Two Special Offers from AHS!

AHS Children's Garden Poster

FOR ALL YOUNG AND YOUNG-AT-HEART GARDENERS—a beautiful, whimsical full-color, museum-quality poster of "The Froggy Pond Garden." Reminiscent of the beloved children's classic *The Wind in the Willows,* the garden is one of 12 children's gardens developed at River Farm. This 18" x 24" poster is a great gift idea for children or adults. All proceeds help fund the 1995 AHS National Youth Gardening Symposium.

AHS member price: $7 (retail price, $10), plus $2.50 shipping and handling. Two or more posters: $5 each, plus $2.50 shipping and handling. Virginia residents, please add 4 1/2% sales tax.

To order the calendar or poster, send a check or your MasterCard or VISA account number with expiration date and your signature to:
AHS Calendar/Poster, 7931 East Boulevard Drive, Alexandria, VA 22308-1300.
Be sure to include your address and daytime phone number.
Or call toll-free at (800) 777-7931.
Credit card orders must total more than $10.

1995 Natural Garden Calendar by Ken Druse

THE AMERICAN HORTICULTURAL SOCIETY is pleased to offer "The Natural Garden" by Ken Druse as its 1995 calendar selection. Druse's influential book, *The Natural Garden,* in its fifth printing, is the winner of both writing and photography awards from the Garden Writers Association of America. Druse also received the American Horticultural Society's Horticultural Writing Award in 1993.

Druse advocates creating gardens that mimic what is best in nature's designs. "The Natural Garden" wall calendar is a splendid adaptation of Druse's gardening philosophy.

The calendar is 12" x 12" and includes full-color photographs throughout. AHS members pay just $7.75 for one calendar (retail price, $8.95), plus $1.50 shipping and handling. Each additional calendar is only $7, postage paid. Virginia residents, please add 4 1/2% sales tax.
All-American Cottage Gardens
_by Rand B. Lee and Nancy McDonald_.
Letting English influence rule this style can be taxing. A horticultural tea party is brewing, and not just in Boston.

Natural Inspirations
_by Richard L. Dubé_.
Nature’s patterns can guide your landscape design solutions.

What’s the Buzz?
_by Anne Westbrook Dominick_.
Put a hive in the right place, surround it with a few favored plants, and you can have both beauty and the bees.

Knotty But Nice
_by Tovah Martin_.
The gnarled appendages of these geranium relatives make them endearing conversation pieces for windowsills and hanging baskets.

Intrepid Trio
_by Joan Hustace Walker_.
Only three orchid species can call Hawaii their home.

DEPARTMENTS

Commentary ........................................ 4
Members’ Forum .................................... 5
Offshoots ......................................... 6
Gardeners’ Information Service ................. 8
Natives at Risk ...................................... 9
Natural Connections .............................. 10
Planting the Future .............................. 12
Book Reviews ..................................... 13
Pronunciation Guide .............................. 42
Classifieds ........................................ 43
1994 Index ........................................ 45

DECEMBER’S COVER
Photographed by Joseph G. Strauch Jr.
In her article beginning on page 29, Anne Westbrook Dominick lists teasel among the many plants that attract honey bees. Both the commonly kept bee, _Apis mellifera_, and common teasel, _Dipsacus sylvestris_, had their origins in Europe. Teasel was brought to the United States by wool manufacturers, who used the dried seedhead to comb the nap of wool cloth, and the species has naturalized widely throughout the United States. Growing up to six feet tall, it looks at home in a prairie garden, where its spiky seedheads remain through winter or can be brought inside to use in dried arrangements.
What are the boundaries of horticulture? They are sometimes challenged by new members asking why a certain article was in our magazine, why a trip was planned to a specific area, or why a certain ad was accepted for our news edition. A little more than a year ago, the American Horticultural Society clarified its mission statement and goals.

Our mission is to supply informational resources within the expanding horizons of horticulture to foster the principles of the “green ethic.” When I entered the field in the 1950s as a research horticulturist for the U.S. Department of Agriculture, our “play book” had remained unchanged almost from Victorian times. Few so-called modern principles of agricultural sciences had been applied to ornamental crops. I watched, supervised, and helped create developments that led to primed seed, regulated seedlings, controlled flowering and plant size, greater stress and air pollution resistance, and greater flexibility in transporting and marketing plants. For each of the dozen or so species we learned to control, others continued to evade the signals that we tried to send by means of light, temperature, chemicals, and nutrition. I watched the emphasis ricochet from annuals to woody plants to foliage plants to perennials to aquatics. Landscape plants, which ranked less than two percent of all crop value in 1975, are on their way to becoming the most dominant and profitable segment of U.S. agriculture, expected to provide almost one in every five dollars generated by crop plants by the year 2000.

This month’s magazine reflects a number of issues we believe should become a part of everyone’s “green ethic.” Most of us have memories of someone's cottage garden. This style has abundance, variety, and a nearly wild appearance that can be very deceptive. Pulling it off requires a knowledge of space requirements and seasonal changes that would test a Pentagon supply officer. Writers from Michigan and New Mexico tell how they have created cottage gardens with low-water, disease-resistant plants appropriate to their climates.

Today we are trying to create gardens that complement, rather than drastically alter, nature. Landscape designer Richard Dubé tells us how to use patterns and shapes in nature to gather ideas and solutions for landscaping problems.

We learn in another article how to create a happy home for those most social of insects, honey bees, offering them nectar and pollen in return for entertainment, pollination of our flowers, and honey subtly scented and flavored by the plants we provide.

Other articles describe efforts to save an endangered Hawaiian orchid—one of only three native to the islands—and species pelargoniums, less refined cousins of the geraniums that color nearly every deck and window box in our country. The former raises questions about how many of today’s plant species will be here for our grandchildren; the latter reminds us of a popular plant’s heritage.

H. Marc Cathey, AHS President
Penstemons in the East
It was a great pleasure to read Robert Nold's fine article on penstemons ("Penstemon Heaven," October), an underappreciated genus of American wildflowers. Here at Green Spring Gardens Park and in other northern Virginia gardens, we have been experimenting with many of the nearly 270 species to determine their cultural needs in the hot and humid mid-Atlantic states. While most of the eastern species can be grown here rather easily, the western and Mexican species come from such diverse environments that it is important to determine their specific needs if they are to thrive in our gardens. Many of our failures reflect lack of knowledge. However, over the past eight years we have had some successes.

We have found three Mexican species—Penstemon canadensis, P. kunthii, and P. gentianoides—to be easy growers in sunny, well-drained sites. Only the first succumbed to our minus 6 degree temperatures last winter, but it is easily grown from seed and will bloom the first year, as will many species.

The beautiful shrub-like species from the Northwest need special treatment, namely a cool, lightly shaded site and soil that drains well but is not too dry. They are choice rock garden plants. Some, however, like P. venustus and P. barrettiae, are large enough to use in borders.

Among the wandlike species, the red-flowered P. barbatus is the easiest, but we have also had good luck with the purple-flowered P. neomexicanus. Many of these southwestern and high plains species flourish and flower during the summer rainy season in their native environment, making them more amenable to our heat and humidity.

There are good, smaller penstemons for full sun and a gritty, well-drained soil. P. pinifolius is one of the best, a true shrub with small, needlelike foliage and narrow tubular flowers of red and yellow. Also from the southwest is P. linarioides, a small-leaved creeper with gray-green foliage and lavender flowers and a reliable rock garden plant.

In addition to the well-known P. digitalis, two other penstemons will tolerate most soil if the drainage is adequate. These are the blue-flowered P. ovatus from the west slope of the Cascade Mountains and P. tenuis from the coastal plain of Texas.

We still have much to learn about the garden uses of this interesting genus. Hybridizing efforts have been spotty and a good text on the genus does not exist. Perhaps in the future these deficiencies will be remedied so that more gardeners may enjoy these intriguing plants.  

Don Humphrey  
Alexandria, Virginia

For Fuchsia Consideration
For several years I have been delighted with your "Pronunciation Guide." Alas, when your October issue arrived, it was with astonishment that I saw your recommended way of pronouncing Fuchsia. I have always heard FEE-sha. That is the way my Taylor's dictionary gives it, though Taylor (and I, too, although my opinion does not carry much weight) suggests an alternative as FUK-ee-sha. Maybe it is pronounced few-SHA somewhere, but if so I have never visited that area.

