel bed—a constructed wetland—planted with reeds and rushes, where bacteria finish treating the waste by oxidation. The clean, odorless water is then piped out of the wetland to irrigate the outlying areas of the property.

“Think of tripling the rain,” says Scharfman. “That’s essentially what’s happened here with this design.”

Most of the plantings at the Moody-Baker home are immature, dating only to early spring 1995. They will be helped along by irrigation from soaker hoses this season as they were during the last. After that, they’re on their own.

A recommendation of permaculture is that plantings be segregated in zones—outlying zones of hardy plants for windbreaks, wildlife habitat, and soil fixing; the zones closer to the house for species needing more care. Within these zones, plantings are often in what permaculturists call guilds. They put great stock in the beneficial arrangements plants will make among themselves if allowed to grow outside a monoculture. A tree provides shade for a shrub, which in turn may protect an herb. One plant may distract predatory insects

from another; still others may be better at attracting pollinators than their neighbors. Some, such as those in the legume family, are excellent nitrogen fixers for others that are heavy nitrogen users.

High-maintenance plantings are to the east and southeast of the Moody-Baker house. Here grow primrose, penstemon, artemisia, datura, mountain mahogany (*Cercocarpus* sp.), and many more species chosen for their beauty. On the south side of the house are edibles, including corn, beans, lettuce, cabbage, carrots, apples, apricots, peaches, mulberries, herbs, jujubes, figs, persimmons, grapes, and all kinds of berries. But they’re not strictly segregated. Asparagus and artichokes mingle with more traditional ornamentals because they do well with the same conditions. On the north side of the house is an aspen grove that creates a visually tranquil setting and gives the house a protected microclimate. Bill Mollison believes that such microclimates also help retain moisture.

Birds and Bounty

After only a few months, Sarah Moody says she noticed an increase in bird and animal life on the property. Plant losses have been minimal, and the first harvest was a bountiful one. “With permaculture, one of your main problems is mobilizing can-

PHOTOS: LEE KLOPPER



ning parties,” says her project manager.

As if to emphasize the point, Moody holds out a head of freshly picked lettuce. Green and succulent, it looks ready for the salad bowl. “We just put seeds out where we thought they would grow,” Moody says.

The initial investment in permaculture—to hire a designer, builders, and a landscaping company as Moody and Baker did—can be expensive. And the owners may occasionally need some professional help keeping the site, especially the constructed wetland, running the way it was designed. But the long-term goal of most permaculture designs is cost-effectiveness. The two women—Moody is an experienced gardener but new to permaculture—took over day-to-day maintenance of the property last fall and expect to do all of the planting, weeding, and harvesting in the future.

A Modest Miracle

Twenty-five miles or so to the north of Santa Fe is another example of how permaculture is making the high desert bloom. More modest in scale and less complex in design than the Moody-Baker site, the home and garden of Roxanne Swentzell and Joel Glanzberg show what individuals can do without a big budget.

Swentzell and Glanzberg have spent nearly a decade developing their quarter-acre plot near the small town of Espanola,

using principles similar to those employed on the Moody-Baker place, but without designers, engineers, site analyses, or landscaping crews.

Their land sits like a green jewel in a sandy red expanse where only the scrubbiest and toughest vegetation seems to take hold. Their trees grow tall, the understory is lush, and flowers bloom in colorful profusion. Swentzell says there is something magical about the way living things—from insects to birds, dogs to children—are drawn here.

When Swentzell acquired the property, there was little hint of today’s oasis. “It was a driveway,” she remembers. “I took it because I wanted to build a house, and nobody else wanted it.” Swentzell is a Santa Clara Pueblo Indian, and the arid plot was reservation land. Then a single mother, she built her two-level passive-solar house herself, laying the foundation in 1986. Then she turned to the landscaping.

In a book that she published recording her family’s work, she writes: “We lived in the shed while building the house. There were no trees, no plants, no animals, just pounded-down dirt and lots of ants.” With the help of her two young children, she hauled straw and manure for mulching and building up soil. The family laid walking trails bordered by herbs, shrubs, and trees—the latter “just sticks” when Swentzell put them in—and contoured

the gently sloping ground with swales.

Swentzell was joined in 1987 by Glanzberg, a native plants landscaper who had taken an apprenticeship in seed saving and organic farming, as well as one of Molli-son’s workshops. He believes their property was the first to test permaculture in this land of lethal spring frosts, dry summers, and punishing winters. “No plants grew well out in the open,” writes Swentzell. “They wanted to be next to a rock, under another plant, in the shade of the house. So we built a wall to make a courtyard with many microclimates for plants.” Their land slopes to the north, which means that heavy, cold air settles at the bottom. Plants at the bottom of the slope need to be more cold tolerant than those farther up, and they may also need more protection in winter.

Again, much of the planting was in guilds. Seeking to recreate beneficial associations found in nature, Swentzell and Glanzberg sometimes cast handfuls of seeds, letting them fall where they would, just to see what would prosper.

Cues from the Past

The couple also took cues from the area’s traditional farmers, including the Anasazi—the vanished cliff-dwellers of the Southwest—and other Pueblo Indians. Through studying ethnobotanical literature and archeological sites, Glanzberg learned

PHOTOS: E. ANN HUNKINS (UPPER RIGHT); ROXANNE SWENTZELL



Roxanne Swentzell and Joel Glanzberg cut sorghum, opposite, eaten by both humans and sheep and turned back into the soil. Ducks provide eggs, upper left, and add nutrients to pond water. Runoff from a shed is captured in a

50-gallon tank, upper right, while a cold frame, above, gets plants off to an early start. From sheep, right, the couple gets fertilizer and wool that Swentzell spins.

Resources

PERMACULTURE: A DESIGNERS' MANUAL, by Bill Mollison, 1988, Tagari Publications, Tyalgum, Australia. Although permaculture has been readily embraced in the American West, where water shortages are a crucial issue, its principles of design and use of natural resources have also been applied in the tropics, in woodlands, and in northern temperate climates. This is the original 576-page bible.

LIVING COMMUNITY: A PERMACULTURE CASE STUDY AT SOL Y SOMBRE, by Ben Haggard. A 152-page softcover book whose author used permaculture design at the home of Georgia O'Keeffe. Available for \$12.95 from Permaculture Resources. **PERMACULTURE RESOURCES**, 56 Farmsville Road, Califon, NJ 07830, (800) 832-6285. This organization sells permaculture publications and can put interested people in touch with local experts. A catalog of their materials can be obtained free by calling the above toll-free number.

Swentzell and Glanzberg believe they're well on their way to self-sufficiency. Last fall's harvest included duck eggs, beans, potatoes, squash, and corn, opposite.

about their environmentally sound agricultural and water-harvesting techniques.

Early Native Americans, Glanzberg observes, made no distinction between wild and cultivated crops. Emulating the Anasazi, the couple harvests piñon nuts, yucca root, and bee weed (*Cleome serrulata*), the latter used as a pot herb or boiled down for a black paste to make the familiar paint on Pueblo Indian pottery.

In their food-growing zones, the couple makes extensive use of terracing, hedges, trellising, and waffle gardens. The latter involve sectioning off plots of the garden and surrounding them with low walls of stone or earth so water can't run off. The walls also help protect young seedlings from wind. Trellises save garden space—an important consideration on small properties such as Swentzell and Glanzberg's—and the plants that grow on them help shade and cool the house.

Animals play a key role in permaculture. Turkeys not only fertilize the ground but help control pests. Turkeys, says Swentzell, fly up and catch grasshoppers whereas chickens are confined to scratching in the dirt.

Although the couple has not yet constructed a wetland or a means of recycling sewage water as Moody and Baker have, they harvest water in other ways. Bathtub water and runoff from the house are used immediately on plant beds, while runoff from a shed is stored in a 50-gallon water tank. In New Mexico, many rural people depend on the water that is provided at intervals from an acequia, or ditch, for irrigating their gardens. Glanzberg and Swentzell collect the acequia water in two small, cement-lined ponds planted with pond vegetation and stocked with fish. Droppings from ducks the couple keeps enrich the pond water, which is channeled to a corn and bean field and to swales where its flow is slowed so it can water the trees on the east side of the house.

The couple grows several kinds of grain: amaranth, wheat, rye, millet, sorghum, corn, and buckwheat, all of which they grind themselves. The meal is made into bread in a horno, or Pueblo-style outdoor oven, that Swentzell constructed. In the winter they grow cover crops such as winter wheat and winter rye to prevent erosion and the drying out of the soil, and to create organic matter and add soil nutrients.

On the hot west side of the house is a shade-giving ramada—a wooden frame attached to the house and projecting 10 feet

or so from the door. Ramadas were invented by the Pueblo Indians, who covered them with branches. Here, grapevines on top provide an edible bonus.

Spraying, of course, is anathema to permaculturists. According to Mollison's principles, there should be no need for it.

"You get pest problems when you have unused resources," says Glanzberg. "When you have that, something's going to come in and use the waste food. What isn't being eaten by pigs and chickens will get eaten by rats and roaches and wild dogs. In our society, we try to deal with these problems technologically, whereas traditional cultures dealt with them biologically, using animals and plants, which is actually more sanitary."

Spreading the Message

The couple's efforts have been noticed both locally and farther afield. Visitors are coming from all over to see how they've made the desert bloom, and they've launched the Flowering Tree Permaculture Institute to educate others about permaculture. The couple gives tours of their place, and Glanzberg teaches courses on growing in the high desert, keeping animals and bees, and food preservation.

Glanzberg explains that permaculture proponents want to reverse the status quo, in which we view the world as a bottomless resource and waste dump for our energy-consuming homes and for landscapes designed with only aesthetics in mind. "Our homes and yards could provide for the majority of our needs for shelter, energy, water, food, fiber, and entertainment as well as education," he says, "and then most of the rest of the world could be left alone."

Glanzberg embraces Bill Mollison's passionate belief that permaculture could free the world and its people of hunger, debt, and depletion of resources.

"If people have energy-efficient housing and yards that can provide a portion of their food, then they can get out of debt more quickly because now most of their income is going for food and energy," says Glanzberg. As their own site matures, and after an initial investment in equipment, animals, and plants, the amount of money needed to maintain their lifestyle is diminishing. They believe they are well on their way to the self-sufficiency and sustainable living that is their goal.

Linda Thornton is a free-lance writer living in Fort Worth, Texas.



**Sun or shade,
damp or drought,
you can choose
alternatives to
Saturday morning
mowing.**

Just when you thought you'd heard the ultimate

in eyebrow-raising antics among our celebrity population, along comes Richard Widmark. In an article profiling the movie actor's Connecticut estate, *Architectural Digest* revealed—are you ready?—that he has a “passion for cutting grass.” Not content with mowing his own 40 acres, he also cuts his neighbors' lawns. Ironically, his beloved mower turned on him one day and badly cut his foot. Widmark's first question, according to the article, was not when he would be able to act again, but when he'd be able to *mow* again!

To put it delicately, Widmark's attitude is... well, rare. Even though we surround our homes with lawns, most of us will admit that mowing ranks pretty low on our list of favorite pastimes, along with tax audits and reading computer manuals.

There are more than 30 million acres of lawn in this country, which means we mow an area the size of Alabama every Saturday! And if that isn't labor-intensive enough, there are all those peripheral chores: edging, raking, bagging, and spraying.

So why do we do it? One theory argues that our affinity for lawns is encoded into our DNA and goes back to when our

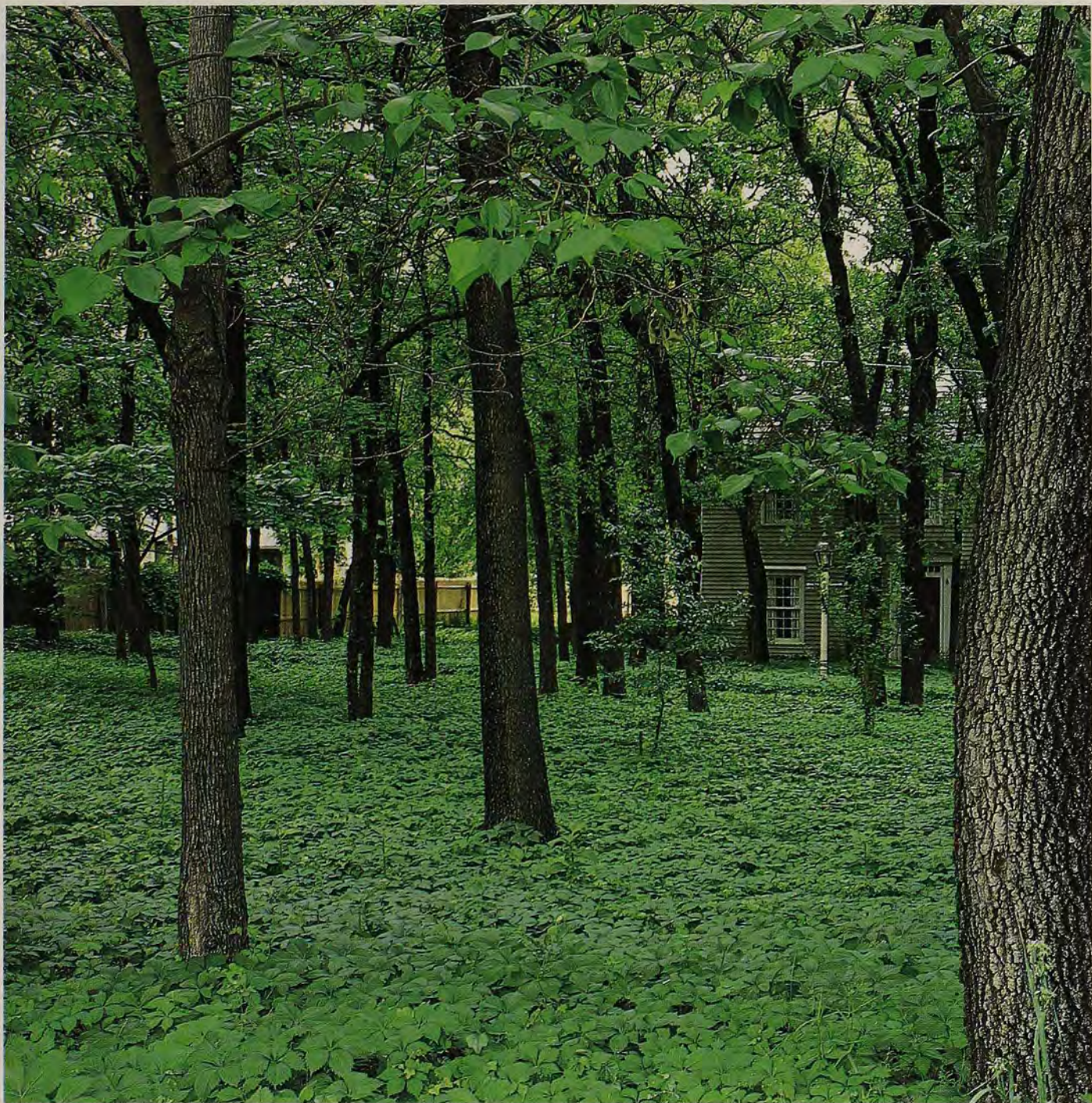
Pleistocene ancestors cavorted on African savannas. Another notion theorizes that our attachment to lawns began in Europe several hundred years ago. The castles of high-born nobles were surrounded by vast lawns that their lowly vassals saw as symbols of the good life. So naturally when our ancestors arrived in the New World, became comfortably middle class, and embraced the philosophy that “every man's home is his castle,” they enthusiastically put down lawns of their own. What they overlooked was that the nobility had all those peasants and sheep to keep their lawns shorn; our forebears were stuck with doing the job themselves. Mowing, like the national debt, got handed down to succeeding generations.

Fact is, we have a curious love-hate relationship with our lawns. On the one hand, most people consider lawns as American as baseball, shopping malls, and Ozzie and Harriet. We spend over \$8.4 billion annually on their upkeep. And while we dislike the work associated with lawns, we regard anyone who doesn't share our burden as the worst sort of scoundrel. Dave Barry put it best when he wrote, “The average homeowner would rather live next to a pervert, heroin-addict, communist pornographer than someone

story and photos by Andy Wasowski

Beauty Beyond





Bluegrass

Virginia creeper, shown above in Bedford, Texas, is native from that state east to Florida and north to New England. Bright red in fall, it provides food for sphinx moths and berries for songbirds. Davis Price, opposite, of Lubbock, Texas, likes his buffalo grass high, so he attaches bicycle training wheels to his mower.



Converting Your Lawn

When you set out to convert your lawn to a lush spread of ground covers, the first thing you have to do is rebuild the soil. Years of chemical treatments will have killed off microorganisms vital to healthy soil, and all that mowing has compacted it. Begin by removing or killing off the lawn. Simply not watering through one hot summer usually does it, but sometimes it has to be dug out—which is preferable to using herbicides. If you have a large yard and heavy turf, this may take more than one season; 200 square feet a year would be a reasonable goal. Till the soil beneath, adding in four to eight inches of rich compost. When your ground covers have been planted, top-mulch with shredded bark, pine straw, or compost. Where lots of tree roots are close to the surface and tilling would damage them, heap on 12 to 18 inches of leaves or grass clippings to smother the grass (don't mound mulch against the trunks). If you can allow several months to let the leaves compost on the spot, you can plant directly into the new organic mixture. The leaves will break down more quickly if you add a nitrogen source such as blood meal or fish meal.