Fuchsias take me back to my childhood when we lived in New Zealand and no garden was complete without at least one large fuchsia bush in the yard, frequently hanging over the front fence. While walking home from school we had to stop at every bush and "pop" all the buds. I don't know if it did them any harm or if they bloomed just as well and I guess I will never know, because now, in Ohio, every fuchsia flower is a treasure and any "poppers" would find themselves immediately un-"pop"ular.

Lesley Reid  
Mansfield, Ohio

No, there is no strange little pocket of the nation (as far as we know) that says few-SHA. Makes you want to say "Gesundheit," doesn't it? Our computer must have had a cold that day.
Prayers For Tomatoes

By Glen Tig

After living for several years in Sitka, Alaska, in a rainy climate about as well-suited to gardening as a swimming pool would be, I returned to North Carolina with pent-up cravings for the fruits of a southern summer.

On my first day back I met my new neighbor, Jonathan, who explained that he would be six years old in just two more months. We immediately began work on my garden. Jonathan supervised as I tilled the beds, blending cow manure and leaves into the rich, dark redness.

On my Saturday morning pilgrimage to the local farmers' market I filled my basket with tender young starts: banana peppers, green bells, curly parsley, sweet basil. Tomato plants by the thousands smiled and waved, some raucous, some coy, yet everyone pleaded for attention. Could 20 of them compensate for my tomatoless summers in Sitka?

By noon, I had painstakingly transplanted, watered, fed, and spaced them in their beds and applied mulch as a loving last touch. Prodded by the warmth of early May, they seemed to grow taller and stronger with each glance across the yard. I was proud indeed, proud as a goose with new goslings .

Until one afternoon about a week after planting, when I pulled into my drive and, from a distance, saw no sign of my 20 little champions. Stopping the car abruptly, I ran to investigate the crisis without finding even a trace of a tomato plant—no wilted remains from heat stress, no tracks from large game, nothing. Stunned, bewildered, in shock, I stumbled from row to row. The peppers, too, were missing. And each and every basil plant had vanished. Clearly, I had been vandalized.

To Jonathan and his mother, I must have appeared quite the spectacle, a dazed neighbor floundering in rage. When I drove up, they were squirting each other with the water hose, squealing with happy
giggles. Now they stood close beside each other, eyeing me in silence.

“Something really weird has happened,” I yelled across the yard. “My garden has disappeared.” They came over to inspect for themselves. Jonathan’s mother, having kept a garden her whole life, said she’d never seen anything like it. She began questioning Jonathan as to whether he’d seen anyone messing around in my yard while he was out playing.

I called other neighbors and asked if they’d seen any unfamiliar vehicles or people near my lot. No one knew a thing. After an hour had passed, I heard a timid knock on my door. Jonathan stood on my porch with a frightened, sad expression, offering up a handful of pitiful tomato plants. Said his mother, standing behind him, “I’m afraid Jonathan has something to tell you.”

“I found these,” Jonathan said. “They were in our back yard.” His mother urged him on with a stern glare. “I think they might be yours,” he said. With now dry roots and limp leaves, my hybrid yellows and heirloom pinks were positively unrecognizable.

“Yes, I think they might be,” I said. Though I tried to speak calmly, I wanted to scream when I asked, “But how do you think they got in your back yard?”

“Somebody must have put ‘em there,” Jonathan said. His mother’s eyes pushed him further. “I mean... I took ‘em,” he said, “because...”

I could feel my blood pressure rising. How dare he? I thought this little fellow liked me. What reason could he have for doing such a mean thing? I looked at Jonathan with a blank face and waited while he stammered.

“Because... I wanted a garden like yours.”

I gulped. Ready for anything that would justify my fury, I was not prepared for this. I paused and shook my head from side to side, but there were no words on my tongue. I knew whatever came out had to be careful and honest.

“Jonathan,” I said, “I’m very glad that you told me what you’ve done, but I am so angry and confused, I have to go cool down my temper before I can talk to you about it.” We all agreed to get together again in half an hour.

Besides needing to spout off some steam, I also needed time to scheme. Could I turn this into a learning opportunity for Jonathan? When we met in the garden later, Jonathan appeared with another handful of drooping plants. There was my cue.

Oh, how sad those plants look,” I said. “It’s good that you’re here now to help out so we can try to save them before it’s too late.” Jonathan and his mother looked equally perplexed. “It’s important that we hurry,” I said. “Can you see how sad these plants are? It may be too late to help them all, but I bet we’ll be able to save a few of them.”

As we collected the shovel, water hose, and hand tools, I explained that plants need many of the same things people need. We talked about different ways to help sick plants regain their health. I dug the holes and held the dirt back while Jonathan laid each critically ill plant delicately in its bed. I pressed the soil firmly around the roots and he “tucked in,” surrounding it snugly with mulch. Jonathan commented that this attention at bedtime was something else plants needed, just like people.

I expected that some of our replantings would in all likelihood survive. According to my strategy, this would help Jonathan see the worth of his work and connect his careful efforts with prosperous, fruitful plants. I was self-satisfied indeed as we neared the end of our task. “What a clever teacher I’ve been,” I thought, “turning this catastrophe into a lesson for my young friend.”

Busy myself with rolling up the hose and putting away the tools, I scarcely noticed that Jonathan had made his way back to our first replanted tomato. Sitting beside it, he was mumbling some inaudible words with his eyes closed. Momentarily, he completed his mysterious powwow and scuttled without hesitation to the next plant. This wasn’t part of my grand design. What antics could he possibly be up to now?

I sat down beside him on the ground as he resituated himself. Reaching out to the second plant, he pressed a wilted leaf gently between his thumb and forefinger. He indicated that I should do the same. Then he closed his eyes.

“Little plant,” he said, “I’m real sorry I pulled you up and made you get sick and have dry roots. And I’m gonna take real good care of you now and water you every day and help you get better.”

Humility overtook me. Jonathan continued: “I won’t do it again and I hope you grow up happy and make lots of big, red tomatoes.” He opened his eyes and whispered to me, “Did I forgetting anything?”

Jonathan was asking me if he had forgotten anything, as if I, being the grown-up, should know. Stepping down off my pedestal, backing away from my pulpit in the face of this lesson in sincerity, I whispered back, “Oh, I think that’s just about perfect, Jonathan. What do you think?”

He let go of the leaf and said decisively, “I think there’s a lot more plants to pray for on this row before we get on to the next one.” He crawled ahead, took hold of another plant, closed his eyes and began another full-length prayer, and another and another until each tomato, pepper, and basil plant in the garden had been blessed, one by one, row by row.

The next day, Jonathan knocked on my door to fetch me for more prayers. The first, second, and third plants received full attention, but by the middle of the row, the blessings became noticeably shorter. Jonathan seemed to be losing steam. As we approached row two, he stood quietly, turning his head from side to side, eyeing all the remaining plants. Suddenly, he addressed the garden at a volume sufficient for the most inattentive Great Power: “LITTLE PLANTS! . . .” Whoever said there was anything dishonorable about praying for the masses?

Some weeks later, Jonathan told me his family was moving away. I learned they were moving closer to his father’s job, into an apartment with a sun deck. On the day of departure, when Jonathan came over for his last inspection of our prosperous tomato crop, he inquired why there was a hole in the ground where one of the healthiest plants had been. I diverted that question, but soon he had another—about the big plastic bag on my porch with the wide red ribbon around it.

When I asked how many more weeks it was until his birthday, he proudly put up three fingers. His attention drifted again toward the ribbon as a grin of comprehension came over his face. With only a slight nod of consent from me, Jonathan tore into the bag, unveiling a two-gallon pot of soil and a thriving, bushy, patio tomato plant—with blossoms.

Glen Tig is a psychotherapist, writer, and gardener who returns this month to live in south central Alaska.
GARDENERS’ INFORMATION SERVICE

Editor’s Note: While AHS Education Coordinator Maureen Heffernan is on vacation, our guest columnist is Jacqueline Héritéau, who writes a twice-monthly newspaper column based on questions raised on “Growise Gardener,” the weekly radio call-in show moderated by AHS President H. Marc Cathey.

Q: I’d like to propagate some roses next season. When should I do that, and how?

A: Roses root easily in late winter and early spring. My grandmother used to get out her pickle jars in late February and make rose cuttings. Cut healthy green stems four to six inches long. Choose some with no side shoots. Clean each stem in a weak solution of household bleach, dip the bottom tip lightly in rooting powder, then stick it into the dirt in a sunny spot in your garden with a jar over it to act as a little greenhouse. They’ll root in six or eight weeks.