—Andy Wasowski

with an unkempt lawn.”

On the other hand, water departments all over the country are mailing out millions of bill-stuffers, urging customers to reduce lawn areas or, better yet, eliminate them altogether. Why? Because conventional turf grass lawns are notorious water-guzzlers. Most parts of our country—even where they get more than 50 inches of rain per year—have water problems of some sort, including periodic droughts, salinity, acidity, threatened aquifers, and pollution. In most cases, it's simply a matter of too many people, too little water.

Still, American homeowners continue to pour from 40 to 60 percent of their precious household water on lawns and landscapes to keep them looking pretty. In many desert communities where rainfall measures a mere three or four inches per year, the figure can jump even higher. Drive through a typical suburban neighborhood

in Phoenix, Las Vegas, or El Paso, and you'll see some of the lushest, most verdant lawns you've ever encountered. Take that drive in mid-August and you'll also see sprinkler systems going full blast at high noon—and rivers of precious water running off into the streets.

When you add the air and noise pollution generated by millions of power mowers, clippers, edgers, and those blankety-blank leaf blowers, you get some idea why more people every day

are taking a good hard look at their lawns and thinking, “There's got to be an alternative!”

In fact, there are many. Some anti-lawn homeowners have devised their own innovative alternatives, such as green concrete. Others opt for gravel in a variety of pastel hues, bordered by painted bricks or rocks—the Sun City look. Still others have actually resorted to Astroturf. While these meth-

ods get high marks for water conservation and low maintenance, they come up short in the aesthetics department. Not to mention that they're lifeless... a definite turnoff to most gardeners.

What we need are *living* alternatives that still conserve water, reduce maintenance, and don't tick off the neighbors. Plenty of plants meet these criteria and, not surprisingly, most of them are native to various parts of our country. Over the millennia, these plants have adapted to



The tiny gray leaves of trailing indigo bush, opposite, have earned this low mounding shrub the name silver mat dalea. **Buffalo grass**, above left, has a fine texture that invites bare feet, but it's tough enough for heavy foot traffic. **Ground covers** at the home of Robert Bruening, former director of the Desert Botanical Garden in Phoenix, are a mix of drought-tolerant flowering shrubs and perennials, above right.

their local growing conditions, such as rainfall levels, temperatures, and soil. It doesn't take a brain surgeon to figure out that if these natives could do so well all on their own, they'll need very little help to thrive in your garden.

Brawny Buffalo Grass

Some people are never going to consider anything except grass. Period! Okay, then how about a grass that has all the beauty you demand of a lawn, but none of the negatives? Buffalo grass (*Buchloe dactyloides*) fills the bill.

Happiest in full sun and in soils with high clay content, this prairie grass is native from the Midwest to the Rocky Mountains. But don't assume this is some rough, stalky "weed" unfit to grace your home. Normally blue-green in hue, buffalo grass has a fine, soft texture that invites bare feet. But it's also tough enough to withstand plenty of foot traffic: A north Texas high school recently sodded its soccer field in buffalo grass. And in winter, when most warm-season grasses look drab and lifeless, buffalo grass turns a soft, lovely gold.

Water-conscious homeowners take it seriously as a lawn grass because it needs a fraction of the water required by conventional (non-native) grasses such as Kentucky blue, St. Augustine, fescue, and Bermuda grass. Less watering means that buffalo grass doesn't grow as tall or as fast as conventional turf grasses, so mowing is a monthly rather than weekly chore. Some new selections, such as 'Prairie' and '609', reach a maximum height of just six to eight inches, while 'Cody' and 'Tatanka' stay even lower, so that no mowing at all becomes a real possibility. You'll find buffalo grass being used from California to New Jersey, from Canada to Texas. And as its popularity grows, so does its availability. Many varieties are now easy to find in nurseries, as seed, plugs, or sod.

For those with fast-draining sandy soil, there's another short grass that's even more drought-tolerant—blue grama (*Bouteloua gracilis*). Mail-order nurseries from Wisconsin to Texas to California offer seed, and there's a demonstration blue grama lawn at Santa Barbara Botanic Garden in Santa Barbara, California. There

is also black grama (*B. eriopoda*), which will form a woolly white, curly mat only about six inches tall.

Low-Maintenance Moss

If you live where it's humid, the soil is acidic, and you have lots of shade, you can probably have a velvety soft, low-upkeep moss lawn. It's green year-round, and maintenance is about as minimal as you can get: Left alone it can become a carpet sprinkled with wild flowers such as violets or anemones. If you prefer a more manicured look, run the mower over it once in the spring to cut down the flowers and again in late autumn to mulch the fallen leaves.

Mosses are native from the Canadian Northwest to Dixie, and there are an incredible number of species—more than 100 in the South alone. In most cases, moss doesn't have to be recruited—it volunteers. The Birmingham, Alabama, lawn of Louise Smith turned to moss in just a couple of years after she quit replanting grass each spring. Moss has the reputation of disliking limy environments, but nurseryman Paul Moore, who lives on a forested limestone

Sources and Resources

Some of the plants in Andy Wasowski's article are new to the trade and not readily available. Below are sources for a few of these hard-to-find plants. Just as Wasowski has adapted Texas natives as ground covers, you may want to do the same with your own regional natives.

NATIVE PLANT SOCIETIES. For a list of native plant societies, send \$1 plus a self-addressed, stamped envelope to Gardeners' Information Service, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.



Snowberry is just one of our native ground covers that tolerates both shade and drought.

NATIONAL WILDFLOWER RESEARCH CENTER, Clearinghouse, 4801 LaCrosse Avenue, Austin, TX 78739. For a list of native plant topics and fees, send a self-addressed, stamped envelope to the above address.

LAS PILITAS NURSERY, Star Route Box 23X, Santa Margarita, CA 93453, (805) 438-5992. Catalog \$6. *Ribes viburnifolium*, *Symphoricarpos albus*. **RICHTERS,** 357 Highway 47, Goodwood, Ontario L0C 1A0, Canada, (905) 640-6677. Catalog free. *Fragaria vesca*.

WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752, (704) 738-8300. Catalog \$2. *Pityopsis graminifolia*, *Salvia lyrata*.

YUCCA DO NURSERY, P.O. Box 450, Waller, TX 77484, (409) 826-6363. Catalog \$3. *Dalea greggii*.

knoll in Nashville, Tennessee, has bright green moss rapidly spreading over the lawn on the shady side of his house.

If a moss lawn is not appearing unassisted at your house, harvest a cup or so of moss from any smooth flat patch in your neighborhood. Put it in a blender with buttermilk (for acidity and as a carrier), give it a few seconds at puree, and then just spray or paint it in the shady place where you want your moss lawn to grow. For an especially quick cover, give it a daily one-minute misting. Once established, a moss lawn needs no watering; even in a hot summer drought it will stay fresh and green.

A Gaggle of Ground Covers

When most people think of ground covers, they usually picture evergreen plants such as English ivy (*Hedera helix*) and Japanese spurge (*Pachysandra terminalis*)—both non-natives, as you might guess from their names. But what is a ground cover, after all? Simply a plant that covers the ground. So long as it's relatively low-growing and suitable for planting en masse, we can use it as a ground cover. A ground cover can be shrubby. It can be a flower. It doesn't even have to be evergreen.

With this expanded definition, we're talking about scads of possibilities. Many ground covers prefer shade and are an especially welcome lawn alternative for folks who are tired of trying to grow grass in shady areas. Ferns would fit in this category, particularly where moss lawns grow; the two complement each other beautifully. Other ground covers for the tree-blessed are wild ginger (*Asarum canadense*) and low evergreens such as dwarf huckleberry (*Gaylussacia dumosa*) and bearberry (*Arctostaphylos uva-ursi*). Smooth aster (*Aster laevis*) and Solomon's plume (*Smilacina racemosa*) will form masses in dappled shade. All of these are too delicate, too shrubby, or too tall for foot traffic. They will look best bordered by paths.

In Texas, where summers are hot and dry and winters are mild, my wife, Sally, experiments with natives found growing at the homes of her garden design clients. These include evergreen woodland flowers such as golden ragwort (*Senecio obovatus*), which sometimes has woolly leaves in addition to its yellow flowers; purple-flowered cedar sage (*Salvia roemeriana*); and horseherb (*Calyptocarpus vialis*), which has crept into Texas from south of the border. Horseherb can be mowed and walked on like a lawn, and some gardeners plant it in

the shade next to buffalo grass and mow the whole area about once a month.

In damp soil, mid-thigh grasses such as inland seaots (*Chasmanthium latifolium*) are an option. Turk's cap (*Malvaviscus arboreus* var. *drummondii*) is a hummingbird favorite and blooms all summer. On the West Coast, the gray-green Santa Catalina dudleya (*Dudleya hassei*), wild strawberry (*Fragaria vesca*), and short shrubs such as evergreen currant (*Ribes viburnifolium*) and snowberry (*Symphoricarpos albus*) are just a few of the shade-loving, drought-tolerant possibilities.

There are endless sun-loving ground covers. Three good low-growing shrubs from Southern California to central Texas are trailing indigo bush (*Dalea greggii*, the silver mat dalea, with tiny leaves and long-lasting wine-purple flowers), the native Texas damianita (*Chrysactinia mexicana*, a strongly scented shrub that produces gold and yellow flowers from June to October), and turpentinebush (*Ericameria laricifolia*, with late-blooming yellow ray flowers).

Silk grass (*Pityopsis graminifolia*, a composite family member with pale grasslike foliage) has been used with great success on sunny slopes in Tennessee. Lyreleaf sage (*Salvia lyrata*) is a mowable evergreen for the South that is a knee-high haze of pale blue flowers each spring.

This is just a small sampling. Some of these plants are so new to the nursery trade that their cold tolerance still needs testing by adventurous gardeners. A few of them can be found growing naturally throughout the United States, while others are native to a very limited range.

Don't settle on just one kind of ground cover and let it grow everywhere. A wide variety—accent grasses, ferns, low-growing leafy shrubs, all interacting just as they do in nature—is not only more interesting and attractive, but it also greatly reduces the need for toxic chemicals in your garden. Diversity of species is one of Mother Nature's best tricks for combating disease and infestations of garden pests.

So slap a "For Sale" sign on that lawn mower and put it out at the curb. There are lawn alternatives aplenty to make your yard prettier, your life easier, and our environment a little healthier.

Andy Wasowski and his wife, Sally, are the authors of five books on native landscaping, including Gardening with Native Plants of the South (Taylor) and Native Gardens for Dry Climates (Clarkson Potter).

PHOTO: DAVID CAVIGNARO

Life Beyond the Leyland Cypress

Sure, it grows fast. But for hedges or edges, there are countless more interesting possibilities.



by THE AMERICAN GARDENER staff

Several months ago a North Carolina member wrote to our Gardeners' Information Service with—what else?—a problem. A neighbor had recently erected a chain-link fence between their properties, and the writer wanted to camouflage it quickly. One of the suggestions we made was, we thought, a cliché but a harmless one: the Leyland cypress (*Cupressocyparis leylandii*).

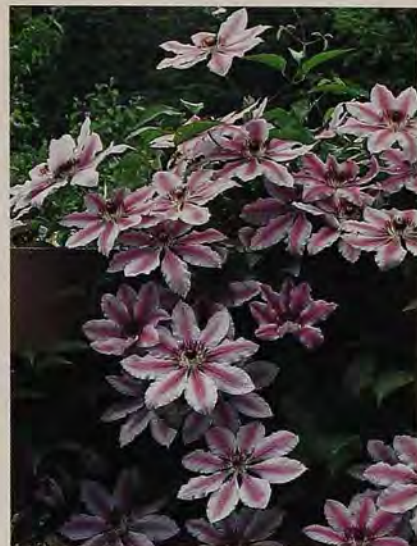
This hybrid between Monterey cypress (*Cupressus macrocarpa*) and Nootka cypress (*Chamaecyparis nootkatensis*) originated in Wales in the late 1800s and in the last 20 years has become America's standard screening tree, primarily because of its phenomenal growth rate of three feet or more per year. It's also easy to propagate and grow, so it's relatively inexpensive.

Our advice elicited a letter from Winston-Salem member Nancy Harper, who is a board member of the North Carolina State University Arboretum. The arboretum and its director, J. C. Raulston, are nationally known for spreading the word about beautiful, useful, but little-known plants. The arboretum,

Harper informed us, "has just ripped out its entire hedge of Leylands, not just because they're not on 'the cutting edge' anymore, but because they become diseased in many areas of our state." Some of her neighbors, she added, had recently removed several hundred feet of diseased Leylands, and wished they had consulted Raulston before planting.

So we contacted Raulston ourselves, and he was ready with a long list of other possibilities for relatively fast screening. "With property sizes shrinking and the destruction of existing vegetation barriers, the demand for screening plants for the landscape is greater than ever," he observes. The Leyland cypress entered the North Carolina nursery and landscape trade in the late '70s. Its growth and profitability so outstripped the competition that it quickly became a monoculture—like the ill-fated

Ornamental grasses can be used alone or with other plants. Above, the diminutive *Miscanthus sinensis* 'Nippon' knits together widely separated pines.



A Leyland cypress hedge, opposite, is hard to beat for fast growth and affordability. But the plants lack seasonal interest and can harbor pests and diseases. **A mix of plants**, above left, is more interesting than solid green. A small grouping can distract the eye from an unsightly vista. **Vines can add color** when draped over evergreens or, mingled on a fence, offer year-round interest. Above right is the ‘Nelly Moser’ clematis, which blooms in May and June.

American elm, planted to the exclusion of almost all else. Like that tree, it developed serious problems, in this case bagworms and canker diseases.

Also overused in North Carolina, Raulston reports, is the redbtip photinia (*Photinia ×fraseri*), so called for its bright new growth. The University of Georgia’s Michael Dirr calls the plant “so overused that the term ‘nauseous’ is not sufficiently applicable.” Gardeners are beginning to recognize the plant’s vulnerability to winter injury and disease, says Raulston, but low cost, universal availability, and fast growth still work in its favor.

A few of the cultivars he names as alternatives are still very limited in availability. Some are expensive—but the cost of controlling insects and disease on a Leyland will run into money, too, Raulston notes.

Some of the plants he suggests are rarely thought of as hedges. But why grow something like the Leyland, which looks pretty much the same from season to season, when you can plant a hedge with show-stopping flowers like a camellia or a magnolia? How about an *Osmanthus*, which will drive the neighbors crazy wondering what can smell so wonderful in autumn? Or ornamental grasses, which will grow to eight feet in a season and provide year-round interest?

Raulston emphasizes that his list was developed primarily for North Carolina, so we asked experts elsewhere to recommend

hedge plants suitable for climates that are drier and/or colder. They offered some general advice as well.

Keep Plants in Scale

Mary Irish, director of public horticulture at the Desert Botanical Garden in Phoenix, Arizona, believes the oleander may be the Leyland cypress of the desert. “Hideous pruning, thoughtless placement, and dreary overuse have made this most drought-tolerant desert plant a pariah among desert gardeners.”

Irish says that this misuse and abuse underscores one of the first principles of good design: Hedges need to be appropriate in both size and form to the overall dimensions of the garden, the house, and other plants. “Gargantuan, hulking plants in areas only 10 or 12 feet wide are grotesque, gulping up every other thing. Large properties can accept large hedges; smaller ones plead for something more their size.”

Some of the plants suggested here work well for hedges only with regular pruning, so consider both your garden space and your energy level.

Don’t Overprune

“Hedges are rarely pruned well,” says Irish. Formal pruning—shearing the plant’s outer stems into clean, sharp lines—is appropriate in an extremely formal setting and with certain plants, such as boxwoods and yews. Today’s more natural landscap-

ing—and plants like azaleas and forsythia that are most beautiful when allowed to develop their relaxed sprawling or weeping growth habits—call for careful, subtle pruning or no pruning at all.

“Careful clipping cajoles the plant into the desired shape and results in a beautiful, long-lasting hedge,” Irish says. “Good pruning results are never achieved with a power tool.”

To retain a hedge plant’s natural shape, selectively remove from near the main stem any stems and branches that are unhealthy or detracting from the shape. But for the most part, Irish notes, dense plants with complex stems make the best, fullest hedges for screening.

Be Patient

Few plants can equal the Leyland for fast growth. But if the object is not to shut out the rest of the world—that cute Leyland you plant for your fortieth birthday could be 50 feet tall at your retirement party—you should probably consider something a little more laid back.

If you’re anxious to block an ugly view, it’s tempting to choose plants primarily for their fast growth. But fast-growers present problems of their own. Irish notes that they need pruning more often, and Galen Gates, manager of horticultural collections at the Chicago Botanic Garden, points out that fast-growing plants often have thin cell walls. This means they have weak wood

PHOTOS: JOSEPH G. STRAUCH JR. (OPPOSITE), GALEN GATES (LEFT), MICHAEL S. THOMPSON (RIGHT)



Let hedge plants meander rather than planting them in a straight line. This will look more natural and create pockets for seasonal plantings.

that cracks easily, contributing to yard litter or making major branches subject to breaking. If you really can't wait to have your plants reach eight feet tall, consider paying a bit more for some that are larger to begin with.