Q: I’ve moved a big hibiscus that was outdoors all summer into our south bay window, and plan to use it as a Christmas tree. It’s still putting out blossoms, but the leaves are dropping.

A: What a great idea! Don’t worry about the leaf drop. It’s natural for a hibiscus to drop leaves when it is brought into dry indoor air. Mist it often to help it adjust. It will winter well as long as it isn’t over-watered. This may be happening if the foliage goes from strong green to a ghostly green. Take it out of the pot and let the root ball dry for a day or two before you put it back. Fertilize it lightly once a month until the days begin to lengthen and new growth begins.

Q: My fiddle-leaf fig grew from about 10 inches to two feet this year, but the trunk isn’t getting thicker and there’s no growth on the bottom. What am I doing wrong?

A: Fiddle-leaf fig (Ficus lyrata) is one of the great plants of Africa, but between October and late March our light levels are such that it will grow but not thicken. At every watering add 20-20-20 fertilizer, a quarter teaspoon to a gallon of water. Try sunbaths every few weeks. As daylight lengths, the plant will get thicker.

Q: Last fall my wife and I gathered about 200 acorns and planted them in a former orchard we bought. They’re planted one and a half inches deep in rows of mounds six feet apart, several acorns to a mound. What’s our next step?

A: As they develop, remove the weakest from each mound, leaving one tree. Don’t fertilize them until the second year—they’ll be stronger if they’re grown on the lean side until they get a root system based on natural fertility. Mulch them with chips, about a bucketful in a three-foot circle around each tree. The early danger in field-grown plants is that weeds may overcome the seedlings. Transplant only after two growing seasons.

Q: My 15-year-old oak tree develops multiple leaders and side branches that grow in toward the trunk. It has four leaders now and is about 13 feet tall. How should I prune it?

A: A trunk with multiple leaders is likely to split in storms as it gets older. Take all but the best leader out, and train the remaining leader by tying it to a bamboo cane. This winter, remove the limbs growing in the wrong direction, and continue this type of pruning for the next 10 years. Once the competition for the lead spot is over, I think the whole character of growth will change.

Q: Last winter we lost a lot of our landscape foliage to deer. Before I replace these plants, can you offer any advice for Bambi-proofing them?

A: Deer, it seems, can’t stand Milorganite, Milwaukee’s composted municipal sludge, which has been sold as an organic fertilizer since 1926. This isn’t mentioned on the packaging, but it’s been bruited about for the last three years or so, and a 1991 study by the Cornell Cooperative Extension Service in Millbrook, New York, confirmed what gardeners already knew.

Milorganite is suitable for all crops, including food, and it is distributed nationally and internationally. Unfortunately, Milorganite’s effect on the deer lessens in fall, when the odor is less pronounced. And, of course, snow and ice will smother it.

You might also consider selecting Bambi-resistant plants. Bob and Bev Tanem, deer-friendly California nursery owners, have published a booklet listing plants that deer in their area appear not to like. These include most prickly things, as well as ginkgoes, grape myrtles, junipers, spruces, pines, and sumacs among woody plants, and lovely herbaceous ornamentals like yarrow, asters, English daisies, baby’s breath, poppies, phlox, tuberous begonias, crocus, scilla, daffodils, forget-me-nots, portulaca, dusty miller, and hollyhocks. “Deer Resistant Planting” is available for $5.95 from Tanem’s Garden Center at 273 North San Pedro Road, San Rafael, CA 94903.
NATIVES AT RISK

Kuenzler Hedgehog Cactus

by Mary Beth Wiesner

The New Mexico Department of Agriculture wasn’t sure the Kuenzler hedgehog cactus should be placed on the federal list of endangered species. But not because the plant—with a population estimated at 3,000 to 5,000—isn’t at risk. Officials were worried that listing *Echinocereus fendleri* var. *kuenzleri* might increase the threat to the species, which has been nearly decimated by overzealous collectors.

When the U.S. Fish and Wildlife Service (FWS) considers a plant for the federal list, it also determines whether it should designate a “critical habitat” for the species. Critical habitat maps, which detail the exact locations of the plants, then become public record. “If a plant is to have its whereabouts in the Federal Register, there may as well be a copy of its death notice too,” one expert commented. Despite the concern, in 1979 the cactus was added to the list of plants protected under the federal Endangered Species Act.

Although the plant is available through authorized growers, cactus lovers still seek wild populations of the Kuenzler hedgehog cactus. “For some reason collectors prefer wild plants to those grown in greenhouses,” says Anne Cully, a biologist with the FWS’s Albuquerque, New Mexico, field office.

Prized for its large funnel-shaped magenta-to-purple flowers, the cactus was discovered in 1961 by Horst Kuenzler, a resident of Canada vacationing in the United States. Kuenzler saw a clump from his car, stopped for a closer look, and took two specimens that ended up in the herbarium at the University of New Mexico in Albuquerque. Since 1982 the cactus has been unofficially accepted as a variety of *E. fendleri*, but it may be the northern extension of *E. hempelii*, a native of the Mexican state of Chihuahua.

The Kuenzler hedgehog cactus is found at elevations of 6,000 to 7,000 feet on sparsely vegetated rocky outcrops in the pinon-juniper woodlands of New Mexico’s Sacramento Mountains. Cully believes this is the northernmost range of *E. fendleri* var. *kuenzleri* because the cactus seems to need grass cover to protect it from the cold. For that reason, cattle grazing is also considered a threat to the species.

A few dealers who collected seed prior to 1979 are propagating and selling the cactus. One is Steve Brack, owner of Mesa Garden in Belen, New Mexico, who says the wild population of the cactus is “very low,” partly because it is susceptible to a fungal disease. “Thousands have died. It turns the plants into a black slime.”

To buy endangered plants or seeds from out-of-state sources, purchasers must obtain an interstate commerce permit, issued by the FWS. In-state purchases are legal as long as the grower has an FWS permit.

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

SOURCES

Abbey Garden Cacti and Succulents, 4620 Carpenteria Avenue, Carpinteria, CA 93013; (805) 684-5112. Catalog $2.

Mesa Garden, Box 72, Belen, NM 87002. Plant list available with SASE.

Beautiful Perennials...

BLUESTONE PERENNIALS

...at a Price You will Like!!
Our plants return to bloom season after season for years of easy pleasure, our specialty...perennials. We grow and ship over 400 varieties in spring and fall - easy to plant and every plant guaranteed.

Send for our FREE color catalog or call 1-800-852-5243. We will be pleased to hear from you.

Name __________________________
Address __________________________
City __________________ State _______
Zip __________________

UNIQUE HOUSEPLANTS

delivered to your doorstep

Established in 1892, Logee’s is one of the country’s foremost mailorder sources of rare tropicals. Our color illustrated catalog lists over 2,000 of the finest fragrant and flowering plants.

Logee’s Greenhouses
141 North Street
Dept. AH
Danielson, CT 06239
Catalog $3.00 refundable
Fragrance of Fir

Anyone who has walked in the forests of Maine, New Hampshire, or Vermont has an olfactory memory of balsam fir (Abies balsamea). Its spicy fragrance, redolent of the north woods and of Christmas time, is unmatched by any of the synthetic products that shopping malls use to evoke the same nostalgia.

Balsam fir is a shade-tolerant species partial to cool climates and moist but well-aerated soils. It is often found in rocky soil close to water and has been seen at elevations ranging from sea level to near the timberline, although its usual range is from 2,800 to 5,000 feet. At or near the timberline it is often seen with the tenacious black spruce (Picea mariana). Although usually associated with New England, balsam fir, along with white spruce (P. glauca) and red spruce (P. rubens), is a key component of the boreal conifer forest that stretches across northern North America. Other common associates include jack pine (Pinus banksiana), tamarack (Larix laricina), and paper birch (Betula papyrifera). Balsam fir is found from Labrador south to Pennsylvania and west to the Great Lakes. North of the lakes its range extends diagonally northwest across the prairie provinces of central Canada to near the headwaters of the Yukon River in British Columbia. It is also seen at high elevations in parts of Virginia and West Virginia.