Break the Mold

When confronting an eyesore, our first reaction is to want to wall it out completely with dense evergreens. But Gates notes that evergreens can be confining and imposing, not to mention monotonous. In today's small landscapes, deciduous plantings can allow us to "borrow" our surrounding landscape. And a group of three different plants, adds Irish, can be so visually arresting that viewers on your side will hardly notice the offending scene.

For a really bold effect, consider a tapestry hedge—a mix of plants with different foliage colors and leaf sizes and shapes. Choose conifers that offer blue, yellow, and white along with green, or throw some broad-leaved evergreens or even deciduous plants into the mix.

Gates champions letting hedge plants meander rather than planting them in a straight line. This will not only look more natural, but will let you create pockets for seasonal plantings of smaller shrubs, perennials, and vines.

Consider smothering that chain-link fence with vines, an option Raulston says is often overlooked. "Or if used, they are used in too limited a fashion." You may be tempted to use English ivy (*Hedera helix*), which is readily available, inexpensive, and will grow in dense shade. But once it gets going it can take a lot of clipping back, and it can easily upset the balance of nature by invading natural areas or upset neighborhood harmony by invading adjacent yards. "We propose the use of mosaics," says Raulston, "the mixing of a wide variety of vines on the same structure to give longer seasonal interest—evergreens with deciduous, early flowering with late." He gives the example of Carolina yellow jessamine (*Gelsemium sempervirens*), Chinese trumpetvine (*Campsis grandiflora*), wisteria, and sweet autumn clematis (*Clematis terniflora*) for four different flowering seasons and some evergreen screening. The potential combinations clearly depend on your growing conditions; USDA Zone 5 gardeners might substitute the evergreen cross vine (*Bignonia capreolata*) for the Carolina jessamine. If you elect to include a rampant grower like wisteria, you will need to pro-

vide considerable discipline to keep it from bullying more demure neighbors.

Gates also lobbies for vines as screens, suggesting a combination of clematis species and cultivars that will give all-season bloom: *Clematis* 'Nelly Moser' (white striped with pink, June), *C.* 'Perle d'Azur' (blue, July), *C.* 'Marie Boisselot' (white, July), *C. tangutica* (yellow, August), and *C. terniflora* (white, September). Canary creeper (*Tropaeolum peregrinum*) and Scottish flame flower (*T. speciosum*) are relatives of the nasturtium with interesting foliage and yellow and scarlet flowers, respectively, that can add drama to an evergreen hedge. They're annuals, but easily propagated from seeds or cuttings. Or consider reblooming hedge roses. Gates especially likes *Rosa* 'The Fairy', a pink hybrid introduced in 1932. You can also choose white or red bloomers that are highly disease resistant, and new hedge roses seem to be coming out every year.

The possibilities are limited only by your imagination. We hope that some of these will stimulate other choices appropriate to your region, your space, and your taste.

Mid-Atlantic

These plants were chosen by J.C. Raulston, director of the North Carolina State University (NCSSU) Arboretum:

Evergreens

'FASTIGIATA' AND 'PYRAMIDALIS' BOXWOODS (*Buxus sempervirens* 'Fastigiata' and 'Pyramidalis')—These columnar boxwood cultivars grow one foot a year to six to eight feet tall. Zone 5–6.

CAMELLIAS—Slow growing and not inexpensive, they range from six to 25 feet tall and spread up to 10 feet. There are now a number of cultivars hardy into Zone 7. Even tougher ones, such as *Camellia oleifera* and cultivars, are hardy into Zone 5 but still somewhat limited in availability.

DEODAR CEDAR (*Cedrus deodara*)—This native of the Himalayas grows to 40 or 70 feet in most landscapes but adapts well to shearing if not pruned on old wood that will not regenerate. Grows two feet a year when young. Smaller cultivars, 'Compacta' and 'Descancio Dwarf', are hard to find and costly. Zone 7.

'YOSHINO' JAPANESE CEDAR (*Cryptomeria japonica* 'Yoshino')—Dense and shapely, it grows to 30 or 40 feet at two to three feet a year. Zone 6.

'STEEDS' JAPANESE HOLLY (*Ilex crenata*



Virginia red cedar, above left, is often naturally columnar in habit, but those selected for the trade on this basis can be hard to find. **Upright branches earned 'Fastigiata'** European hornbeam, above right, its cultivar name. There are fastigate or columnar forms of many of our common trees, including the oak and tulip tree, which makes them ideal for hedging.

'Steeds')—An upright and relatively rapid-growing holly that originated in North Carolina. Makes an excellent six- to eight-foot hedge with little shearing. Zone 6.

'CAROLINA SENTINEL' HOLLY (*Ilex* 'Carolina Sentinel')—This new NCSU release grows two feet a year. The NCSU plant is 14 feet tall and four feet in diameter after six years without shearing. Zone 5.

'DR. KASSAB' HOLLY (*Ilex* 'Dr. Kassab')—Exceptional dark green foliage and abundant fruit. Maintains a tight, columnar habit to 15 feet without shearing. Grows 18 to 24 inches a year. Zone 6.

'NELLIE R. STEVENS' HOLLY (*Ilex* 'Nellie R. Stevens')—Tough and adaptable, growing to 10 to 20 feet tall and seven to nine feet wide if not sheared. Grows two feet a year. Zone 6.

SMALL ANISE TREE (*Illicium parviflorum*)—This Florida native with olive green leaves is suggested as an alternative to the redbtip photinia. It will reach 20 feet and can be hand-clipped (shearing will ruin its large leaves) to any size. *I. floridanum*, the Florida anise tree, has darker green foliage and showier flowers; Raulston likes *I. henryi* even better. Zone 6.

'SPARTAN' CHINESE JUNIPER (*Juniperus chinensis* 'Spartan')—This cultivar from Monrovia Nursery has a tight columnar form and dark green foliage. It grows to 20 feet at 18 to 24 inches a year. Zone 5.

VIRGINIA RED CEDAR (*Juniperus virginiana*)—This eastern native juniper is often

naturally columnar, but superior cultivars are hard to find. Zone 4.

SOUTHERN MAGNOLIA (*Magnolia grandiflora*)—Takes well to shearing and is widely used for hedging in southern Europe. It makes a great screen in a deciduous woodland. 'Little Gem' grows to only 15 or 20 feet and blooms for six months. Zone 6.

WAX MYRTLE (*Myrica cerifera*)—This southeastern native can either be sheared or limbed up as a small tree. It is tough, durable, inexpensive, and rarely grows to more than 15 feet. The leaves are fragrant when crushed, and the dark waxy berries attract birds. Zone 7.

HOLLY TEA OLIVE (*Osmanthus* spp.)—Many species and cultivars resemble the holly in foliage and habit. Fragrant autumn flowers are a big plus, but it is usually used as an individual specimen because of its cost. A slow grower usually up to 10 feet. Zone 7–8.

PINES (*Pinus* spp.)—Many pines can be sheared if a set of needles is left on any

Mid-Atlantic Sources

CAMELLIA FOREST NURSERY, 125 Carolina Forest Road, Chapel Hill, NC 27516. Catalog \$2.

Camellias, *Cryptomeria japonica* 'Yoshino', *Osmanthus* spp.

GIRARD NURSERIES, P.O. Box 428, Geneva, OH 44041, (216) 466-2881.

Catalog free. *Juniperus chinensis* 'Spartan', *Quercus robur* 'Fastigiata'.

ROSALYN NURSERY, 211 Burrs Lane, Dix Hills, NY 11746, (516) 643-9347.

Catalog \$3. *Cedrus deodara* 'Descancio Dwarf'.

ARTHUR WEILER, INC., 12247 Russell Road, Zion, IL 60099, (708) 746-2393. Catalog free. *Carpinus betulus* 'Fastigiata', *Quercus robur* 'Fastigiata'.

branch that is cut. White pine, *P. strobus* (Zone 3), is most commonly used this way, but *P. virginiana* (Zone 7) is tougher.

'SMARAGD' AMERICAN ARBORVITAE (*Thuja occidentalis* 'Smaragd')—This cultivar of our eastern arborvitae, trademarked as Emerald, has a good tight columnar form but relatively slow growth. May reach 25 feet. Zone 5.

Deciduous Trees

'COLUMNARIS' AND 'FASTIGIATA' EUROPEAN HORNBEAMS (*Carpinus betulus* 'Columnaris' and 'Fastigiata')—These grow only half as fast as the Leyland cypress, to about 25 feet tall and eight feet wide, but offer yellow fall foliage. They are usually limbed up to expose the trunk but will retain their lower branches. Zone 5.

'ARNOLD' AND 'FASTIGIATUM' TULIP TREE (*Liriodendron tulipifera* 'Arnold' and 'Fastigiatum')—These columnar forms of the native species grow fast, eventually to 50 feet, but are hard to find. Zone 6.





Smokebushes are knock-outs when they bloom in summer, opposite. Pick a purple-leaved form and plant a row to catch the setting sun. **Hedge roses won't grow tall** enough to screen out the neighbor's satellite dish, but with nonstop blooms like those offered by 'The Fairy', above left, you may forget the eyesore is there. **Cornelian cherries are a bowlful of delights**, from spring flowers to edible fruits and fall color. 'Golden Glory', above right, is columnar and pest resistant.

'FASTIGIATA' ENGLISH OAK (*Quercus robur* 'Fastigiata')—This columnar oak grows as fast as the Leyland cypress, to more than 50 feet tall but only 10 to 15 feet wide, and lasts longer in the landscape. Seed-grown forms vary considerably. The leaves can develop mildew in fall, but this does not harm the tree. Zone 5.

Upper Midwest

Galen Gates, manager of horticultural collections at the Chicago Botanic Garden, recommends these plants for hedges:

Taller Plants

SERVICEBERRY (*Amelanchier* × *grandiflora*)—This hybrid of the native tree has large early spring flowers on long, slender racemes, berries loved by birds, and striking fall color. It matures at 15 to 20 feet. For an all-white scheme, underplant it with 'Thalia' daffodils and white-flowering myrtle (*Vinca minor* 'Alba'). Growth rate six to 15 inches. Zone 5.

'GOLDEN GLORY' CORNELIAN CHERRY (*Cornus mas* 'Golden Glory')—This cultivar from the dogwood genus, known for its early spring yellow flowers, edible red fruits, and red fall color, is more columnar than the species as well as pest resistant. It grows to 15 to 20 feet. Growth rate six to 10 inches. Zone 4–5.

SMOKEBUSH (*Cotinus* spp.)—Several species in this genus offer gray-pink late

summer flowers as well as fall color. Those who prefer natives can choose our *C. obovatus*. But for a really stunning display, plant a purple-leaved form such as *C. coggygria* 'Velvet Cloak' to catch the rays of the setting sun. Growth rate six to 15 inches. Zone 5, to Zone 4 with protection. A similar effect can be created with cultivars of Japanese maples, *Acer japonicum* or *A. palmatum*, in other parts of the country.

'SKYROCKET' JUNIPER (*Juniperus scopulorum* 'Skyrocket')—A widely available columnar evergreen, it sports blue-green foliage and will grow to 15 feet tall but only two feet wide. Does best in the open prairie and areas of low humidity. Growth rate six to 12 inches. Zone 3–4.

'MALEPARTUS' AND 'SARABANDE' MAIDEN GRASS (*Miscanthus sinensis* 'Malepartus' and 'Sarabande')—'Malepartus' has a

medium leaf texture, flowers that stand out from the foliage, and often great burgundy red fall color. 'Sarabande' has narrow foliage like the ubiquitous 'Gracillimus' and flowers earlier. They will grow quickly to five to seven feet. Zone 5.

'HETZ WINTERGREEN' ARBORVITAE (*Thuja occidentalis* 'Hetz Wintergreen')—The American arborvitae often twists, breaks, and sprawls under heavy wet snows. This cultivar develops a strong central leader that prevents such damage and remains dark green through winter. Growth rate four to 12 inches. Zone 4.

WESTERN ARBORVITAE (*Thuja plicata*)—The western or giant arborvitae, native to our Northwest, has bright glossy green foliage all summer, changing to golden in winter. Its foliage is aromatic when crushed, and unlike the American arborvitae it tolerates shade and is ig-

Upper Midwest Sources

APPALACHIAN GARDENS, Box 82, Waynesboro, PA 17268, (717) 762-4312. Catalog free. *Buxus* 'Green Velvet', *Rhus aromatica* 'Gro-Low', *Thuja occidentalis* 'Hetz Wintergreen'.

ARBORVILLAGE FARM NURSERY, P.O. Box 227, Holt, MO 64048, (816) 264-3911. Catalog \$1. *Cotinus* spp., *Malus sargentii* 'Tina', *Rhus aromatica* 'Gro-Low', *Viburnum carlesii* 'Compactum'.

FORESTFARM, 990 Tetherow Road, Williams, OR 97544, (541) 846-6963. Catalog \$3. *Cornus mas* 'Golden Glory', *Rhus aromatica* 'Gro-Low', *Thuja occidentalis* 'Smaragd'.

While boxwoods are very slow-growing, broad-leaved evergreens that are deerproof are cherished in the upper Midwest.

nored by deer. With a mature size of 50 to 70 feet tall and 15 to 20 feet wide, this is a hedge only for large-scale properties. Zone 5.

CANADIAN HEMLOCK (*Tsuga canadensis*)—While this species is beset by the woolly adelgid in the eastern United States, it has no problems in the Midwest where soils are heavy. In the sandier soils of Wisconsin, it can develop winter burn due to lack of soil moisture. It grows to 25 to 35 feet tall at six to 12 inches a year. Zone 3-4.

Shorter Plants

BOTTLEBRUSH BUCKEYE (*Aesculus parviflora*)—A native shrub with dramatic, slowly emerging leaves, white summer flower spikes, and medium to coarse texture. It will grow 10 to 15 feet tall and as wide. Try Virginia bluebells (*Mertensia virginica*) underneath for spring interest. Growth rate four to 12 inches a year. Zone 4.

'EMERALD CAROUSEL' BARBERRY (*Berberis* 'Emerald Carousel')—This hybrid of the Korean barberry (*B. koreana*) and the mentor barberry (*B. ×mentorensis*) provides the best of both but displays the flowering and fruiting characteristics of the Korean species. It will grow to four to five feet tall at four to 10 inches a year. Zone 4.

'CHICAGOLAND GREEN' AND 'GREEN VELVET' BOXWOODS (*Buxus* 'Chicagoland Green' and 'Green Velvet')—While boxwoods are very slow-growing, broad-leaved evergreens that are deerproof are cherished in the upper Midwest. The broadly mounded 'Chicagoland Green' has proven hardy to 27 degrees below zero and doesn't produce the secondary growth that many boxwoods do. This means less shearing and fewer winter-burned branch tips. At the Chicago Botanic Garden, 13-year-old plants are slightly more than three feet tall and five feet wide. Zone 4.

DWARF FOTHERGILLA (*Fothergilla gardenii*)—A wetland native with fragrant white bottlebrush-shaped, early spring flowers, uniform habit, and orange and red fall color. It performs best in sun. It grows to three feet tall at three to six inches a year. Zone 5.

'TINA' CRABAPPLE (*Malus sargentii* 'Tina')—This cultivar of the well-loved Sargent's crabapple has proven to be the best dwarf crabapple for this region. It may grow to only four or five feet. Growth rate three to four inches a year. Zone 4.

'PURPURASCENS' MAIDEN GRASS (*Miscanthus sinensis* 'Purpurascens')—A three- to four-foot grass great for wet, sunny spots.

It looks terrific when its purple-red early fall color is backlit by sun. Zone 4.

'GRO-LOW' FRAGRANT SUMAC (*Rhus aromatica* 'Gro-Low')—The leaves are fragrant when crushed and it produces small yellow flowers in spring. It grows only to two-and-a-half feet and has a more spreading habit than the species, which usually grows to four feet. The glossy leaves often develop late fall reds and yellows. Growth rate four to 12 inches. Zone 4.

'THE FAIRY' ROSE (*Rosa* 'The Fairy')—Can't be beat for reblooming pink flowers, combined with an old-fashioned appearance and disease resistance. Growth rate four to 10 inches. Zone 4 with protection.

'GOLDFLAME' SPIREA (*Spiraea ×bumalda* 'Goldflame', also listed as *S. japonica* 'Goldflame')—Almost as ubiquitous in the Midwest as the Leyland cypress is elsewhere but more deserving, since its bright yellow foliage and pink flowers offer more seasonal interest and it's problem-free. Try combining it with *Tulipa batalinii* 'Bronze Gem'—aesthetically and culturally a good combination, since tulips need to go dry and bake in summer and the spirea foliage will protect them from summer rains. Growth rate four to 10 inches. Zone 4.

'GREFSHEIM' SPIREA (*Spiraea ×cinerea* 'Grefsheim')—A useful mid-sized shrub at five to six feet tall and slightly less wide, its small white, early spring flowers are both numerous and fragrant, and fall foliage is often golden. Growth rate four to 10 inches. Zone 4.

'COMPACTUM' KOREAN SPICE VIBURNUM (*Viburnum carlesii* 'Compactum')—This cultivar is better behaved than the hybrid known as the Judd viburnum, which grows almost too fast. The species matures at 10 to 12 feet, but 'Compactum' matures at three to four, making it ideal near a patio or deck where its wonderful spring fragrance and red fall color can be appreciated up close. Growth rate three to six inches. Zone 4.

Desert Southwest

Mary Irish, director of public horticulture at the Desert Botanical Garden in Phoenix, suggests the following plants, most of them Arizona natives, for creating screens:

Tall Plants

DESERT HACKBERRY (*Celtis pallida*)—An evergreen in the elm family with dense, spiny branches and smooth, mottled gray



New transplants to our Southwest often miss the trees and shrubs they grew up with, but this region has its own fascinating plant palette. **The silvery evergreen leaves of four-wing saltbush**, above, are set off on female plants by a lavish display of interesting winged fruits and often golden fall foliage.

wood, it can grow to 18 feet. Its greenish white spring flowers are followed by yellow or orange oval fruits appreciated by many bird species as well as small mammals. Moderate growth rate. Zone 8a.

TEXAS OLIVE (*Cordia boissieri*)—This tree in the borage family can grow to 30 feet with a spreading, rounded top and stout branches, although it can be more shrub-like. From April to October it bears cymes of showy white trumpet-shaped flowers with yellow throats. Requires summer irrigation. Moderate growth rate. Zone 9.

HOPBUSH (*Dodonaea viscosa*)—A slender tree in the soapberry family that grows to 15 feet. Bears ornamental pale pink to magenta-brown fruits. There is a cultivar, 'Purpurea', with purple-red foliage and seeds. Zone 8.

TEXAS RANGER (*Leucophyllum candidum*)—A tree in the figwort family with

a whitish cast to its leaves and intense purple flowers. A cultivar, 'Silver Cloud', has even whiter foliage. Grows one to two feet a year. Good for tapestry hedges (see page 39). Zone 7.

TEXAS EBONY (*Pithecellobium flexicaule*)—This spiny evergreen shrub or tree usually grows to about 50 to 60 feet, forming a round, spreading head and a trunk three feet in diameter. From June to August, fragrant flowers are borne in spikes. The four- to six-inch seed pods, typical of the pea family, give this genus the common name "ape's earring." The dark bark is also eye-catching. Slow growth rate. Zone 8.

SUGARBUSH (*Rhus ovata*)—This dense evergreen sumac is usually shrubby (10 feet tall and six to eight feet wide) but can be pruned to a more treelike form. It has dark glossy leaves, light yellow flowers in short, dense spikes, and beautiful dark red, hairy fruit. Slow growth rate. Zone 7.

ARIZONA ROSEWOOD (*Vauquelinia californica*)—This evergreen in the rose family has long, narrow, glossy leaves and bronze new growth. At first an upright column, it becomes vase-shaped as it matures to 15 feet tall and eight feet wide. It has small white flowers in June. Slow growth rate. Zone 7.

Smaller Plants

BEEBUSH (*Aloysia gratissima*)—This verbena relative is evergreen with twiggy growth and sparse, pale green leaves. It generally grows 10 feet tall and about as wide. Its white flowers, which last from spring through autumn, are tinged with purple and exude an extremely sweet vanilla scent. Fast growth rate. Zone 8.

TEXAS SILVERLEAF (*Leucophyllum frutescens*)—This shrub in the figwort family grows to 10 feet with ashy gray leaves. The hairy flowers are usually purple but can be





The buds of sugarbush, opposite, open to pale yellow flowers and are later replaced with dark red, hairy fruits. Texas ebony is a spiny evergreen, above, with fragrant flowers and dark, eye-catching bark responsible for its common name. Typical pea family seed pods have earned it another nickname, “ape’s earring.” It can grow to 60 feet tall with a trunk three feet in diameter.

pink or, rarely, white. Sometimes called “barometer bush” because it blooms heavily after summer rains. Good cultivars include ‘Green Cloud’ (bigger, with green leaves, purple flowers), ‘White Cloud’ (white flowers), and ‘Thunder Cloud’ (whiter foliage, intense purple flowers). Moderate growth rate. Zone 7.

GOATNUT, JOJOBA (*Simmondsia chinensis*)—A shrub with dense foliage and leathery gray-green leaves that fold to protect themselves from intense sun. It grows to six feet tall and four feet wide. The

flowers are inconspicuous, but the nuts are edible and valued for their oil. Takes well to formal pruning but doesn’t require any. Slow growth rate. Zone 7.

A Desert Tapestry

Tapestry hedges, in which plants with leaves of different colors and textures are encouraged to mingle, are rarely seen in the West. Irish recommends a mix of Texas ranger, described earlier, and:

FOUR-WING SALTBUSH (*Atriplex canescens*)—This silvery-leaved evergreen usual-

ly grows to eight feet tall but its shape is variable. The white June-to-September flowers aren’t as showy as the beautiful winged fruits. Moderate growth rate. Probably Zone 7.

BIG SALTBUSH, **QUAILBU**SH (*Atriplex lentiformis*)—This deciduous shrub usually grows to only five feet with an erect, slightly rounded outline. A cover for wildlife, producing good bird food, but browsed by deer. Flowers June to August. Extremely drought tolerant. Zone 8a, probably into Zone 7.

ALGERITA (*Berberis haematocarpa*)—A plant for all seasons, with blue-gray, holly-like evergreen leaves, fragrant yellow spring flowers, and red summer fruits. It ranges from three to eight feet tall and roughly as wide. The leaves are painfully prickly but fortunately pruning is unnecessary. Slow growth rate. Zone 7.

LITTLELEAF SUMAC (*Rhus microphylla*)—A deciduous shrub with arching branches, deep green leaves, and a broad, rounded shape, typically six feet tall and eight feet wide. Produces red-orange summer fruits loved by birds and burgundy red fall foliage. Plum-colored new growth gives winter interest. Grows a foot a year. Zone 6.

Desert Southwest Sources

LAS PILITAS NURSERY, Star Route Box 23X, Santa Margarita, CA 93453, (805) 438-5992. Catalog \$6. *Atriplex canescens*, *A. lentiformis*, *Rhus ovata*.

SOUTHWESTERN NATIVE SEEDS, P.O. Box 50503, Tucson, AZ 85703. Seeds only. Catalog \$1. *Berberis haematocarpa*, *Rhus microphylla*, *Simmondsia chinensis*.

WHOLESALE ONLY. Ask your local nursery to contact Mountain States Nursery, P.O. Box 33982, Phoenix, AZ 85067, (602) 247-8509. *Celtis pallida*, *Cordia boissieri*, *Dodonaea viscosa* ‘Purpurea’, *Leucophyllum candidum* ‘Silver Cloud’, *L. frutescens*, *Pithecellobium flexicaule*, *Vauquelinia californica*.

Clematis

Less well-known than the flashy-flowered hybrids, our bashful native clematis deserve their own place in the garden.

Clematis





b y C a r o l H o w e

When most people think of clematis, they imagine eye-catching hybrids such as wine red 'Ernest Markham', lavender-blue 'Ramona' with its rounded sepals, or double 'Duchess of Edinburgh' with flowers like crumpled damask napkins. Or they may know and grow smaller-flowered, mass-blooming species such as snowy *Clematis terniflora* (formerly *C. maximowicziana*) and golden *C. tangutica*.

But gardeners seeking to use more North American natives may be surprised to find great diversity among our own less publicized clematis. In general, native

Extended on graceful stems, the rosy sepals of *Clematis texensis* unfurl only at the tips to reveal a cream-colored interior.

PHOTO: DAVID CAVAGNARO

clematis “are much more delicate than the hybrids,” says Richard Weaver, co-owner of We-Du Nurseries in Marion, North Carolina. “The bell-shaped flowers are such a unique shape that they provide an entirely different character.” Yet that delicate appearance is deceiving. As with many natives, clematis grown in their native range are often hardier and more disease- and pest-resistant than hybrids or non-natives.

Native clematis can be found in most regions of North America, from northwest Canada to Baja, California, from Florida to Nova Scotia, although the majority of species are clustered in the East and Northwest. Among the best known are *C. crispa*, a southeastern native with lavender flowers that sometimes have a pale margin; *C. douglasii*, a deep mauve- to violet-flowered native of the Northwest; and *C. texensis*, a scarlet to purple native of Texas.

Clematis are members of Ranunculaceae, the buttercup or crowsfoot family. The genus name is derived from the Greek word *klema*, which means a climbing or branching vine. Depending on who is counting, there are from 200 to more than 250 known species, mostly in the temperate regions of both hemispheres.

The colorful “petals” of clematis are actually petal-like sepals that surround a cluster of usually contrasting stamens. Although clematis can have between four and eight sepals, all of our natives have four.

Clematis became popular in Europe in the early 1800s, but on this side of the Atlantic only naturalists such as Neltje Blanchan—a late-19th-century writer and wife of publisher Abner Doubleday—took much notice of our native clematis. The exception to this neglect was *C. texensis*, a five- to eight-foot-tall leafy vine or shrub. It became parent to a number of important hybrids and cultivars, including ‘Etoile Rose’ and ‘Duchess of Albany’.

The Leather Flower Group

Clematis texensis is one of several clematis species in North America with four tough, thick sepals that are joined to form downturned, urn-shaped blossoms with reflexed (upward curling) tips. The thickness of the sepals led to several species becoming known by the common name “leather flower.” Others include *C. viorna*, *C. versicolor*, *C. crispa*, and *C. addisonii*. Some taxonomists lump together clematis with these characteristics as the Viornae group. Most are low-growing with delicate flowers that can be used in a



Clematis crispa, top, a native of our Southeast commonly called blue jasmine or curly clematis, has pale blue to lavender flowers with ruffled edges. Distinguished by purple sepals covered with fine silvery hairs, *Clematis douglasii*, above, is native to northwestern North America.

Commonly known as vase vine, *Clematis viorna*, top, is found along the Eastern Seaboard from New York to Georgia. Similar in appearance is Addison’s clematis, above, a rare species endemic to limestone banks and glades in western Virginia.

PHOTOS (CLOCKWISE FROM UPPER LEFT): JESSIE M. HARRIS, ROB SIMPSON, ANITA SABARESE, JESSIE M. HARRIS, MARYL, AND JOANNE PAVIA



The flowers of 'Duchess of Albany', top, a cultivar derived from *Clematis texensis*, are followed by one-seeded fruits (achenes) with silky styles. *Clematis occidentalis*, above, known as purple clematis or bell rue, has two botanical varieties with droopy sepals that range from rosy pink to indigo.

partly shaded border or allowed to cascade gracefully over a small shrub.

As you might guess from its name, *C. texensis* is native to Texas and surrounding states. Hardy to USDA Zone 5, it is commonly known as scarlet clematis. Its flowers, which arise from new wood between July and October, can range from scarlet to a dull reddish purple.

Clematis viorna, also known as vase vine, is found in gravelly soils from New York to Georgia and is hardy to Zone 4. The sepals are mostly reddish purple but the tips—curled upward like elfin shoes—are often greenish or creamy white. Writer Christopher Lloyd compares the dark yellow

but they reappear continuously from May to September. Hardy to Zone 5, *C. crispa* grows from six to nine feet tall and is found from Pennsylvania west to Missouri and south to Texas and Florida. Often found in moist soils in woods or around swamps, it is also known as marsh clematis. Its stems usually die to the ground in winter, and in the northern extent of its range it is advisable to protect the crown of the plant from frost with a layer of straw mulch.

Free-Climbing Clematis

In sharp contrast to the low-growing, delicate leather flower group is *C. virginiana*, a vigorous climber that can reach 20 feet.

Christopher Lloyd compares the dark yellow seed heads that form after vase vine's June flowers to many-legged "tropical spiders."

low seed heads that form after the June flowers to many-legged "tropical spiders."

Clematis versicolor is found from Kentucky and Tennessee west to Missouri, Oklahoma, and Arkansas. Hardy to Zone 5, it has small but numerous summer to early fall flowers on a seven- to 12-foot vine. Its sepals are rosy pink on the outside, fading to almost white towards the tips.

Addison's clematis (*C. addisonii*), restricted in the wild to limestone and dolomitic glades and banks in western Virginia, is a bushy clematis that reaches only a foot to three feet in height. Distinctive heart-shaped leaves are borne on almost nonexistent leaf stalks. Its leathery sepals are deep reddish purple on the outside and creamy white inside. When the solitary early- to midsummer flowers bloom on their long stalks, the sepal tips curl back to reveal a downy interior.

Sometimes known as blue jasmine or curly clematis, the fragrant *C. crispa* also has downturned flowers, but with more delicate sepals than other "leather flowers." The sepals—distinguished by ruffled edges and strongly reflexed tips that often curl back to touch the outside of the sepals—are pale blue to lavender with a lighter band on the interior midrib of each, forming a star around the central cream-colored stamens. The blooms may be few in number,

Commonly called old man's beard or virgin's bower, it is hardy to Zone 4. Look for it trailing over plants and bushes in moist woods or along streambanks from Nova Scotia to Georgia and west as far as Manitoba and Tennessee. Although it blooms from July through September, *C. virginiana* is better known for its fall display of plummy silver to gray seed heads than for its unspectacular, small white flowers.

Its Western counterpart is *C. ligusticifolia*, native from western Canada south to California and east to Missouri. Hardy to Zone 5, it has three botanical varieties. In larger gardens, both *C. virginiana* and *C. ligusticifolia* can be used for naturalizing with large shrubs or even in trees.

One of the widest ranging of our native clematis is *C. occidentalis* (formerly *C. verticillaris*), known as purple clematis or bell rue. Hardy to Zone 4, it is found from British Columbia to eastern Quebec, south to Wisconsin and northeastern Iowa and east as far as West Virginia and New England. This is a woody-stemmed six- to 10-foot trailer or climber that prefers rocky, limy woods. It has broad, drooping, almost translucent, lavender to purple-blue sepals that are downy within and without. Arising singly from leaf axils or branch tips, the flowers can reach two inches long but rarely open fully. Despite its range, *C. occidentalis*

is actually rather scarce in the wild. It has two botanical varieties—*C. occidentalis* var. *dissecta*, a three-foot climber with rosy pink to purple flowers, found in the Cascade Mountains of Washington, and the indigo-flowered *C. occidentalis* var. *grosseserrata*, found in Alaska and northwestern Canada.

The range of *C. occidentalis* overlaps that of a related species, *C. columbiana*, which has floppy purple to blue May-blooming flowers with translucent sepals even broader than those of its more eastern relative. *C. columbiana* is found from British Columbia and Alberta south to Oregon and Colorado. Although *C. occidentalis* and *C. columbiana* are rated hardy to Zone 4, both can be found growing wild into some areas of Zone 1. Heavy snow cover apparently helps protect dormant plants.

Another western species, native to sagebrush country and high desert from British Columbia south through Washington and Oregon and east to Montana and Wyoming, is *C. douglasii* (formerly *C. hirsutissima*), which rarely grows more than two feet tall. Its rounded, leathery, downturned flowers are formed of deep purple sepals that curl back at the very tips to reveal creamy stamens within. Both its leaves and sepals are covered with fine silvery hairs. It can be grown in a well-aerated sunny border or rock garden. A variety, *C. douglasii* var. *scottii*, differs from the species in having bipinnate leaves and paler lavender sepals and growing up to a foot taller.

Found from Indiana south to Mississippi and west to Nebraska and Texas, *C. pitcheri* is distinguished by ribbed sepals that are pale lavender or rose on the outside and ruby red to purple inside. Creamy to greenish white stamens provide a lovely contrast to the sepals in this six- to 10-foot vine. Its large leaves are divided into seven to nine occasionally lobed leaflets.

These species are just a few of the many adorning our countryside. It's fun to discover native clematis on rambles in the woods, but they are tamable as well. Some are ideal for naturalizing a corner of your garden. Others will look terrific in the border or as late season adornments for a small shrub whose spring flowers are long gone. Still others can be trained up a small trellis or grown over an arbor.

Collect seeds where clematis grow prolifically, but never dig plants in the wild. Clematis are notoriously hard to transplant, so adhere to the advice of an Ohio wildflower booklet: "Let them live in your eye, not die in your hand" (or garden).

"I find native clematis are much easier to grow and tougher than a lot of the hybrids," says Susan Austin, who runs The Compleat Garden—Clematis Nursery in Ipswich, Massachusetts. "I wish more people knew about them because they are worthy garden plants."

Carol Howe is a free-lance writer who resides in Rockland, Maine.

Sources

THE COMPLEAT GARDEN—CLEMATIS NURSERY, 217 Argilla Road, Ipswich, MA 01938-2614. Catalog \$3.

C. addisonii, *C. crispa*, *C. pitcheri*. **FORESTFARM**, 990 Tetherow Road, Williams, OR 97544-9599, (541) 846-7269. Catalog \$3. *C. ligusticifolia*, *C. virginiana*.

THE FRAGRANT PATH, P.O. Box 328, Fort Calhoun, NE 68023. Catalog \$2. *C. crispa*, *C. pitcheri*, *C. texensis*, *C. virginiana*.

SASKABERIA SEEDS, P.O. Box 26, Prairie River, Saskatchewan S0E 1J0, Canada. Price list \$1. *C. douglasii*, *C. occidentalis*.

WE-DU NURSERIES, Route 5, Box 724, Marion, NC 28752, (704) 738-8300. Catalog \$2. *C. crispa*, *C. viorna*, *C. virginiana*.

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

Growing Native Clematis

Many nurseries sell potted clematis, but they can also be grown from seed by following a few simple guidelines.