Because of its soft wood, balsam fir was never a tree of choice for the lumber industry, but it is a minor source of timber for dimension lumber, interior paneling, and crates. It was one of the first tree species used to make paper and in the opening decades of this century it was slated, along with spruce, to become a principal source of pulpwood for the expanding paper-making industry in New England. But beginning in 1909, a severe infestation by the fir’s principal nemesis, the spruce budworm (the larval stage of the moth Choristoneura funebrana), devastated thousands of acres of fir and spruce forest. Surviving trees were 30 to 40 years from harvestable size and in the 1920s New England’s paper-making industry gravitated toward hardwood trees. In time balsam fir recovered and, despite another bad infestation of spruce budworm in the late 1970s, is now used extensively as pulpwood in New England.

It is believed that fir trees, possibly silver fir (Abies alba), served as the prototype in medieval Europe for what has become the Christian tradition of bringing an evergreen tree into the home at Christmas time. In North America, since the middle of the 19th century, balsam fir has been one of the most popular Christmas trees. Its symmetrical conical form matches the traditional ideal, and its sturdy yet flexible branches and soft needles lend themselves to hanging ornaments. Along with needle retention unparalleled among evergreens, balsam fir also keeps its spicy fragrance and bright color throughout its tenure inside. Those qualities have also made the tree a major source of greenery for Maine’s burgeoning wreath-making industry.

Balsam fir can be distinguished by flattened needles that spiral around the branch.

Balsam fir accounts for about eight percent of annual U.S. Christmas tree sales, according to the National Christmas Tree Association in Milwaukee, Wisconsin. The more widely available Scotch pine (Pinus sylvestris) is the top seller at 36 percent, followed by Douglas fir (Abies douglasii) with 20 percent.

Despite its popularity, balsam fir has not proved to be a very successful landscape tree, possibly because of a susceptibility to pollution and a need for a steady supply of moisture to its shallow root system. In the wild, balsam firs may grow as tall as 90 feet, but the average height is between 25 and 60 feet. They are not long lived, usually succumbing to a combination of pathogens and environmental stresses within about 90 years, although 150-year-old specimens have been seen. Balsam firs look very similar to spruce trees, but can be distinguished by their cones, which are held upright rather than hanging down, and by their needles, which are flattened rather than square-like spruce. Balsam fir’s slightly tapering two-to-four-inch green cones ripen to purple in September and yield light brown seeds with a single wing. Heavy cone crops occur cyclically every two to four years. Fir needles are a glossy deep blue-green on top and pale green with two silvery lines beneath. The needles appear to form two comblike rows, but in fact spiral around the branch in a gentle whorl.

Young trees have smooth gray bark stippled with resin blisters containing the balsam that gives the tree its name. Known as Canada balsam, the transparent aromatic resin was used by Native Americans as an inhalant for treating headaches, and as a salve for wounds and burns. Later, woodsmen also used it to cover wounds and as a form of chewing gum. Commercially, it was once used as a fixative for mounting specimens on microscope slides. The flammable resin can be an Achilles heel, however, igniting and turning individual trees into torches during forest fires.

For years, pillows stuffed with the aro-
matic needles have been sold as sachets or to remind former New Englanders of home. Along with the aromatic fir oil, the needles contain chemical compounds that act as a natural insecticide by mimicking a hormone that interrupts insect growth cycles. Some pests, however, are not affected by the chemicals. The spruce budworm, which despite its name selects firs as its preferred host, feeds on the tender new flower and foliage buds in spring. Dead tree tops and brown foliage loosely band¬
ed with webbing reveal their infestations, which, left unchecked, can kill trees in five years. Balsam woolly adelgids (Adelges piceae) and red heartrot, a fungal disease, also take a toll on firs.

In winter the foliage provides browse for more benevolent feeders, like moose, white-tailed deer, and various types of grouse. Porcupines feed on the bark, and the seeds are popular with birds and small mammals.

Whether in the woods or in the home, balsam fir is a sensual treat—its glossy blue-green foliage pleasing to the eye, its smooth flexible needles begging to be touched, and its intense aroma providing a natural potpourri. —David J. Ellis

Assistant Editor

Lose yourself in the magnificence of Vaux-le-Vicomte, the exquisite design and texture of Villandry and the elegance of Chenonceaux. Discover romantic Apremont, gardens by Le Notre and Paul Marquerita and a perfect gem of a classical garden. Enjoy country and city gardens. All while cruising through the heart of France on the luxury hotel barge The Chanterelle.

Six night cruises, weekly departures. April to October 1995.

Perfect for garden clubs and small groups of friends.

Kemwel’s Premier Selections
106 Calvert Street
Harrison, NY 10528
(1-800)-234-4000

Shelves That Move
Grow Healthier Plants!

Introducing... the

RotoGro

Now you can use the same technique professional growers rely on for healthy, beautiful plants!

For Free Information, Mail Coupon or CALL TOLL FREE
1-800-880-2345

WINTER SALE!

The superior choice for year-round indoor gardening!

✔ YES! Please rush me FREE information about the all-new RotoGro, including the Special Winter Sale and 10-Day Risk-Free Offer!

NAME ____________________________

ADDRESS _________________________

CITY ____________________________ STATE __________ ZIP ________

Mail to: 30 Wright Avenue, Dept. 51124R, Lititz, PA 17543

AMERICAN HORTICULTURIST 11
Garden Videos

by Larry Johnson

When I was young, I often stayed with my grandparents in the country. On nature walks with my grandmother, I developed my love of gardening and storytelling.

In the early '70s I began to use television for storytelling and children's education. I produced and hosted a local children's television show with an environmental message in Austin, Minnesota. I told stories and Tyler, a big purple angleworm with a blue baseball cap, tended the garden.

In 1977, Tyler helped me start a participatory call-in TV channel for patients in Minneapolis Children's Hospital. We planted a garden on the roof and taped Tyler talking to patients in the garden.

Now I'm a storyteller/video teacher in Minneapolis, teaching young people to tell stories, plant gardens, and make international video 'letters.' My Minnesota students have been amazed to see their video pen pals from Ecuador growing corn and standing in a banana jungle, and to watch their Georgia pen pals harvesting peanuts and cotton. You can join us!

All you need to create a garden video letter is a thriving indoor or outdoor garden tended by children, a camcorder, and a person with homestyle video experience to help the children show and tell what's going on in the garden.

Decide what to show your video visitors in a group planning session. Garden games you play? Children telling garden stories? A field trip to a garden-related place? How you turn kitchen scraps into compost? Garden songs?

Keep the video simple and interesting—15 to 20 minutes is plenty. Let each child narrate a small portion, giving his or her name and showing the garden, its setting, and favorite projects. End with some information about what you'd like to see in the return video. If you're not editing, plan your shots and tape them in order, fading to black between scene changes.

Clear sound is important, so use a handheld microphone, or keep the sound source close to the built-in microphone on the camera. Then think visually, even when asking what you'd like in a return video. If you show something you're doing and ask your video friends to respond, they'll be more likely to show their activities. We play Garden Bingo on our school's closed-circuit channel. We've also invented games like "scarecrow," played like hangman except we use garden words and build a scarecrow.

Ideally, children will learn to produce and tape a video tour themselves. But no matter who does the actual taping, they shouldn't feel pressured to create a "professional" product. A video exchange should be likened to a note, handwritten, loving note to a friend. Certainly you don't want a sloppy video that can't be heard or seen, but beyond that its purpose is mainly to communicate.

Finding international children's gardens to trade videos with is still difficult, but you can find U.S. gardening classrooms through the National Gardening Association's Growing Ideas Exchange. Write them at: NGA Growing Ideas, 180 Flynn Avenue, Burlington, VT 05401.

If you'd like to start by trading videos with me, send me a video or a postcard requesting a video for your group of children to respond to. If you have questions about producing a video or dealing with the challenges of international exchanges, send your questions with a stamped, self-addressed envelope to Larry Johnson, 315 Georgia Avenue North, Minneapolis, MN 55427.

Larry Johnson was a speaker at the first AHS symposium on children and gardening, held in 1993.
The Art of Botanical Illustration

Almost 50 years ago, the editors of the New Naturalist series of books on British natural history decided to produce a title on botanical art and illustration. One editor asked Wilfrid Blunt, art master and author on interesting persons and travels, to undertake the work. Another editor, however, asked William Stearn, eminent botanist at the Natural History Museum in London. The two scholars agreed that Blunt would write the text and Stearn would revise and augment it. The result was the first edition of The Art of Botanical Illustration, published in 1950, and reprinted in 1951, 1955, and in 1967 in Japan.