Germination

Unless you can sow seeds immediately after harvesting, patience is the key to germinating most native clematis. Fresh seeds of some species will germinate in less than a month, but seeds that have been stored for more than a few weeks can take from a month to several years to ger-

minate. Many species require several cycles of cold and heat for germination. "I wish I could say they were all easy," says Susan Austin, owner of The Compleat Garden—Clematis Nursery in Ipswich, Massachusetts, who grows all her stock from seed. She sows her clematis seeds in March and allows them to go through natural seasonal temperature cycles.

Richard Weaver Jr., co-owner of We-Du Nurseries in Marion, North Carolina, says *Clematis virginiana* "is very easy to germinate—but we usually give it at least a month of cold stratification." We-Du also sells *C. viorna*



PHOTO: DAVID CAVAGNARO

Fluffy seed heads make a wonderful fall display on many clematis species.

and *C. crispa*, both of which require cold treatment followed by warm treatment. Weaver says he usually sows the seeds in a soilless potting mix in January and leaves the

flats in an unheated greenhouse until they germinate in late summer. You can actually dispense with seeds in the case of *C. virginiana*, which he says is extremely vigorous



PHOTOS: JOANNE PAVIA (LEFT), ANITA SABARESE (RIGHT)



The translucent purple to light blue sepals of *Clematis columbiana*, left, a native of the Northwest, droop delicately from slender stems. The white flowers of the free-climbing *Clematis virginiana*, above, are smaller and less refined, but it is redeemed in late fall and into early winter when it becomes a mass of the typical showy clematis seed heads.

and can be propagated from stem nodes, which will root if the plant is allowed to run along the ground. *C. ligusticifolia* is reported to be similarly fecund.

Stanley Zubrowski, a clematis grower and owner of Saskaberia Seeds in Prairie River, Saskatchewan, says both *C. occidentalis* and *C. douglasii* seeds germinate best when sown immediately after harvesting. "Otherwise you need to stratify them for a few months. I've had some pots lie outside under snow and germinate a year later." In *Seed Germination Theory and Practice*, author Norman Deno says *C. columbiana* and

C. virginiana will germinate best uncovered at 70 degrees, while *C. occidentalis* germinates best outdoors. Deno's testing indicates that *C. addisonii* seeds require use of the plant hormone gibberellin to germinate.

Growing Requirements

Although hybrid clematis have a reputation for being picky about soil pH, some natives appear more adaptable. "Despite the common belief to the contrary, I don't think that all the natives require alkaline soils," says Robert Mackintosh of Woodlanders nursery in Aiken, South Carolina.

Mackintosh says *C. crispa* often is found growing on low ground, where the soil tends to be slightly acid. "We have not added any lime to soil when we have grown them here," he says. Mackintosh does suggest amending soil with peat moss, leaf mold, compost, or other well-rotted organic material. Zubrowski says he plants all his clematis in sandy loam, amended if needed. "We have a good supply of natural lime in the soil here." He recommends planting western natives in a semi-shady spot. "Where I've seen them growing in Alberta, they are usually under lodgepole

pinus in moist, well-drained, cool areas."

Select a site for your clematis where its roots will be protected from direct sun during the hottest part of the day in summer, but the foliage will be able to grow into at least filtered sunlight. If the soil is heavy clay or too sandy, amend it with organic matter to make it moist and well aerated. After planting, water the site thoroughly with a slow-running hose, then add an inch of light-colored mulch around—but not touching—the plant's base to help keep the roots cool and reduce weeds.

—David J. Ellis

the name game

ANY OBSESSED GARDENER QUICKLY LEARNS THAT BOTANICAL NAMES are indispensable, whether we're seeking a rare cultivar or identifying the weed in the back forty. Once we learn that leukos is Greek for "white," we can guess that the species name *leucopetalus* means "white petals." Knowing a genus can indicate the growing conditions a plant may need—or a tendency to be toxic. ■ But about the

time we think we're figuring these things out, taxonomists change all the names, we realize all our reference books are hopelessly outdated, and a friend takes us aside to explain that we've been making a fool of ourselves saying "cotton-easter." Hey, no one ever said this stuff was easy!

Blue Flax



Linum perenne

great taxonomic gaffes

by Arthur O. Tucker

Outside of my family, my real passion is my garden. Thus, to be able to talk shop and compare notes, I belong to many horticultural societies. But because I was trained as a botanical taxonomist, I often hear plant names used in a way that sets my teeth on edge. I have learned to keep my mouth shut; no one really likes to be corrected by the self-right-

eous, especially about anything as esoteric as nomenclature. Yet, as Henry Higgins declared in *My Fair Lady*, your speech sets you apart. Likewise, your use of plant names distinguishes you as more than an armchair gardener.

Any level of taxonomic naming is called a taxon (taxa in the plural). Most gardeners are concerned with minor differences, as exemplified by a verticillium wilt-resistant tomato, a cold-hardy rosemary, or a grape-scented iris. Thus, they are concerned with a taxon called "cultivar." Derived from "cultivated variety," the term cultivar is used by botanists and horticulturists to denote anything from a very minor variation, such as the white-flowered selection of red valerian (*Centranthus ruber* 'Albus') all the way to intergeneric hybrids of orchids. The cultivar is normal-

ly enclosed within single quotes (the abbreviation "cv." preceding the name is no longer permitted) with the first letter of the name capitalized. Since January 1, 1959, cultivar names must be in a modern language, not Latin. Previously, many cultivars were described as botanical varieties or forms even though they arose in cultivation. For example, the zebra iris arose as a pre-1901 mutation or sport of *Iris pallida* with cream edges along the leaves and became *I. pallida* 'Variegata.' But if this variegated iris were introduced today, its Latin cultivar name would not stand up in a court of botanical nomenclature.

Because some cultivars involve extensive hybridization, it is rather pointless—and often confusing—trying to pin down a species. Thus, we write *Iris* 'Song of Norway', not *I. germanica* 'Song of Norway'

PHOTO: LEE KLOPPER

since the true *I. germanica* contributed little to iris evolution.

Another misuse of taxonomy involves the concept of species. A species is properly the genus plus a specific epithet (specific name—abbreviated “sp.,” or “spp.” for the plural); because a species has two names, it has to be expressed as a binomial. As a species humans are *Homo sapiens*,

containing many species. It is in Lamiaceae (alternatively, Labiatae), sometimes called the mint family, but neither lavender nor *Lavandula* is a family. Lamiaceae includes many other plants related by their common attributes of zygomorphic (bilaterally symmetrical) flowers, square stems, glandular hairs filled with essential oils, and so forth, such as the rosemarys

behold, taxol was there too. And deer-plagued gardeners are noticing that if deer leave one plant alone, they may also bypass its near relatives.

Oh, finally, don't be afraid to pronounce a botanical name. The “pronunciation police,” as I term some self-important critics, usually don't know what they are talking about anyway. While it's helpful knowing Latin to pronounce botanical names, many names aren't really Latin after all, but are derived from Greek and other roots. I have yet to meet two botanists who pronounce *Aeschynomene* the same way!

Ultimately, since communication is the goal, go for the most melodious-sounding pronunciation for the audience. Most gardeners (and botanists, too) mix classical Latin and English pronunciations. If you want to cause an uproar in your discussions, try using the classical Latin pronunciation of *Pinus ponderosa* (the “i” in classical Latin is pronounced similar to the “i” in “machine”). Freudian compulsions do have their limits!

Arthur O. Tucker is a research professor in the Department of Agriculture and Natural Resources at Delaware State University. He was senior author for an appendix in the 1995 revision of the International Code of Nomenclature for Cultivated Plants.

What really makes me cringe is hearing someone discuss, for example, the “family of lavenders.”

not just *sapiens*! For the same reason, you don't want to be heard saying, “Well, *dentata* is not hardy for me.” You would be saying your “toothed” isn't hardy. A toothed what? The statement that “*Lavandula dentata* is not hardy,” however, has real meaning, since you are now referring to the toothed lavender. To further define a species, the authority who first named it is also appended in formal botanical usage. Thus, the full, correct name of the toothed lavender is *L. dentata* L., referring to Linnaeus' publication of this name in 1753 in his *Species Plantarum*. For most horticultural use, though, the authority is omitted.

Hybrid species are designated with a multiplication sign “x,” although the lowercase letter “x” may also be used. Peppermint is a hybrid of spearmint (*Mentha spicata*) and water mint (*M. aquatica*) and is written as *M. x piperita*. Intergeneric hybrids, such as heucherella, a hybrid of the two genera *Heuchera* and *Tiarella*, have the “x” before the genus; thus the new genus x*Heucherella*. Some nursery catalogs list an “x” before certain cultivar names. I'm not sure what this really means; the *International Code of Nomenclature for Cultivated Plants* doesn't allow the use of “x” before a cultivar name.

What really makes me cringe, though, is hearing someone discuss, for example, the “family of lavenders.” Family? *Lavandula* is a genus

(the genus *Rosmarinus*), true mints (the genus *Mentha*), and sages (the genus *Salvia*), among others.

PUTTING LATIN TO WORK

Understanding botanical nomenclature has very real applications beyond trying to impress your friends. Knowing the related species will indicate potential for hybridizing, grafting, medicinal properties, etc. For example, when taxol was discovered in the Pacific yew (*Taxus brevifolia*), chemists began searching our cultivated yews, and

Putting Plants in Their Place

Families are organized into orders, orders into classes, classes into divisions, and divisions into kingdoms.

(The division has traditionally set botanists apart, since zoologists call this taxon a phylum, but the 1994 *International Code of Botanical Nomenclature* now allows both to be used by botanists.) Thus the toothed lavender could be fully classified as follows:

KINGDOM	Planta
DIVISION	Magnoliophyta (or Anthophyta)
SUBDIVISION	Magnoliatae (or Angiospermae)
CLASS	Magnoliopsida (or Dicotyledonae)
SUBCLASS	Asteridae
ORDER	Lamiales
FAMILY	Lamiaceae (Labiatae)
GENUS	<i>Lavandula</i>
SPECIES	<i>L. dentata</i>

Gardeners are rarely concerned with anything above the level of family. Only the genus and subgeneric taxa (such as species or subspecies) are italicized. Notice that the genus may be abbreviated with an initial when it was previously mentioned and the reference is obvious. But if I mention *Lavandula* and *Leonurus* in the same context, I cannot abbreviate either genus because it could be confusing.

—Arthur O. Tucker

utter nonsense

Okay, now that Dr. Tucker has said it, we'll confess: We *don't* always know what we're talking about when it comes to pronouncing plant names. Our staff frequently gets calls asking what we use as a guide for developing our pronunciation guide at the back of each issue. We draw upon a number of books (see “Resources,” page 48), and when they're in sync, our job is easy. When they aren't, we have to settle the dispute by considering common usage (also difficult, since we have heard eminent horticulturists say Ameri-kah-na and Ameri-kay-na in the same conversation).

There is also a certain

amount of disagreement between our Kansas-bred editor who thinks a short “a” should be nice and broad—as in “bad”—and our assistant editor who was raised abroad and thinks a short “a” should be more dignified, as in po-tah-toe. We do agree that most Americans will say Hy-dran-JUH, and not Hy-dran-JAH. We try to be consistent in the way we render similar pronunciation elements and now have many pronunciations in our data base, but we are always revising. We welcome comments from readers who disagree strongly with any of our *suggested* pronunciations.

And by the way, Dr. Tucker, *Aeschynomene* is pronounced es-ky-NOH-men-ee.

help for the binomially challenged

by Ruth Kvaalen

Maybe you have been startled, as I have, by some of the recent changes in plant names. Fall-flowering “mums” are now called *Dendranthema*, and other members of the *Chrysanthemum* genus have been transferred to genera such as *Tanacetum* and *Leucanthemum*. Certain sedum species,

(including *Sedum spectabile*, with its popular cultivar ‘Autumn Joy’) have been moved to *Hylotelephium*. The Japanese iris we knew as *Iris kaempferi* is now *I. ensata*.

Sweet autumn clematis (*Clematis maximowicziana*), which has been called by at least two other names in the last 20 years, is now *C. terniflora* (which is something of a relief!). Some spiraeas that we knew as species (*Spiraea bullata*, *S. albi-flora*, *S. xbumalda*) have been reduced to cultivars of *S. japonica*.

And the list goes on.

The binomial system of botanical names is intended to create one unique name for each plant, recognized worldwide, so that no matter where you are or what language you use, the botanical name identifies the plant in question. But with frequent changes in the botanical name, the system can lose its effectiveness.

Why are plant names changed? And how can people who need to communicate about plants deal with these changes?

Names are changed to subscribe to nomenclatural rules or to fit a new understanding of the limits of a group of plants. The *International Code of Botanical Nomenclature* describes the requirements for a name to be valid. For instance, the oldest name given to a plant is the one that should be used (the rule of priority). Thus, if an older valid name for a plant is discovered in historical records, it takes precedence over the name currently in use.

When the same name has been applied to more than one plant, the plant named first retains that name. Others must be re-

named unless experts at a worldwide meeting of botanists, such as the 15th International Botanical Congress held in 1993 in Japan, agree to make an exception.

Name changes also occur when scientific evidence indicates that one group of plants is so similar to another that they should not be considered distinct. In other cases, evidence may dictate that some members of a group are different enough to merit setting them apart.

The advent of new methods in molecular biology and genetics to investigate similarities and differences among plants probably means that in the future we will be seeing more groups of plants combined or separated, with resulting name changes.

Unfortunately, botanists sometimes can't agree among themselves. One group may want to include pasque flower with *Anemone*, but another may want to separate it out as *Pulsatilla*. (Taxonomists who habitually tend toward merging groups or separating them are sometimes described as “lumpers” or “splitters,” respectively.)

CHANGING WITH THE TIMES

How do gardeners deal with this ever-changing parade of names? If you stick with old names, soon you may not be able to find your favorite plants in nurseries and catalogs. Some people may not even recognize the name you are using. Yet you may have similar problems if you adopt a change too quickly. During a transitional period, many gardening magazines and books use the new name, with the older following it in parenthe-

Resources

The following books can be ordered through the AHS Book Service. Prices reflect an AHS member discount; a postage and handling fee is additional. To order, call Barbara Catherwood at (800) 777-7931 ext. 36.

Dictionary of Plant Names. Allen J. Coombes. Timber Press, Portland, Oregon. 1994. \$9.95.
Gardener's Latin: Discovering the Origins, Lore and Meanings of Botanical Names. Bill Neal. Algonquin Books of

Chapel Hill, North Carolina. 1992. \$13.50.

Guide to Flowering Plant Families. Wendy B. Zomlefer. University of North Carolina Press, Chapel Hill. 1994. Hardcover \$49.50, softcover \$24.75.

Hortus Third. Staff of Liberty Hyde Bailey Hortorium. Macmillan Publishing Company, New York, New York. 1976. \$135.

Index of Garden Plants. Mark Griffiths. Timber Press, Portland, Oregon. 1994. \$53.95.

New Pronouncing Dictionary of Plant Names.

American Nurseryman Publishing Company, Chicago, Illinois. 1995. \$2.95.

The New York Botanical Garden Illustrated Encyclopedia of Horticulture.

Thomas H. Everett. Garland Publishing, Inc., New York, New York. 1981. 10 volumes; \$100 per volume.

Plants and Their Names: A Concise Dictionary.

Roger Hyam and Richard Pankhurst. Oxford University Press, New York, New York. 1995. \$28.50.

Scientific and Common Names of 7,000 Vascular Plants in the United States.

Lois Brako, Amy Y. Rossman, and David F. Farr. APS Press, St. Paul, Minnesota. 1995. \$27.

Stearn's Dictionary of Plant Names for Gardeners.

William T. Stearn. Sterling Publishing Company, Inc., New York, New York. 1992. \$26.95.

A Synonymized Checklist of the Vascular Flora of the United States,

Canada, and Greenland. John T. Kartesz. Timber Press, Portland, Oregon. 1994. Two volumes; \$135.

ses, until the new name gains acceptance.

Of course, the most carefully checked new references suffer a lag between preparation of the text and publication. Also, not all references cite the same authority for botanical names. The nomenclature of the horticulture industry's old standard, *Hortus Third*, published in 1976, is long out of date because many plants have been introduced and many names have changed in the intervening years. *The New York Botanical Garden Illustrated Encyclopedia of Horticulture* does not address itself primarily to nomenclature, and it suffers from the same handicaps as *Hortus Third*, having been published in 1980-1982.

Sad to say, we must look to books from Britain and Europe for correct names be-

onym, you can find it there and learn the current valid name. This is a great reference for nomenclature, but it contains no plant descriptions or information about the origins of the species listed.

If Latin names mystify you, *Stearn's Dictionary of Plant Names for Gardeners* (1992) gives the meanings and origins of more than 6,000 botanical names—more plants than most of us recognize. It includes notes on pronunciation, an informative chapter on vernacular (common) names, and a cross-index of 3,000 common names to their botanical names. Stearn is well-qualified for this book; he is the author of *Botanical Latin*, the standard reference that has undergone several editions from 1966 to the present.

indexed both by common name and botanical name, but common names are indexed by each word in the name.

Formerly a horticultural instructor at Purdue University, Ruth Kvaalen writes frequently on horticultural topics. This article is adapted from one she wrote for the November 1994 Indiana Nursery News.

Cultivated Plant Code revised

Sad to say, we must look to books from Britain and Europe for correct names because there are few authoritative American references.

cause there are few authoritative American references. A comprehensive recent publication is *The New Royal Horticultural Society Dictionary of Gardening* (1992), a four-volume set on which nearly 500 people collaborated. At nearly \$800, it's too costly for most people. [The publisher is offering a special discount for AHS members; see box below for details.]

An affordable offshoot may serve as the best current replacement for *Hortus Third*. The Royal Horticultural Society's *Index of Garden Plants* by Mark Griffiths is based on the four-volume RHS publication mentioned above, for which Griffiths was editor. It gives names and brief descriptions for more than 60,000 ornamental and economic plants, reflecting current classifications and cross-referenced to synonyms (out of date or wrongly used names).

For native American plants, the best answer to questions about valid names is the second edition of *A Synonymized Checklist of the Vascular Flora of the United States, Canada, and Greenland* by John Kartesz. Published in 1994, this two-volume work covers all the vascular plants north of Mexico, backed by the Biota of North America Program. The first volume is arranged by families. Genus and species names are given with their synonyms. The second volume has the same plants arranged alphabetically by genus. If you know a plant by its syn-

A useful guide to flowering plant families, which serves as an update of sorts to the more comprehensive *Integrated System of Classification of Flowering Plants* by Arthur Cronquist (1981), is Wendy Zomlefer's *Guide to Flowering Plant Families* (1994). It contains detailed botanical drawings illustrating major distinguishing features of the plant families described.

If you are looking for a reference to help you figure out the true identity of the plant your neighbor calls "clammy cockle," *Scientific and Common Names of 7,000 Vascular Plants in the United States* (1995) by Lois Brako, Amy Rossman, and David Farr is helpful for finding your way through the confusing maze of common names used for plants. Not only is it in-

The *International Code of Nomenclature for Cultivated Plants* (ICNCP), the rules by which cultivated plants used in agriculture, forestry, and horticulture are named and registered, has been revised and is now available in a 191-page publication.

First published in 1953, the ICNCP (informally called the "Cultivated Plant Code") spells out the rules for naming cultivated plants—those selected and developed specifically for unique horticultural or agricultural characteristics. The rules for naming variations that occur in nature are found in the *International Code of Botanical Nomenclature* (ICBN).

Designed to be more user-friendly and to address the many changes in horticulture since the last revision—a 32-page pamphlet—was published in 1980, the new Cultivated Plant Code "is completely different from the preceding one," says Freek Vrugtman, a research associate at the Royal Botanical Gardens in Hamilton, Ontario, and one of the ICNCP editors.

The revised Cultivated Plant Code includes 32 articles about creating and using

Both the ICNCP and the ICBN (revised in 1994) are available from Balogh Scientific Books (formerly Koeltz Scientific Books USA), 1911 North Duncan Road, Champaign, IL 61821; telephone (217) 355-9331; fax (217) 355-9413; e-mail balogh@balogh.com. The exact cost of the ICNCP was not available at press time, but was estimated to be approximately \$48, including postage and handling. The ICBN costs \$63.50, postage and handling included.

Special Offer!

Stockton Press, publisher of *The New Royal Horticultural Society Dictionary of Gardening*, is offering the four-volume set to AHS members for \$595 plus \$20 shipping—a considerable savings off the \$795 list price. Orders must be received by June 30 to qualify for this special offer. Call Barbara Catherwood at (800) 777-7931 ext. 36.

cultivar names. The 12 appendices include:

- International Registration Authorities for cultivar names.
- Herbaria and arboreta that maintain standards (samples of the plants) used for cultivar identification.
- A nomenclatural "filter" to help determine if a proposed name is correct.
- Steps for creating a new cultivar name.
- A glossary of nomenclatural terms.
- A description of how botanical names are formed (summary of ICBN).
- A flow chart of nomenclatural organizations and processes.

Among the notable changes from previous editions: New cultivar names must consist of no more than 10 syllables and 30 letters; the 1980 Cultivated Plant Code allowed a maximum of three words. In keeping with current practice, cultivar names should only be distinguished by inclusion within single quotes; the 1980 code allowed the use of the abbreviation "cv."

The ICNCP and the ICBN are prepared and released under the authority of separate international commissions, but to ensure consistency two members currently serve on both commissions.

much ado about TMs®

This spring as you filled out your catalog plant orders, you may have noticed that some of the descriptions were rife with strings of letters like 'Migtig', or maybe 'Smaragd'. A few years ago, these would have been ordering codes. Today, they're the names of the plants.

How would anyone expect to sell plants—no matter how "rare and choice"—with such ugly monikers? They don't, which is exactly the point.

In recent years a number of nurserymen—none of whom have yet to challenge Donald Trump or Bill Gates as money-makers—recognized that they could increase profits immeasurably by patenting and trademarking their products.

If a grower has a new plant—whether a naturally occurring mutation with bigger flowers or variegated leaves (a selection) or a hybrid developed through years

of painstaking crosses—he or she can register it as a cultivar through an International Registration Authority. Cultivar names have no legal standing, but are "gentlemen's agreements" intended primarily to help gardeners know exactly what they are buying and growing. The person who registers the cultivar has no ownership of the plant name or its germplasm—the seeds or cuttings that allow it to be reproduced. They will profit only from whatever propagating, distributing, and selling they actually do.

If a new introduction is patented, the patent owner can control the propagation, distribution, and sale of the clone through royalty agreements—anyone else who sells the plant has to give them a cut—but only for 17 years.

A trademark does not control distribution and sale of a particular product, but it does control the use of a name—indeinitely, as long as it continues to be clearly linked to one origin in the public mind. (Aspirin was originally a trademark symbolizing one originator of acetylsalicylic acid, but lost its protection after being applied in general use to all similar products.)

Cybergardening

Scanning Flowers for Fun and Profit

by Richard Dufresne

The increasing affordability of computer technology raises some interesting opportunities for gardeners. With a modest computer setup, I have scanned plant cuttings from my garden. The resulting images are beautiful, show a high level of detail, and can be creatively used in a wide variety of ways.

The images accompanying this article were scanned and manipulated on my home computer system: an IBM Pentium 90 computer with Paint Shop Pro 3.0 and Adobe Photoshop 3.0 software, and a Hewlett Packard (HP) Scanjet 3c—a 600 dots-per-inch (dpi) scanner.

As a seller of salvias and other herbs, I hope to use the

images to illustrate catalogs, brochures, posters, and other merchandising materials. I'm also exploring the idea of selling the images directly in an artistic format. Other possible uses of this technology include:

- Archiving plant collections.
- Identifying pests and pathogens.
- Designing plant labels and marketing displays.
- Illustrating books.
- Illustrating Internet sites.
- Developing material for slide presentations.
- Designing business cards and letterheads.

I scanned the plant material within one hour of cutting. The scanner gave me images with a depth of field of about one-half inch. By using the zoom feature on my scanner software, I was able to get de-

cent detail on half-inch flowers and fixed insects such as adult Chinese wax scale. (When a sense of size is useful, you can set a clear six-inch plastic ruler next to the plant on the scanner.) I removed the backgrounds using Paint Shop Pro and Photoshop, with color corrections done in Photoshop.

I set file size at under 1.4 megabytes to allow transfer to floppy disks. It is worthwhile to save scans at 24-bit color resolution, but to only release 8-bit files as freebies (for instance, over the Internet) so others can't profit from your work. You will need a software package such as Paint Shop Pro to collect and

manipulate 24-bit images. Using HP DeskScan II software, I save images with two degrees of sharpening—normal and extra sharp. The latter setting increases the contrasts of the color gradients, making the scans look more like artwork. This software also allows a modest degree of color correction.

To produce similar images, you need three basic components in addition to your computer:

1. A Scanner. You can start out with a fairly modest system, relying on Internet services or a service bureau (such as a Kinko's copy center) to



Thus anyone can sell as many trademarked October Glory maples as they like, as long as they sell them by the cultivar name 'PNJ0268' and not the appealing trademark name marketed as representing a superior plant.

It's pretty clear that when trademark laws were passed, no one thought they would ever be applied to plants. When a trademark is applied for, the product must have a separate generic (common) name as well: hence the conception of a generic name that can double as a cultivar name in the scientific community, while having absolutely no appeal in the marketplace. (A trademark can be formally registered, or become official through common use. Thus the name under which a patented plant is sold is likely to be accepted as a trademark when the patent expires.)

There are a number of problems with this system:

• A grower can apply a successful trademark to an entirely different plant. A name like Pretty Petals could be used for a decade for a pink rose and then applied to a white rose if the trademark owner decides the first rose is waning in popularity,

but still finds the name appealing.

• A second grower can give a second trademarked name to the same plant, says Steve Hutton, president of Conard-Pyle Company, a Pennsylvania-based distributor of roses and woody ornamentals. Pretty Petals could also be Beautiful Blossoms, both with the cultivar name 'Blufiz'.

• Because trademark officials and cultivar registrars aren't equipped to run cross-checks, new cultivar names may infringe on trademarks in one or more countries, and a long-established cultivar name like 'Mr. Lincoln' could be trademarked for another red rose, a yellow tulip, or both.

• Writers in professional journals aren't consistent in their use of these names. A researcher considering a study on disease resistance of 'Blufiz' may fail to find previous reports indexed under Pretty Petals.

• Writers for the popular press are at a loss, since most use the single-quote convention for cultivars but, by our own long-standing convention, do not use the trademark symbol.

There doesn't seem to be a simple solution to this chaotic situation.

Rick Darke, curator of plants at Long-

wood Gardens, says trademark law was never intended to protect the name of a single, unique entity like a plant, and some names have been successfully challenged on these grounds. "But while it might be worth a million dollars for a trademark holder to protect a name, it's not worth that much to the person who wants to contest it."

Conard-Pyle's Hutton sees only two potential solutions: for Congress to amend the trademark laws (not likely even when the nation's lawmakers aren't in a state of open warfare as they are currently), or for consumers to learn to keep it all straight.

"I always use the analogy of painkillers," he says. "You can learn to look for acetaminophen, and possibly save some money, or you can buy Tylenol, because it's easier to remember."

The Tylenol name, however, no longer applies to the original capsules since the poisoning scare created the ultimate marketing nightmare for that trademark holder. It does apply to caplets, as well as cold and flu medications. The Tylenol name can tell you who makes the product; the generic name tells you what it really is.

get TIFF format scans (see below). If you are going to make heavy use of these scans, invest in a good color bed scanner with at least 600 dpi resolution.

2. Image-Editing Software.

A modest investment (less than \$100) in a paint program such as Paint Shop Pro will get you started nicely. Besides having tools like lassos and magic wands to quickly select and modify backgrounds, such programs have conversion utilities that allow you to import and export images between publishing and transmission formats. For example, TIFF is a popular format for

saving images that will be imported into different programs or used on both Mac and IBM-compatible computers. However, TIFF files need to be converted for Internet transmission. GIF and JPEG are two formats that compress image files to decrease the amount of time it takes to send them across modem lines.

For good color control and advanced image manipulation, however, you will need to buy Adobe Photoshop, which costs around \$600.

3. Image-Processing Software. This can be done using a good word processing program, such as Lotus WordPro, Microsoft Word, or WordPerfect. All these programs allow

you to insert graphics into documents and let you control the size of a 256-color image, which is suitable for most needs. True color images are best developed by a service bureau. Many service bureaus have desktop publishing stations with color laser printers and Adobe PageMaker software for customers to use.

4. A Color Inkjet Printer. This is your best bet for printing images for previews and simple applications. I bought a Canon BJC 610 for \$550 because the individual color cartridges are replaceable. Less costly but perfectly useful printers start

around \$250, but require replacement of the whole color ink module when one color runs out.

Richard Dufresne worked at Lorillard Research for 15 years as a flavor chemist.

He has been collecting, propagating, researching, and marketing herbs and rare plants since 1972, specializing in salvias and other members of the mint family.

For more information, contact Richard Dufresne at 313 Spur Road, Greensboro, NC 27406, (910) 674-3105, or through e-mail at salvia@nr.infi.net.

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book reviews

☛ *flowering crabapples*

☛ *native plants*

☛ *herb encyclopedia*

FLOWERING CRABAPPLES: THE GENUS MALUS

Father John L. Fiala. Timber Press, Inc., Portland, Oregon, 1995. 340 pages. 8 1/2" x 11". Color and black-and-white photographs. Publisher's price: hardcover, \$49.95. AHS member price: \$44.95.

Written by the late Father John L. Fiala, who died of cancer in 1990 at the age of 66, this beautiful book deserves a place both on the coffee table for its 245 magnificent color photographs and on the reference shelf of every crabapple lover. Considerable space is devoted throughout the book to people and places central to the history, lore, and development of crabapples, and Fiala was unsparing in giving credit where credit is due.

About one-third of the book is devoted to a descriptive list of crabapple species, hybrids, cultivars, and varieties. Each entry includes information about care and propagation, along with suggestions for treating problems associated with diseases and pests. The descriptions often include the results of disease evaluations made by the late Lester

P. Nichols, formerly a plant pathologist at Pennsylvania State University in State College. Parentage is generally listed, as are size and color of flower and fruit, and the size of the tree.

Fiala divided this listing of names into two chapters, the first of which is described as crabapples of "documented authentic origin." He describes those listed in the second chapter as named crabapples "from sources that cannot be verified," although the latter list contains many names that are included in a 1970 book by Roland M. Jefferson called *History, Progeny, and Locations of Crabapples of Documented Authentic Origin*.

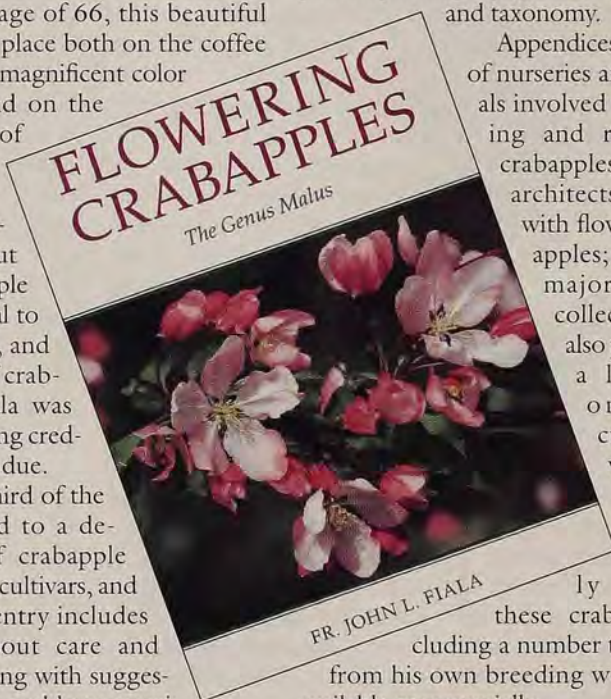
There are a few errors in the descriptions, some of which seem to result from unsubstantiated assumptions made by Fiala. For instance, he writes that *Malus* 'Abbondanza' is a synonym of *M.* 'Abundance'. This is not so. 'Abbondanza' has red fruit about 4.8 centimeters (2 inches) in diameter, while 'Abundance' has dark red to purple fruit that is only 1.5 centimeters (three-fifths inch) in diameter. Fiala states that *M.* 'Namew' "does not appear in any U.S. collection," but my records show this tree at three locations including the U.S. National Arboretum in Washington, D.C. It is unfortunate that all of Fiala's records were lost in a fire. Thus there is no way to follow up on some of his information.

Other chapters discuss crabapples in the landscape; culture, pests and diseases; companion plants; propagation; hybridization; and taxonomy.

Appendices include lists of nurseries and individuals involved with breeding and research on crabapples; landscape architects who work with flowering crabapples; and sites of major crabapple collections. Fiala also put together a list of recommended cultivars for various ornamental uses. Unfortunately

some of these crabapples, including a number that resulted from his own breeding work, are not available commercially.

This book can be heartily recommended to those interested in the history and culture of flowering crabapples and as a pic-



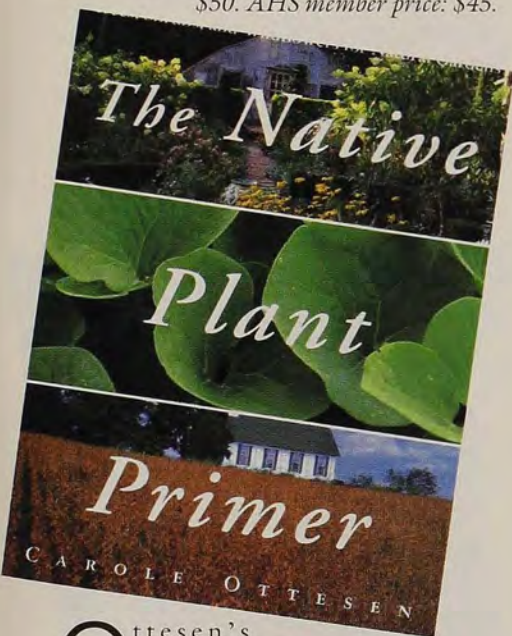
torial guide to some of the best crabapple species and cultivars. It should not, however, be relied upon as a final source of taxonomic information. I must commend Gilbert S. Daniels, who served as technical editor for the book. I only found one spelling error in a book that contains thousands of cultivar names.