In both the original and the updated editions, Blunt and Stearn devoted chapters to such topics as herbals, etchers and engravers, the importance of the flower-piece in 17th-century Dutch painting, West and East, and the Botanical Magazine. They also covered such prominent figures as Otto Brunfels, Leonhart Fuchs, Daniel Rabel, Nicolas Robert, Claude Aubriet, Georg Ehret, Pierre-Joseph Redouté, William Kilburn, Francis and Ferdinand Bauer, Robert Thornton, Walter Fitch, and John Ruskin. In more recent years, Blunt had wanted to revise the work, but the loss of the original plates by the publisher made a new edition more costly to produce. Now, seven years after Blunt's death, the co-author has published what is essentially the same work, with some slight alterations and additions to the text and with some changes in illustrations.

The chapter on botanical art in the 20th century has, of course, been updated. In my opinion, however, Stearn has overemphasized the work being done in Africa, Greece, and Australia. What a pity not to mention Claus Caspari (Germany), Aline Marie Roques Raynal (France), Marilena Pistoia (Italy), and Rory McEwan and Susannah Blaxill (England). Nor does he touch on the Society of Botanical Artists, founded by Suzanne Lucas, which is the focus for contemporary botanical art in Great Britain. Modern Japanese botanical draughtsmanship is limited to a footnote, and mention of American artists is confined for the most part to a paragraph of only eight lines.

As Professor Stearn noted in his introduction, however, no book of moderate size can adequately encompass the display of so much talent. At the Hunt Institute, we regard this as the classic work on the history of flower painting from antiquity to the present day. I hold this book in high esteem and routinely refer to it. It is a good value, and mention of American artists is confined for the most part to a paragraph of only eight lines.

—James J. White

James J. White is curator of art for the Hunt Institute for Botanical Documentation at Carnegie Mellon University, Pittsburgh, Pennsylvania.

The Undaunted Garden

After 40-odd years as an avid gardener and reader of gardening books, I admit to a touch of "ho-hum, what's new?" when browsing through the latest offerings. Lauren Springer's first book (but not, I devoutly hope, her last) is as refreshing in style and content as a cool shower on a hot day. She has the gift of infectious enthusiasm, and as gardener, writer, and photographer she takes her place among the best.

"A Passion for Plants" would have made a good subtitle. Nothing, you come to understand, is going to deter Lauren Springer from gardening, wherever she may live. At present Colorado is the lucky state to claim her, and she makes it plain that if cold, heat, drought, and hail cannot be conquered, then they can be managed by appropriate choice, placement, and care of plants. This includes relying a good deal on native plants and refraining from watering some of them, but the book is free of that mood-of-the-moment sermonizing that seeks to force all gardens into the same mold.

—AMERICAN HORTICULTURIST
Looking at the lovely pictures you might suppose that they were taken in an English cottage garden. Not so. Home is a town corner lot where, undeterred by such hazards and limitations as two- and four-legged passersby and height-restricting ordinances, she has extended her one-third acre by planting the sidewalk verges as well, turning these “hell strips” into something more like a gardener’s heaven.

Don’t deny yourself this book just because you live in the Northeast or on the West Coast. Having gardened in other regions, the author can make comparisons, favoring close planting, for example, but mentioning that this may induce rot where summers are hot and humid. Two plants new to me this year and last—a tansy species, Tanacetum nivum, and Arizona giant pink anise hyssop, Agastache barbi—were gifts from Lauren’s garden. They are equally happy in my coastal Virginia plot.

My congratulations to the publisher as well. The thick book is stitched to open flat, and the reproduction of the more than 250 photographs is excellent. At less than $30, this is the best value in garden books I’ve seen in a long time.

The best gardening books make you long to have the writer for a neighbor, to be able to say “Would you like a bit of this . . . will you share a bit of that . . . have you tried so-and-so?” This is that kind of book.

—Pamela Harper

Pamela Harper is a free-lance horticultural writer and photographer who lives in Seaford, Virginia. Her most recent book, Color Echoes, has just been released by Macmillan.

Pests of Landscape Trees and Shrubs: An Integrated Pest Management Guide

Although ostensibly developed for landscape managers and residents of California, Pests of Landscape Trees and Shrubs is undoubtedly one of the most complete integrated pest management (IPM) reference works available.

Unlike encyclopedic works, strong on illustration but often too heavy-handed with remedial measures, this latest product from the University of California’s Integrated Pest Management Project puts its emphasis on actually developing a sound IPM program.

Anyone interested in pursuing an IPM regimen would be well-advised to read—and re-read—chapters on “Designing an IPM Program” and “Growing Healthy Trees and Shrubs,” before launching into the exhaustive sections on pests, diseases, environmental problems, weeds, and so on. All too often, a compulsion to solve problems quickly gets IPM programs off to a bad start.

One of the greatest virtues of IPM is problem avoidance. The appropriate selection of plants, site preparation, and a sound management plan can help eliminate a host of potential problems. A chapter on abiotic disorders—those caused by mechanical or environmental factors—emphasizes careful soil preparation and site selection to avoid problems like mineral deficiencies, sunburn, exposure to road salt, and even lightning strikes!

Amateurs and professionals alike will treasure the valuable tables, diagrams, and references that support each chapter. Ta-
bles listing pest- and disease-resistant plant alternatives will help with landscape planning. There is an entire chapter devoted to insects, mites, snails, and slugs, complete with descriptive information, astonishing color photographs for identification, and monitoring and management protocols.

The centerpiece of the book is the group of problem-solving tables in chapter nine. Undoubtedly, many readers will turn to this 50-page section first, looking for easy solutions to often long-term problems. It is to the credit of the University of California team that the final column of each table lists “comments” rather than “solutions.” Each probable cause leads back to the IPM program itself.

In many respects, IPM is ill-served by its very name. Instead of the “P” representing “pest,” it ought to stand for “plant” or perhaps even “patience,” to focus attention away from environmentally injurious quick fixes, whether chemical or biological, and onto planning and prevention, observation and identification, management and correction, continued monitoring, and long-term commitment. To this end, readers and users of Pests of Landscape Trees and Shrubs will find themselves well-served. —Joseph M. Keyser

Joseph M. Keyser is the environmental specialist for the Montgomery County, Maryland, Department of Environmental Protection.

---

After Last Year’s Severe Winter…Use Wilt-Pruf to Guard Against Moisture Loss and Winter Kill.

Use on Rhododendrons, Evergreens, Boxwood, Azaleas, Hollies, Laurel and Other Ornamentals.

Most gardeners know what Wilt-Pruf does. But for those who may not be familiar with this organic and biodegradable product, Wilt-Pruf acts as a protective coating on plant foliage. Wilt-Pruf substantially reduces water loss during periods of plant stress that many plants experienced during last winter’s severe weather.

Wilt-Pruf has helped plants survive year around for nearly 50 years. Let it help your plants through the winter ahead. Call or write today for additional information.

Wilt-Pruf® P.O. Box 469, Essex, CT 06426
203/767-7033

Bird Feeding Reaches New Heights

Our beautiful Estate copper bird feeders grace the gardens of America’s finest arboretums, museums and parks. They are now available to add elegance to your property.

- Handcrafted copper feeders are majestic in scale
- Lowers safely & easily to ground level to fill
- Seed chambers hold up to 30 lbs!
- Guaranteed squirrel-proof
- Complete with free-standing base
- Lifetime warranty

Call toll-free 1-800-BIRDS-FLY
(1-800-247-3735)

Please rush me information about your unique bird feeders.

Name ___________________________
Address ___________________________
City ___________________________
State/Zip ___________________________

The Backyard Sanctuary Company
Improving Habitat for Birds
550 Warren Street • P.O. Box 307
Dept 107 • Hudson, NY 12534

Backyard
Sanctuary
In the heat-baked alkaline clay of New Mexico, “cottage” can’t mean “coddle.”

BY RAND B. LEE

The term “cottage garden” tends to conjure up images of misty English countrysides, crammed with a somewhat limited number of “old-fashioned” ornamentals: primroses, sweet Williams, hollyhocks, dame’s rocket, cabbage roses, perhaps an herb or two. But in fact the first cottage gardens—the style dates to the Middle Ages, the term to the 18th century—were extremely utilitarian collections of fruits and vegetables; the flowers came later.