—John H. den Boer

John H. den Boer is editor and publisher of Malus, the journal of the International Crabapple Society. This review is adapted with permission from one published in the spring 1995 edition of Malus.

THE NATIVE PLANT PRIMER

Carole Ottesen. Harmony Books, New York, 1995. 354 pages. 8 1/2" x 11 1/4". Color photographs. Publisher's price: hardcover, \$50. AHS member price: \$45.



Ottesen's *Native Plant Primer* is in many respects a rich and lavish odyssey that traces the author's growing appreciation for American native plants. It begins, oddly enough, at the Peradeniya Gardens in Sri Lanka and unfolds during a horticultural pilgrimage across the United States.

Ottesen leads us to more than 20 native plant gardens as she traverses 13,000 miles of incredible geological and climatic variation. Regional "snapshots," each accompanied by a plant list, introduce readers to some of this country's outstanding plant breeders, garden designers, and naturalists. Their insights, meshed with those of Ottesen, provide the real substance of this work.

The sumptuous design and illustrations of *The Native Plant Primer*, while seductive, serve merely as a showcase for Ottesen's valuable information. Unlike other encyclopedic works—divided into

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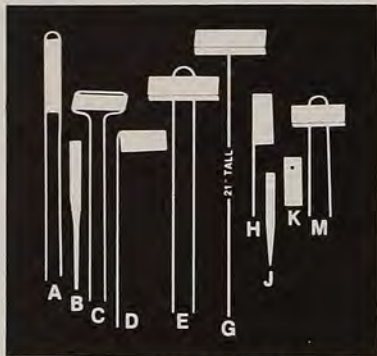
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plant colors or designations and heavy on impersonal cultural requirements—this book's sections on plant groupings from perennials to grasses, from water plants to shrubs and trees, offer a warm and delightful journal that combines history, legends, design advice, and in-the-field professional recommendations.

Every gardener will appreciate no-nonsense comments such as those on *Melampodium leucanthum*: "difficult to propagate from seeds. Buy plants." There are also extensive "spreadsheets" or charts for many of the more diverse genera like *Solidago*, *Liatris*, and so on. Information on azaleas, including a sidebar on azalea care, is provided by Fred Galle, former director of horticulture at Callaway Gardens. Similar sidebars and insights from native plant experts too numerous to mention proliferate, reflecting the author's rich network of associates around the country.

Ottesen's plant descriptions are a rich tapestry that combines her personal experiences with quotes from *Hortus Third*, William Robinson, Aldo Leopold, Michael Dirr, and Vita Sackville-West. At times, thankfully, her observations mirror our own; perhaps we have also had difficulties with *Franklinia alatamaha* or been disappointed with particular plant placements.

Ottesen is sensitive to each plant's seasonality and its relationship to a dynamic plant community. She at times suggests appropriate companion plants that will help achieve successive flowering, mirroring the natural cycle of life in the garden and providing year-round beauty.

There are as many reasons to value *The Native Plant Primer* as there are reasons to use native plants in our individual landscapes. While it would be noble to think that gardeners are turning to natives out of concern for genetic diversity or to maintain vital ribbons of wildlife habitat, the fact is that natives—regionally adapted and used properly—are tough, require little maintenance after becoming established, and are easily and naturally integrated into our existing landscapes.

The Native Plant Primer is a rare combination of friendly musings, useful lists, charts, and appendices, and a focused lesson on selecting and using native plants from some of the finest horticultural minds in the country. Ottesen has succeeded in bringing her odyssey home to us all.

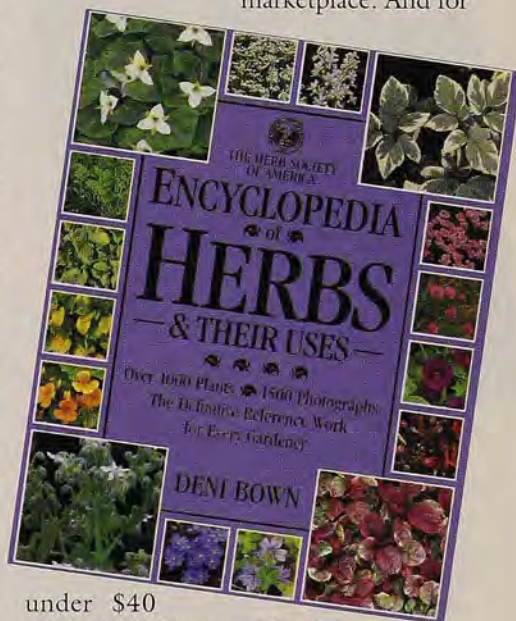
—Joseph M. Keyser

An environmental specialist with Maryland Environmental Services, Joseph M. Keyser develops programs to encourage habitat restoration and environmentally sensitive landscaping.

THE HERB SOCIETY OF AMERICA ENCYCLOPEDIA OF HERBS AND THEIR USES

Deni Bown. Dorling Kindersley Publishing Inc., New York, 1995. 422 pages. 9" x 11 1/2". Color photographs. Publisher's price: hardcover, \$39.95. AHS member price: \$35.95.

With a plethora of herb books on the market—many of them with descriptors such as "comprehensive," "complete," or "encyclopedia" in their titles—it is often difficult for gardeners to separate the wheat from the chaff and make good decisions on what to add to their libraries. Although the *Encyclopedia of Herbs and Their Uses*—billed as "The Definitive Reference Work for Every Gardener"—covers more than 1,000 plants and contains a veritable visual feast of more than 1,500 color photographs, the term "definitive" is still a stretch. It is safe to say, nevertheless, that this is the most complete volume on plants for the herb garden in the glutted herb book marketplace. And for



under \$40 this lavishly illustrated book is a remarkable publishing feat.

The heart of this volume is an A-to-Z encyclopedic treatment, arranged by genera. Unfortunately, to look up information on one plant you have to thumb between two sections of the book—"The Herb Catalog" and "The Herb Dictionary."

The catalog contains descriptions of herbs, together with information on their hardiness and uses. Each plant description features information on height, spacing, name origin, distribution, and native habitat, along with one or two color photographs of the species or its cultivars.

The dictionary contains a more detailed

botanical description of each species, with general facts on the plant group and cross-references to other sections. The species entries include scientific and common names, and uses for various parts (medicinal, economic, aromatic, etc.). A succinct section on growing and harvesting herbs is set off below each species entry. The dictionary section has less visual appeal than the catalog, and it seems that combining all the information about individual plants in one place would have made the book more user-friendly.

The dictionary also includes information about historical human interest in herbs and the medicinal uses ascribed to them. Because the entries do not actually inform the reader how to use the herb, however, this section falls short of being "definitive," and some of the material is dated or otherwise suspect. Medicinal properties listed for the genus *Echinacea* include late 19th-century uses such as in the treatment of gangrene. Current use is primarily as a nonspecific stimulant to the immune system, especially as a preventive for colds and flu. In Germany, it is a registered drug for this purpose, yet I found no mention of that in the book.

St. John's-wort—the herbal medicine of choice for the treatment of depression—is widely prescribed by physicians in Europe, yet under the listing in the book I found no mention of anti-depressant activity other than the curious comment "not given to patients with chronic depression." Furthermore, the book is not referenced and the bibliography is skimpy.

The book does, however, feature an excellent chapter on designing herb gardens, along with chapters on history, myth and legend, herbal books, herbs that changed the world, and some how-to information for using herbs for culinary, medicinal, and cosmetic purposes. A fascinating section on herbs in the wild describes herbs harvested from different regions.

Although the book is endorsed by the Herb Society of America, the British roots of the work show through from time to time. Despite its North American origin, evening primrose is listed as a major herb of the European region. Yet the naturalized range of taxa such as *Albizia* and *Vitex agnus-castus* in North America is largely neglected.

Despite these drawbacks, Deni Bown has completed a monumental work that any herb gardener will be delighted to own.

—Steven Foster

Steven Foster is a writer and photographer who specializes in the pharmaceutical and toxicological properties of plants.



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gardeners' books

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

FLOWERING PLANTS

HYDRANGEAS: A GARDENERS' GUIDE

NEW

Toni Lawson-Hall and Brian Rothera. 1995. 160 pages. Publisher's price: hardcover, \$34.95. AHS member price: \$31.

This book broadens our knowledge of this well-loved flowering shrub by describing more than 80 of the most available cultivars. The authors, who designed the British National Hydrangea Collection, cover American cultivars and growing conditions as well. Includes more than 130 color photographs, as well as leaf silhouettes and line drawings.

Book code: TIM 038

PEONIES

NEW

Allan Rogers. 1995. 296 pages. Publisher's price: hardcover, \$34.95. AHS member price: \$31.

Rogers, who operates Caprice Farm Nursery in Oregon, offers advice on siting, growing, propagating, and choosing cultivars of these beautiful flowers. Appendices include a listing of all species and cultivars available commercially, nurseries that sell peonies, and a special section on landscaping with peonies. Illustrated with more than 150 color photographs and line drawings.

Book code: TIM 054

THE ENCYCLOPEDIA OF ROSES: AN ORGANIC GUIDE TO GROWING AND ENJOYING AMERICA'S FAVORITE FLOWER

NEW

Judith C. McKeon. 1995. 192 pages. Publisher's price: hardcover, \$29.95. AHS member price: \$26.50.

McKeon, chief horticulturist at the Morris Arboretum of the University of Pennsylvania, provides all the information both new and experienced gardeners need to select and grow superb roses using organic meth-

ods. Along with chapters on growing roses and designing with roses is an encyclopedic section with detailed descriptions of 175 roses, supplemented with brief descriptions of more than 200 cultivars. Includes 220 color photographs, 35 color illustrations, and a mail-order source list.

Book code: ROD 002

THE SIBERIAN IRIS

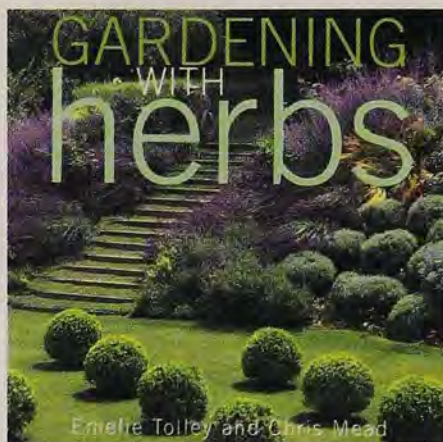
NEW

Currier McEwen. 1996. 242 pages. Publisher's price: hardcover, \$39.95. AHS member price: \$35.50.

A complete primer on these elegant garden plants by one of the foremost American growers and hybridizers. Includes chapters on history and classification, followed by descriptions and cultural information on all modern cultivars. Contains 37 color photographs and 11 line drawings.

Book code: TIM 069

HERBS



GARDENING WITH HERBS

Emelie Tolley and Chris Mead. 1995. 262 pages. Publisher's price: hardcover, \$45. AHS member price: \$40.

These New York-based herb lovers traveled the world to describe and photograph the most unique, interesting, and beautiful herb gardens. Topiary, cottage, kitchen, drought-tolerant, and many other herb garden themes are illustrated using more than 300 exquisite photographs. Includes eight garden plans and a chart detailing more than 60 herbs.

Book code: RAN 005

HERB GARDEN DESIGN

Ethne Clark. 1995. 144 pages. Publisher's price: hardcover, \$25. AHS member price: \$22.50.

An American gardening in England, Ethne Clark uses 30 beautiful watercolor planting plans and 75 color photographs to illustrate countless ways to use herbs in the garden. Advice for urban gardening, allergy-free

gardening, and container plantings is included, along with a chart covering more than 200 herbs.

Book code: MAC 010

THE HERB GARDENER: A GUIDE FOR ALL SEASONS

NEW

Susan McClure. 1996. 236 pages. Publisher's price: hardcover, \$29.95. AHS member price: \$26.50.

Beautiful and practical, this book is the complete guide to growing 75 different herbs year-round. Written by an American gardener, it is designed for all levels of expertise. Illustrated with more than 100 color photographs and many detailed charts and tables.

Book code: STO 008

GREAT REFERENCES

AMERICAN HORTICULTURAL SOCIETY ENCYCLOPEDIA OF GARDEN PLANTS

Christopher Brickell. 1992. 608 pages. Publisher's price: hardcover, \$49.95. AHS member price: \$42.50.

A comprehensive, illustrated guide to more than 8,000 trees, shrubs, vines, perennials, cacti and succulents, and other plants. Contains more than 4,000 color photographs.

Book code: MAC 001

LANDSCAPING WITH NATIVE TREES

Guy Sternberg and Jim Wilson. 1995. 288 pages. Publisher's price: hardcover, \$34.95. AHS member price: \$31.45. Publisher's price: softcover, \$24.95. AHS member price: \$22.45.

A well-written and beautifully photographed guide to identifying, growing, and landscaping with native trees. This edition concentrates on the trees of the Northeast, Midwest, mid-South, and Southeast.

Book code: hardcover CHA 001a
softcover CHA 001b

NATURAL GARDENING

NEW

John Kadel Boring, Erica Glasener, Glenn Keator, Jim Knopf, Jane Scott, and Sally Wasowski. 1996. 288 pages. Publisher's price: hardcover, \$24.95. AHS member price: \$22.45.

Another in the popular series of guides from the Nature Company, this colorful book offers hundreds of suggestions for plants and landscape designs that will make your garden a natural habitat for a diverse community of wild creatures. The combined effort of an experienced group of horticulturists and naturalists from all over the country, this well-written guide is packed with color photographs, planting plans, and charts.

Book code: TLB 001

TITLE, AUTHOR	BOOK CODE	AHS PRICE
Accessible Gardening for People with Physical Disabilities, <i>Janeen Adil</i>	WOO 001	\$15.50
AHS Encyclopedia of Gardening, <i>Christopher Brickell</i>	DK 001	\$49.95
The Art of French Vegetable Gardening, <i>Louisa Jones</i> NEW	WOR 001	\$31.50
The Book of Rhododendrons, <i>Marianna Kneller</i>	TIM 006	\$40.00
Botany for Gardeners, <i>Brian Capon</i>	TIM 009	\$15.95
The City and Town Gardener, <i>Linda Yang</i>	RAN 001	\$16.00
Cushion Plants for the Rock Garden, <i>Duncan Lowe</i> NEW	TIM 018	\$26.50
Daffodils for American Gardens, <i>Brent and Becky Heath</i>	ELL 001	\$22.45
Encyclopedia of Herbs, Spices and Flavorings: A Cook's Compendium, <i>Elisabeth Lambert Ortiz</i>	DK 004	\$30.00
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regional happenings

a look at what's happening around the nation

MID-ATLANTIC

MAY 8-9 ■ Regional Expression and the Virginia Garden. Gillette Forum. Lewis Ginter Botanical Garden and the Jefferson Hotel, Richmond, Virginia. (804) 262-9887 ext. 3022.

MAY 11 ■ Georgetown Garden Tour. Private and public gardens. Washington, D.C. (202) 333-4953, (202) 333-6896, or (301) 656-2343.

MAY 18 ■ Herb Fair and Sale. Oatlands Plantation, Leesburg, Virginia. (703) 777-3174.

MAY 18 ■ Sow, Grow, and Celebrate. Festival and plant sale. William Paca Garden, Annapolis, Maryland. (410) 267-7619, 269-0432, or 261-1110.

MAY 18-19 ■ 48th Annual Rose Show. Virginia Peninsula Rose Society. Coliseum Mall, Hampton, Virginia. (804) 596-6452.

JUNE 2-3 ■ Charles Village Garden Festival and Walk. Wyman Park, Baltimore, Maryland. (410) 662-7777.

NORTH CENTRAL

MAY 11-12, JUNE 29-30, and SEPT. 14-15 ■ Hermann's Secret Gardens on Tour. Garden tours and art show. Hermann, Missouri. (314) 486-2744.

MAY 18 ■ Spring Into the Garden. Workshop. Klehm Arboretum and Botanic Garden, Rockford, Illinois. (815) 654-4295.

JUNE 1-2 ■ Iris Show. Olbrich Botanical Gardens, Madison, Wisconsin. (608) 246-4551.

NORTHEAST

MAY 4 ■ May Gardener's Market. Garden Education Center of Greenwich, Cos Cob, Connecticut. (203) 869-9242.

MAY 4-5 ■ Gardener's Swap Meet. New York Botanical Garden, Bronx, New York. (718) 817-8700.

MAY 11-12 ■ Annual Wildflower Plant and Seed Sale. Brandywine River Museum, Chadds Ford, Pennsylvania. (610) 388-8327.

MAY 19 ■ Lilac Sunday. Arnold Arboretum of Harvard University, Jamaica Plain, Massachusetts. (617) 524-1718.

MAY 30 ■ Private Garden Tours In and Around Wilmington, Delaware. Swarthmore College, Swarthmore, Pennsylvania. (610) 328-8025.

JUNE 21-23 ■ Secret Garden Tour. Historic Point Section, Newport, Rhode Island. (401) 847-0514.

JUNE 30 ■ City Spaces, Country Places. Tour of 20 private gardens. Worcester County Horticultural Society, Boylston, Massachusetts. (508) 869-6111.

NORTHWEST

MAY 18-19 ■ Wetlands Tour. Geothermal Aquaculture Research Foundation, Boise, Idaho. (208) 344-6163.