A cottage garden isn’t a style of any one time or place or a particular kind of plant. It is an informal garden of intimacy, variety, and idiosyncracy, stocked with plants chosen for ornament, sentimental association, fragrance, food and cut flower production, uses as flavorings or medicines, or historical interest. It should be sited near a dwelling so it can be easily reached from the kitchen or main living area, and it should be laid out to invite entry, exploration, and repose. It may include annual, biennial, and perennial flowers; herbs, vegetables, and fruits; vines, shrubs, and (if space permits) trees. Any obvious show of wealth must be avoided in the plants chosen and the materials and ornaments continued on page 18
Cottage Gardens

The Michigan growing season is short, but it can also be sweet.

BY NANCY MCDONALD

In our far northern Michigan garden (USDA Zone 4), the growing season is short and cool. Summer days are long, but nights can drop into the 40s. Tomatoes are a challenge, melons just a dream. Winters are severe, with temperatures well below zero for long periods. Fortunately, our good snow cover keeps perennials safe; we rarely experience frost-heaving. Shrubs are another matter, and winterkill is common.

Our soils are extremely sandy and rocky. The subsoil beneath our new orchard measures pH 4.5, though the surface soil tends to be pH 5.5 to 6.0. Blueberries and potatoes thrive here. Our worst pest is the white-tailed deer, with chipmunks a close second. Far behind either come insect pests. Our severe climate keeps many of these, as well as many plant diseases, in check. Despite these challenges, our garden contains more than 1,700 different species and cultivars of perennials and shrubs from all over the world. While I’d never voluntarily give up my imported treasures, more and more I find myself choosing native plants to withstand our conditions.

The cottage style of gardening is the perfect application for native plants and their...
continued from page 16

used in the garden’s construction. Since ease of maintenance is one hallmark of the cottage garden, efforts should be made to emphasize plants that are naturally suited to the climate and soils of the local region. This means, for American cottage gardeners, an increased use of native American species and cultivars.

When I first rented my home in Santa Fe in 1989, I was daunted by the scant 15 inches of rain a year, the 15 percent humidity, the blazing sun and high winds of our 7,000-foot altitude, and the heavy loamless clay soil, which undoctored runs to a pH of 8 or higher. In my 300-square-foot garden, I have found myself using more and more native plants and adaptavars—non-natives that fit in with a minimum of hand-holding—to form the backbone of my mixed borders.

Penstemons, my current mania, are getting heavy use in my 12-foot diameter Wheel of Creation bed, in which a central core is surrounded by six pie-shaped wedges, each with a different color theme. In the red section are scarlet bugler (Penstemon barbatus), the cardinal penstemon (P. cardinalis), and P. rostitflorus (aka P. bridgesii). All three bear bright red tubular flowers for many weeks, the first two on stems to three feet, the latter to two feet. With them grow the somber wine-red perennial Gaillardia x grandiflora ‘Burgundy’, the red form of Mexican hat (Ratibida columnifera), which is perennial for me; and the hummingbird trumpet, Zauschneria arizonica. If the last survives our winter it will eventually grow three feet tall by four feet wide. It bears gray-green leaves and bright scarlet funnel flowers in loose racemes. Completing the wedge are tall scarlet zinnias (Zinnia elegans ‘Red Man’), whose origins are Mexican; dark red annual nasturtiums from the Andes (Tropaeolum majus ‘Mahogany’); a red California poppy (Eschscholzia californica ‘Dalli’); and the lipstick-red Drummond phlox (Phlox drummondii).

In the orange pie wedge, I feature the firecracker penstemon (Penstemon eatonii), a three-foot-tall sparkling red-orange. It shared its space this year with the orange sneezeweed (Helenium hoopesii), which in late spring opens its big lolling primitive orange daisies; Mexican campion (Silene laciniata), with its fringed red-orange tubular flowers; tall African marigolds (Tagetes erecta ‘Deep Orange Lady’), which despite the common name hail from Mexico and Central America; and standard gold-orange California poppies (Eschscholzia californica), which seed themselves all over the place.

The dry front of the yellow bed is claimed by an unusual form of the compact Penstemon pinifolius, which is usually scarlet. In this case the needle-like leaves, which form a cloud of pale green, are smothered in tiny, pale yellow tubular flowers in early summer. P. confertus bears tubular blooms of an even paler yellow on 20-inch stems. Much taller, much easier, and much longer in bloom is the golden columbine, Aquilegia chrysanthha, a polite re-seeder whose nodding yellow heads are a lovely contrast to the blue-green foliage. The spurred blooms are fragrant, and it can top three feet with ease, flowering six weeks for me beginning in late spring. With it I grow Gaillardia x grandiflora ‘Yellow Queen’, which if deadheaded makes huge pinwheels of milky yellow all summer. Backing all these is the golden Helianthus scabra ‘Summer Sun’, which starts blooming for me in August.

Among the natives in the pale- to mid-blue wedge is Salvia azurea, the blue sage,
Continued from page 17

cultivars. Being more pest and disease resistant, natives often require less care than exotics, and many provide food for wildlife, as well. A note of caution, however: It will behoove you to do your homework before planting natives in the smaller garden. Many can be extremely invasive. Sometimes it’s better to seek out politer cultivars than to grow the species. Those of Monarda, Physostegia, and many others can be labor-intensive in rich soils, where they will thrive all too well. Some asters can be trusted; others cannot (clump-formers like ‘Alma Potschke’ and ‘Purple Dome’ are safe bets). The combinations of natives that follow are particular favorites in our cottage garden.

In late spring a fetching pair blooms in the light shade of an old apple tree, where they are much visited by hummingbirds. The pale yellow form of wild Canadian columbine (Aquilegia canadensis var. flavescens, also called A. canadensis ‘Corbett’) dangles its sprays of dainty skyrockets, through which grow sprigs of Polemonium reptans ‘Blue Pearl’. Blooming with them are our local yellow trout lily (Erythronium americanum) and white and yellow violets (Viola canadensis and V. pubescens). A little later a native of more southerly climes, willow amsonia (Amsonia tabernaemontana ‘Salicifolia’) joins in with its steel blue stars.

A larger group nearby, also loved by hummers, contains species or descendants of four American legumes. This group is also shaded from late morning through early afternoon, though the shade is so light and our climate so cool that they’d probably do fine in full sun. The soil in this bed, while still very sandy, is relatively rich in humus.

The season begins with a combination of lupines and long-spurred columbines. While I enjoy the many color combinations of the showy ‘Russell’s Hybrids’ lupines, I’m also much taken with the more open spikes of their wild, blue-violet ancestor, Lupinus perennis. Both do surprisingly well in poor soil, though they thrive under richer conditions. With these bloom the lovely golden columbine (Aquilegia chrysantha), long-spurred columbine (A. longissima), and Colorado columbine (A. caerulea), plus some of their variously colored offspring.

After a long show in late spring and early summer, these give way to the three- to four-foot high false wild indigo (Baptisia australis). Its spikes of deep indigo blue pea flowers go beautifully with the yellow pea flowers borne on the five-foot spires of southern thermopsis (Thermopsis caroliniana) and three-foot spires of mountain thermopsis (T. montana). I deadhead the columbines and lupines to keep them from taking over the garden, but the green balloon seedpods of the Baptisia and the thin silver pods of the Thermopsis are too attractive to remove. They extend the season of interest by several weeks, since in our climate they ripen slowly.

Last in this group to flower is wild senna (Cassia marilandica), whose lush, almost tropical-looking foliage has been enhancing the garden since spring. The gold-and-brown pea flowers in the leaf axils are showy only when you’re close, but wild senna is worth growing for the foliage alone. I’m told the four-inch seedpods are decorative as well, though they never have time to form here before frost cuts down the three-foot plants.

From mid-to late-summer the popular, icy yellow Coreopsis verticillata ‘Moonbeam’ glows below the pale pink spikes of Sidalcea malviflora ‘Elsie Hough’, which

continued on page 21

In one of her beds McDonald grows four natives in the pea family, including the Carolina lupine, top, and false wild indigo, above.
It is short, under one foot tall, and puts up stalks of breathtaking sky-blue flowers in early to midsummer. Also sky-blue are the flowers of the eight-to-16-inch-tall Penstemon rydbergii, although books describe them as dark blue to indigo.