MAY 19 ■ Wildflower Festival.

Landscaping Nebraska Communities

Most botanical gardens and arboreta have a single address. But in Nebraska, "the topography and climate are so varied it wouldn't do justice to all the areas to have just one location," explains Justin Evertson, planning specialist for the Nebraska Statewide Arboretum (NSA). "The state as a whole is our site."

More than 30 Affiliated Arboretum Sites across the state are owned and operated by local groups, with the University of Nebraska-Lincoln serving as a clearinghouse for funds and technical expertise on such things as design and tree planting.

One innovative, award-winning approach NSA has taken is the Community Landscape Improvement Project, launched in 1986. In a seven-year period, more than 50 primarily rural Nebraska communities were assisted with beautifying schoolgrounds and other public spaces. In each, an NSA team worked with community volunteers to identify landscape needs and opportunities. Projects had to include an educational component and a realistic maintenance strategy. The Peter Kiewit Foundation of Omaha contributed more than \$1 million to be matched one-to-one by the local communities.

A SCHOOL BY ANY OTHER NAME...

When the NSA program was announced, says Roger Petersen, principal of the Arbor Park Middle School in Blair, "We decid-

ed to build on the theme of the school's name." Now trees and shrubs are planted throughout the 30-acre grounds, amid playgrounds, sidewalks, and an existing creek.

Children raised several thousand dollars collecting cans for recycling. Memorials brought in additional funds; the names of those honored are engraved on a wall plaque in the school or listed in a book displayed under a mural by a local artist.

Now when students enter Arbor Park in the fourth grade, each adopts a tree and assumes responsibility for its care. They learn to identify tree species with the help of brochures donated by a local nursery. Senior citizens use the meandering walkways for their morning exercise, and other locals stop by for planting advice. "We ended up not only beautifying the school site," says Petersen, "but with a nice outdoor classroom."

FROM DUMP TO PARK

It took vision to transform a solid waste landfill into a park—that and four to six feet of earth dumped on top of concrete chunks and old washing machines.

The land had been used to raise peonies by the father and grandfather of the most recent owner, who donated the property to the city for waste disposal. All the parties involved agreed that the site should become a park once its waste capacity was reached. Volunteers solicited funds from nearby residents and others interested in establishing an arboretum, and sold bricks with gold-leaf inscriptions. These

Open Days Directory

Residents of the Northeast who long for a glimpse inside the fences of that area's best gardens will enjoy the recently expanded Open Days Directory, a guide to visiting select private gardens. Published by the Garden Conservancy, a national garden preservation organization, the directory includes gardens in northern New Jersey and Long Island in addition to the original region of Connecticut, and Westchester, Putnam, and Dutchess counties of New York.

Nearly 200 private gardens chosen for a strong sense of design or an interesting plant collection will open exclusively for the 1996 Open Days program on one or more of 16 weekend days through September. Each listing includes a garden description, travel directions, and the dates and times the property is open. Admission to each garden is \$4; the directory costs \$8 (\$5 for conservancy members) plus \$1.50 for shipping and handling. To order the directory, write the Garden Conservancy at P.O. Box 219, Cold Spring, NY 10516, or call (914) 265-2029.

Mount Pisgah Arboretum, Eugene, Oregon. (541) 747-3817.

MAY 31-JUNE 1 ■ Fern Festival.

Northwest Horticultural Society, Center for Urban Horticulture, Seattle, Washington. (206) 527-1794.

JUNE 15-16 ■ Tour of Private

Gardens. Whatcom In Bloom Garden Society, Bellingham, Washington. (360) 738-6833.

SOUTH CENTRAL

MAY 4-5 ■ Spring Garden Tour and Plant Sale. Beaumont Council of Garden

Clubs. Garden Center in Tyrrell Park, Beaumont, Texas. (409) 842-3135.

MAY 10-11 ■ Heritage Herb Spring Extravaganza. Ozark Folk Center State Park, Mountain View, Arkansas. (501) 269-3851.

MAY 25 ■ Surplus Cacti and Succulent Sale. Chihuahuan Desert Visitor Center, Alpine, Texas. (915) 837-8370.

JUNE 1-8 ■ Garden Week. Will Rogers Garden Exhibition Building, Oklahoma City, Oklahoma. (405) 943-0827.

JUNE 14-15 ■ Herb Society Seminar and Sale. Tulsa Garden Center, Tulsa, Oklahoma. (918) 746-5125.

SOUTHEAST

MAY 4-5 ■ Sho-Fu Bonsai Society Show and Sale. Marie Selby Botanical Gardens, Sarasota, Florida. (941) 366-5731 ext. 10.

MAY 6-8 ■ Gardening in Paradise. Southeast Region Master Gardener Continued Training. Pensacola Beach, Pensacola, Florida. (904) 477-0953.

MAY 11 ■ Gardens for Connoisseurs Tour. Atlanta Botanical Garden, Atlanta, Georgia. (404) 876-5859.

JUNE 22 ■ Aquatic Plant Sale. Crosby Arboretum, Picayune, Mississippi. (601) 799-2311.

SOUTHWEST

MAY 10-11 ■ Annual Plant and Used Book Sale. Denver Botanic Garden, Denver, Colorado. (303) 331-4000.

MAY 11 ■ Propagating and Cultivating Herbs. Workshop. Desert Botanical Garden, Phoenix, Arizona. (602) 941-1225.

MAY 18 ■ Plant Sale. Red Butte Garden and Arboretum, Salt Lake City, Utah. (801) 581-5322.

JUNE 1 ■ House and Garden Tour and Preview of Botanic Garden. Tour of private gardens and new Rio Grande Botanic Garden (opening in



At Arbor Park Middle School, top, landscaping plans accommodated a natural creek on the 30-acre grounds. A project in York, Nebraska, above, replaced a landfill with a community park.

efforts netted the group \$39,000 in less than a year.

"We wanted a passive green space," explains Jim Krejci, director of parks and recreation for the City of York. "Neighbors realized the park wouldn't bring increased vehicle traffic, but would mean an increase in property values."

Now the handicapped-accessible site, complete with many concrete pathways, serves as a classroom for schools and 4-H groups. A slope was left open for a sledding hill, and a vine-draped arbor is popular for weddings and outdoor meetings.

AN AVARICIOUS PROJECT

Jim Goeke of the West Central Research and Extension Center in North Platte calls theirs "the most avaricious project" funded through the arboretum's program. It was actually eight projects—landscaping seven schools and a shopping mall—calling for more than 1,000 trees and shrubs.

Instead of spending money on professional planting services, "we used volunteers to maximize the plant funds." Even so, some landscape plans exceeded the budget, "so we had to prioritize." Approaches and entrances topped the list; some schools later finished landscaping plans with their own funding.

However, as the NSA's Evertson points out, the program's impact goes beyond trees and landscaping. "It was as much about community involvement and putting in place tools for long-term commitments to landscape and other community improvements."

Terri J. Huck, Managing Editor

They Do Windows

In 1992 Hurricane Andrew left its mark on Fairchild Tropical Garden in Miami, Florida, but the opening of the new Fairchild Conservatory last March marked the final phase of restoration and the garden's full recovery, as well as its 58th anniversary. The roof of the conservatory, which was formerly the Rare Plant House, collapsed during the storm, necessitating a complete make-over.

The theme of the new exhibit is "Windows to the Tropics." Six "windows" focus on distinct areas of tropical flora. Exhibit areas highlight plants used as food products throughout the world; interactions between plants and animals; and plants newly introduced into the garden from recent expeditions to remote regions of the globe.

Fairchild Tropical Garden is located at 10901 Old Cutler Road. For more information, call (305) 667-1651.

October). Albuquerque, New Mexico. (505) 764-6200.

JUNE 15 ■ 11th Annual Plant Sale and Horticultural Fair. The Arboretum at Flagstaff, Arizona. (602) 774-1441.

WEST COAST

MAY 4-5 ■ Mount Tamalpais Wildflower and Garden Festival. Mill Valley, California. (415) 388-3503.

MAY 4-6 ■ Plant Evolution on Islands. One-day symposium and subsequent tours of the Channel Islands. Santa

Barbara Botanic Garden, Santa Barbara, California. (805) 682-4726 ext. 102.

MAY 11-12 ■ Geranium Show and Sale. Descanso Gardens, La Cañada-Flintridge, California. (213) 681-2201, (818) 793-7397, or (818) 794-3082.

MAY 12 ■ San Diego Epiphyllum Society Annual Show and Sale. Casa del Prado, Balboa Park, San Diego, California. (619) 583-9551.

MAY 19 ■ Celebration of Old Roses. Heritage Roses Group. El Cerrito Community Center, El Cerrito, California. (510) 526-6960.

BOARD OF DIRECTORS PROXY

Notice of Election in conjunction with the 51st Annual Meeting of the American Horticultural Society.

I will not be able to attend the AHS Annual Meeting on May 30, 1996.

Please assign my proxy to AHS Chairman William Barrick or to:

Name _____

to cast my ballot in the annual election of the Society's Board of Directors and to cast my ballot in other matters that may be brought before the Annual Meeting with the same effect as though I were personally present.

New Board Members:

- Katherine McKay Belk
- Michael Bonfante
- Edward N. Dane
- Robert Dolibois
- Merle Jensen
- Egon Molbak
- Charles Henry Smith Jr.
- Valerie Thomas

Write-in Candidate

Second-Term Board Members:

- Paul Ecke Jr.
- Gene Miller
- Dudley Morgan
- Geoffrey Rausch
- Monroe Whitton

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William Barrick, AHS, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.

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a look at current offerings from the marketplace

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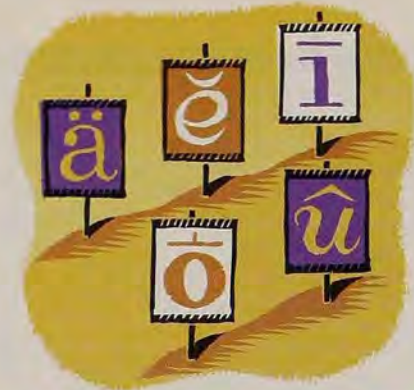
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pronunciations

a simple speaking guide to plants found in this issue

Acorus gramineus
AK-or-us grah-MIN-ee-us

Aeschynomene
es-ky-NOH-men-ee

Aesculus parviflora
ES-kyew-lus par-vih-FLOR-uh

Aglaonema modestum
ag-lay-oh-NEH-muh mod-ES-tum

Aloisia gratissima
uh-LOY-zee-uh gra-TIS-sim-uh

Astragalus phoenix
uh-STRAG-uh-lus FEE-niks

Atriplex canescens
AT-rih-pleks kuh-NEH-senz

A. lentiformis
A. len-tih-FOR-mis

Azara microphylla
uh-ZAR-uh my-kro-FIL-luh

Bouteloua eriopoda
boo-teh-LOO-uh air-ee-O-po-duh

B. gracilis
B. GRASS-ih-liss

Buchloe dactyloides
boo-KLOH-ee dak-tih-LOY-deez

Calyptocarpus vialis
kah-lip-toh-KAR-pus VY-ah-lis

Camellia oleifera
kuh-MEEL-yuh o-lee-IF-ur-uh

Carpinus betulus
kar-PIE-nus BET-yew-lus

Cedrus deodara
SEED-rus dee-o-DAH-ruh

Centaureum namophilum
sen-TAR-ee-um nam-OFF-ih-lum

Chamaecyparis nootkatensis
kam-eh-SIP-uh-riss newt-kuh-TEN-sis

Chrysactinia mexicana
kris-ak-TIN-ee-uh mex-ih-KAN-uh

Clematis hirsutissima
KLEM-uh-tiss her-soo-TISS-ih-muh

C. ligusticifolia
C. lih-gus-tih-sih-FO-lee-uh

C. maximowicziana
C. mak-sih-mo-vich-ee-AN-uh

Cordia boissieri
KOR-dee-uh bwa-SEE-air-eye

Cotinus coggygria
KOH-tin-us koh-JEE-gree-uh

C. obovatus
C. ahb-oh-VAY-tus

Crataegus aestivalis
kruh-TEE-gus es-tih-VAL-iss

C. marshallii
C. mar-SHAL-lee-eye

Cryptomeria japonica
krip-toh-MAIR-ee-uh juh-PON-ih-kuh

Dalea greggii
DAY-lee-uh GREG-ee-eye

Dodonaea viscosa
doh-doh-NAY-uh vis-KOH-suh

Dudleya hassei
dud-LAY-uh HAS-see-eye

Enceliopsis nudicaulis var. *corrugata*
en-see-lee-OP-siss noo-dih-KAW-liss
var. kor-yew-GAY-tuh

Ericameria laricifolia
air-ih-kuh-MAIR-ee-uh
luh-rih-sih-FO-lee-uh

Franklinia alatamaha
frank-LIN-ee-uh uh-lah-tuh-MAH-hah

Gaylussacia dumosa
gay-loo-SAK-ee-uh doo-MOH-suh

Grindelia fraxino-pratensis
grin-DEL-ee-uh
frak-SEE-no-pruh-TEN-sis

Hylotelephium
hy-lo-tuh-LEF-ee-um

Iris kaempferi
EYE-riss kemp-FAIR-eye

Ivesia eremica
eye-VEES-yuh eh-REM-ih-kuh

Lavandula dentata
luh-VAN-dyew-luh den-TAY-tuh

Leucophyllum candidum
loo-koh-FIL-um KAN-dih-dum

L. frutescens
L. froo-TES-enz

Lonicera standishii
lah-NISS-er-uh stan-DISH-ee-eye

Malvaviscus arboreus var. *drummondii*
mal-vuh-VISS-kus ar-BOR-ee-us
var. drum-MON-dee-eye

Melampodium leucanthum
meh-lam-PO-dee-um loo-KAN-thum

Mentzelia leucophylla
ment-ZEE-lee-uh loo-ko-FIL-uh

Myrica cerifera
my-RIH-kuh seh-RIF-er-uh

Nitrophila mohavensis
ny-TROF-ih-luh mo-hah-VEN-sis

Oxypetalum caeruleum
ok-sih-PEH-tal-um seh-ROO-lee-um

Pinus ponderosa
PIE-nus pon-deh-RO-suh

Pithecellobium flexicaule
pih-thuh-seh-LO-be-um flek-sih-KAW-lee

Pityopsis graminifolia
pit-ee-OP-siss grah-min-ih-FO-lee-uh

Poncirus trifoliata
pon-SEER-us tri-fo-lee-AY-tuh

Pulsatilla
pull-suh-TIL-uh

Quercus garryana
KWER-kus gah-rec-AN-uh

Q. imbricaria
Q. im-brih-KAIR-ee-uh

Q. velutina
Q. vel-yew-TY-nuh

Ribes viburnifolium
RY-beez vy-ber-nih-FO-lee-um

Rubus cockburnianus
ROO-bus cock-bur-nee-AN-us

Salvia roemeriana
SAL-vee-uh rem-air-ee-AN-uh

Simmondsia chinensis
sim-MOND-see-uh chy-NEN-siss

Smilacina racemosa
smy-luh-SEE-nuh rass-eh-MO-suh

Tropaeolum peregrinum
tro-PEE-o-lum pair-eh-GRY-num

Tulipa batalinii
TOO-lip-uh bat-uh-LIH-nee-eye

Tweedia caerulea
TWEE-dee-uh seh-ROO-lee-uh

Vauquelinia californica
vaw-kwe-LIN-ee-uh kal-ih-FORN-ih-kuh

Zantedeschia
zan-teh-DES-kee-uh

What's in a Name: *Cordia boissieri*

A member of the borage family (Boraginaceae), *Cordia* is a genus of some 250 to 300 species of evergreen and deciduous trees, shrubs, and vines found mainly in the tropics of both the Old and New Worlds. Swedish naturalist Carolus Linnaeus, who is credited with developing the binomial system for nomenclature, named the genus in honor of Euricius Cordus and his son, Valerius, a duo of German botanist-pharmacists who lived in the late 15th and early 16th centuries.

The specific epithet honors Edmond Boissier (1810-1885), a Swiss botanist who described many species from Spain and the Middle East. Boissier's life was marred by the tragic death of his 27-year-old wife, Lucille, during a botanical expedition to Spain.

• *The Gardens of Belgium*

June 2-11, 1996



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A MARVELOUS COLLECTION OF PRIVATE GARDENS in the environs of Bruges, Ghent, Antwerp, and Brussels will be open to AHS members. Each day of our trip will bring different gardens in different settings — from the gardens of Baronne François van der Elst's residence at Chateau de Oostekerck to the rose collections of Comtesse Michel d'Ursel at Chateau de Hex. We will visit gardens designed by Russell Page, Jacques Wirtz, Paul de Rooze, and Count Michel de Villegas — the noted Belgium landscape architect whose assistance in developing this tour has been invaluable. Leading this program will be AHS Board member Katy Moss Warner, director of horticulture at Walt Disney World in Florida.

Also Planned For 1996

■ JULY 17-21, 1996
GARDENS OF NANTUCKET

■ AUGUST 12-24, 1996
GARDENS OF SCOTLAND
AND THE HEBRIDES

■ SEPTEMBER 12-21, 1996
GARDENS OF PROVENCE

■ OCTOBER 14-25, 1996
GARDENS OF TUSCANY

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