In the middle and front of my dark blue bed are D. glaber, P. neomexicanus, and P. strictus, all purchased in flower since some seedings bloom bluer than others. With them is the frost-tender perennial dwarf mealy-cup sage (Salvia farinacea Victoria), which sends up 18-inch spikes of a satisfying dark violet-blue atop hairy gray-green foliage much of the summer.

In my lavender-to-purple bed a deep-grape-colored seedling of Penstemon whippleanus, which stands about two feet tall, is next to 'Chihuahua', a rare cultivar of P. campanulatus, the bell-flowered penstemon. P. campanulatus is supposed to be hardy only to USDA Zone 8 or so, but the seed from which my plant was raised, collected in Chihuahua, Mexico, has overwintered five or six years in its propagator's Santa Fe garden without special protection. It bears large rosy-violet flowers. I have fronted these plants with the 10- to 12-inch-tall lavender harebell, Campanula rotundifolia, which is native to most of the Northern Hemisphere and, given a bit of water, spills over into my paths. To the back is the tall, weedy, annual to biennial Aster bigelovii, a mass of lilacs in the fall.

In a fragrant night-blooming bed near a bedroom window is Edna St. Vincent Millay's "dumb white nicotine" (Nicolitana alata), which by day lets her long flared snowy trumpets droop, but by night "wakes and utters her fragrance/in a garden sleeping"; the candy-scented night-flowering tour 'o'clock, Mirabilis longiflora; and Datura meteloides, the infamous sacred jimsonweed, whose immense white trumpet flowers lie like gleaming UFOs under the moon. For color, the bed also holds 'Rose Elf', a Penstemon barbatus selection, half its parent's height and a pleasant chubby pink. It is backed by Aster novae-angliae 'Harrington's Pink', a tall, tall-flowering beauty that forms a shimmering mass of hundreds of tiny exquisite clear pink daisies.

In a front bed near the street is Maximilian sunflower (Helianthus maximiliani), which is an installation rather than a plant; once sited, it cannot be moved. It makes a beautiful dark green drought-tolerant hedge much of the summer, then come fall erupts into spires of perfect golden daisies. In front of it is the two- to four-foot Penstemon floridus, whose rose-colored flowers have been perfectly described by a local nurseryman as "guppy-shaped," and the two-and-a-half to three-foot P. pseudospectabilis, which blooms a startling lipstick-pink. Nearby grow the sweet sand verbena, Abronia fragrans, which bears white snowballs, scented of arbutus, spring to midsummer; the four-foot-high edible pink nodding onion, Allium cernuum; the spreading poppy mallow, Callirhoe involucrata, with its violent red-violet winecups; and purple coneflower, Echinacea purpurea, in both its rose and white forms.

Rand B. Lee is co-editor of a new quarterly publication, The American Cottage Gardener.

**SOURCES**


Colorado Alpines, Inc., P.O. Box 2708, Avon, CO 81620, (303) 949-6464. Alpines, Rocky Mountain wildflowers. Catalog $1.50.

Plants of the Southwest, Agua Fria, Route 6, Box 11A, Santa Fe, NM 87505, (505) 471-2212, FAX (505) 438-8800. Xerics, low and high desert natives. Catalog $1.50.

Prairie Seed Source, P.O. Box 83, North Lake, WI 53064-0083. Prairie natives and wildflowers. Catalog free.
remind me of tiny hollyhocks. Behind these grows fragrant anise hyssop (Agastache foeniculum), with fluffy, dusky lavender flower spikes and violet-tinted foliage. Earlier in the summer, Penstemon ‘Prairie Dusk’ flowers nearby, and the gracefully hanging heads of nodding onions (Allium cernuum) grow up through the airy coreopsis foliage, blooming in shades of rosy lavender and white. Still earlier, the tiny iris relative, blue-eyed grass (Sisyrinchium angustifolium), opens its blue eyes to the sun. The anise hyssop, onion, and blue-eyed grass will self-sow freely if not deadheaded, though only the anise hyssop is large enough to cause problems.

Another late summer combination we enjoy is the soaring, rich violet-blue candelabra of blue vervena (Verbena hastata) with the rusty red sneezeweed, Helianthus autumnale ‘Moerheim Beauty’. Both are tall and require rich, evenly moist soil; for us they grow well at the edge of a vegetable bed. Blue vervena also looks nice with mauve-pink cultivars of purple coneflower (Echinacea purpurea), though these are much more tolerant of dry soils. Purple coneflowers and red sneezeweed do not enhance each other, but the white form of coneflower, ‘White Swan’, is a fine, if shorter, choice. Blue verbena also has a white form, though I’ve not yet found a source. Oxeye (Heliopsis helianthoides ‘Scabra Hybrids’) also helps close the season. In fact, the cultivars we grow seem to bloom forever.

A late season favorite here is a cross between two frighteningly invasive genera, asters and goldenrod. But the hybrid, × Solidaster lateus, isn’t the least bit invasive, and it produces its frothy pale yellow plumes in a most engaging end-of-summer show. We grow it with the later-blooming white boltonia (Boltonia asteroides). We have recently added to this group the sky-blue aster (Aster azureus), a clump-former safe for small gardens and busy gardeners. In the background is culvers root (Veronicastrum virginicum). Ours is the icy pale blue species, though we’d like to add the cultivar ‘Roseum’, in pale pink.

Everyone seeks a perennial that will bloom all season. In our climate, the quest begins and ends with various forms of the western bleeding heart (Dicentra formosa) and the eastern bleeding heart (D. eximia). Unlike the Asian D. spectabilis, which leaves a hole when it dies back in midsummer, the cultivars ‘Adrian Bloom’ (rosy pink), ‘Bacchanal’ (dark, muted rose), ‘Langtrees’ (white), and ‘Silversmith’ (blushing white) all bear clusters of flowers over superbly glaucous foliage from frost to frost. There are many more cultivars, some quite painfully bright, others more subtle. In hot climates, they require some shade, but here in the cool north they thrive in full sun, given evenly moist, fairly rich soil.

There are a great many more natives worth trying. Next year I plan to include another native legume, leafy prairie clover (Petalostemum foliosum). Its lacy, almost ferny foliage is lovely in itself. The midsummer to late fall rosy purple flowers are a bonus. I’d like to try more penstemons and some clematises, and experiment with native annuals and shrubs. The longer I garden with natives, the better I like them.

Nancy McDonald is co-editor of a new quarterly publication, The American Cottage Gardener.

CONTINUED FROM PAGE 19

Next year, McDonald plans to add leafy prairie clover, left, to her legume collection. Coneflower and oxeye, above, are among her most vigorous late-season bloomers.

SOURCES AND RESOURCES

The American Cottage Gardener, 131 East Michigan Street, Marquette, MI 49855. This publication’s goal is to help readers create a cottage garden anywhere in the United States or Canada using both traditional English cottage flowers and American natives with color, form, and fragrance that make them admirable substitutes. Subscriptions are $35 a year (Canadian readers need to send U.S. funds); single copies are $10.

Busse Gardens, Route 2, Box 238, 635 East 7th Street, Cokato, MN 55321, (612) 286-2654. Bleeding hearts, Solidaster, Lewisia, × Solidaster lateus. Catalog $2.

Forestfarm, 990 Tetherow Road, Williams, OR 97544, (503) 846-6963. Agastache, columbine, Thermopsis. Catalog $3.


J. L. Hudson, Seedsman, P.O. Box 1058, Redwood City, CA 94064. Sisyrinchium angustifolium. Catalog $1.

Mileger’s Gardens, 4838 Douglas Avenue, Racine, WI 53402, (414) 639-2371. Asters, bleeding hearts, coneflowers, lupines, many others. Catalog $1.
By Richard L. Dubé

Good landscape designers are always on the lookout for inspiration that will add to the quality and scope of their work. By traveling and visiting the sites of a variety of public and private landscapes, professionals add to their repertoire of ideas and find new ways of merging old concepts to produce original approaches. There is another source for design concepts close at hand, however, as easily accessed by the amateur as by a professional with the most impressive connections and lavish budget. All that is required is looking at things in a different way.

This font of inspiration is the natural world. It is the ultimate source of everything we use or consume, and all of our actions are reflective of its intricate systems and patterns. Usually we are too deeply immersed in those patterns to notice them.

A term used to describe the process of rediscovering the designs within the natural world is “pattern language.” The term was coined in the title of a 1977 book by architect Christopher Alexander, who was looking for a more organic approach to the understanding of architecture as it relates to both natural and historic patterns. In looking at natural patterns, he took his inspiration from such things as the branching of a tree or the way organisms develop, becoming more differentiated as they grow.

It is difficult to know where to begin the design process without some basic guiding principles. Pattern language aids you in observing nature, so that you find clarity and reason in what at first appears to be a chaotic environment. It could be thought of as a linear approach to a non-linear world. This approach also helps you quantify design...
goals and objectives. You can use these patterns to solve a particular problem, or use them for overall inspiration.

There are many natural patterns that have been recognized and expressed in artificial forms—not just in architecture, but in practical items we use in our daily lives. For example, Velcro fasteners are said to have been inspired by a Frenchman who noticed how tightly the seeds of the burdock adhered to his pants. Upon examining the seeds, he discovered that they were formed like tiny hooks. One side of a Velcro strip consists of hooks, the other of tiny loops.

Even when we don't need a magnifying glass to see them, the connections between natural patterns and manmade objects may not be readily apparent. The same may have been true for those who first copied them; their use may have been the result of sudden serendipitous insight rather than a conscious effort to solve a design problem.

Spider webs, for example, offer insights into engineering principles that could fill a textbook and may have inspired inventions ranging from lassos to ladders and suspension bridges.

Nature is said to be the inspiration for the Crystal Palace, the famous conservatory designed by Sir Joseph Paxton for the Great Exhibition in London in 1851. According to Felix Paturi, in his 1976 book *Nature, Mother of Invention*, Paxton's model for supporting the vast expanse of glass—at 1,848 feet long and 408 feet wide, it was four times the size of St. Peter's in Rome—while retaining a delicate appearance was the royal water lily, *Victoria amazonica*, which he had grown as gardener for the Duke of Devonshire. The water lily's huge leaves, which can be up to six feet in diameter, are supported on the underside by ribs that radiate from the center like wheel axles, then fork into smaller branches at the leaf-edge. Flatter “struts” bind these ribs to each other.

One natural principle that has been consciously copied for centuries is the golden mean, discovered by 13th-century mathematician Leonardo Fibonacci when comparing the mating of rabbits to the number of offspring they produced. The Fibonacci sequence, as this ratio of \( \frac{1}{2} \) to \( \frac{2}{3} \) came to be called, mathematically describes many seemingly unrelated natural phenomena—the placement of leaves or twigs on a stem, the curve of a parrot's beak, the spiraling chamber of a nautilus, the seed head of a sunflower. The eye-pleasing golden rectangle, which reflects this ratio in the related diagrams.
tionship of its length and width, can be seen in the shape of playing cards and the Parthenon in ancient Greece. Romantic-era artists used it to place the focal points of their paintings, in order to be faithful to the pattern “laid out by God.”

Asian cultures have long drawn upon nature to inspire their designs. In their gardens, this allows the visitor to be a participant, being transported mentally to a different space and time, and results in a sense of tranquility and contemplation.

In China, you can travel to specific sites that served as models for painters and, subsequently, landscape designers. The Li River of Guilin in south-central China is one of the best-known of these. Its towering limestone cliffs can be found duplicated in miniature in gardens throughout the country—an example of replicating natural landmasses in smaller forms. These Chinese gardens incorporate pathways adjacent to these “cliffs” and “rivers,” sometimes even leading into artificial caves. From the top of these cliffs a gardener can emulate the recluse who climbs a mountain to meditate and glean inspiration from the scene below.

The Japanese are also adept at incorporating natural forms and patterns into their gardens. One outstanding example is “tapestry” hedges, in which shrubs of varying textures and colors are planted in a mass and pruned to a single vertical plane. This technique is intended to mirror the way lines of trees overlap on distant hills, creating a foreground, midground, and background in a relatively shallow space.

Other forms the Japanese have used to inspire their gardens are crashing waves, copied in their raked gravel gardens; the solitary island, reflected in stones jutting from earth or water; and snow-viewing elements such as stone lanterns, intended to hold snow where it can be contemplated, sometimes reflected in a body of water.

Generally, as you look for inspiration from the natural world, you will want to look at where you are. The best solutions tend to be the ones close at hand. If you are living in New England it would be best to use its land or plant forms. If you live in Arizona, you would look to the geology and botany of the desert. And don’t forget to examine micro-patterns, which are often a reflection of the larger forms. In the veins of a leaf, for instance, we can see the branching of a tree or a river system. In lichens on a stone, we can imagine rocks in a stream.

You can use these patterns in two ways. You may have a favorite natural site or design that you want to replicate in your own landscape because of the pleasure it gives you, or you may have a particular landscape problem for which any one of several natural patterns may offer a solution.

How would you begin to transform your own garden using natural sites and patterns? The first step is to ignore the details and look for a way to describe in words what you are looking at. That will help you organize your thinking about the pattern and its applications.

For example, there is the pattern I call the “arc ing stream,” represented in nature by a creek or narrow river meandering along a shore. When we look at it, normally from an oblique perspective, we see a number of characteristics: a sweeping curve that repeats itself; a contrast of texture between water and land; a bank of varying heights relative to the water; and often a bulky mass of shrubs or other vegetation to the extreme land side of the arc. The arcing pattern creates a feeling of movement and a sense of direction, while the bulky mass conveys a sense of anchored strength. Applications that suggest themselves include arcing planting beds, walkways and paths, and decks and patios. As you look at a pattern in na-
Leaves in water at Pemigewasset Wilderness area in New Hampshire, top, show an emergence pattern of congregation and separation similar to leaves growing on a tree. The natural stone path, above, leading into a courtyard garden in this residence in Falmouth Foreside, Maine, merges with a formal concrete paver path that leads to the front door.

I used this pattern with one client who wanted a way to reach her yard from her higher-level patio without using steps or stairs. A conventional ramp would have consumed too much room in the small yard. We solved the space problem by compressing the ramp into an S-shaped curve. The stream banks were reflected in stone wall ellipses, and strategically placed shrub beds against grass gave us textural contrast. The bulky mass was a solitary tree at the head of the ramp.

Another client had a rectangular deck that took up one whole side of his house and looked out onto a river in a spectacular salt marsh setting. Local building code required a railing for the deck since it was three feet high, but this would have detracted from the use of the deck and from its view. We made the house itself the "bulky mass," with the decking flowing around the house. To eliminate the need for the railing, the deck was built with two levels, and the steps between the two became the bank. We added a bench running the length of the deck to finish framing the view, and completed the S-curve with stairs to the deck at the front of the house. The bulky mass inside this curve is Miscanthus, mimicking the natural grasses of the salt marsh, just as the deck mimics the arc of the river through the marsh.

Another common pattern is what I call "emergence." In nature, there are rarely any hard edges or boundaries. If you look up at the canopy of a tree, you will see nothing but leaves near the trunk, and farther out, nothing but the sky. In between, however, you see individual leaves contrasting against sky. This same observation applies to ocean and shore, sand and grass, field and woods, and many micro-patterns seen in nature. Some things you may observe about these transitional situations are that they have contrasting textures, that each of the different elements has its own internal continuity, and that one element is often more random than the other.

In designing your home landscape, rather than butting one element right up against another, it is sometimes more appropriate to include elements of both in a transition zone. Some applications for this emergence pattern include blending hardscaping and softscaping, blending two different walkways, and lighting a landscape. For instance, if you have an informal stone walkway abutting a formal brick walk, you could incorporate some of the stepping stones in the brick walk. This helps the eye flow naturally from one element to the other.

Let's look at some other useful natural patterns as they might be applied to a single design problem: creating a transition zone between your backyard and your front yard. Possibilities include a path, a deck, a pergola, or an elevated walkway. If you want a path, there are a number of natural patterns to serve as your model. The pattern you choose will guide your selection of material for the path, the plants that surround it, and the placement of both. You can think of the plants you use as sculptural elements used to re-create the body and details of the natural pattern form you choose.

If you have a two- or three-story house, or one that is "natural" in appearance such as a log cabin or cottage, you might want to use a pattern I call "grove of trees." This pattern is characterized by a random placement of vertical elements alongside a meandering path. The path should be of informal stone or mulch, surrounded by shade-loving ground covers and bulky shrub masses that increase in height moving away from the path, to create a feeling of depth. One possible combination of plants that could be used in New England would be birches as vertical elements (palms could serve the same function in Florida or Southern California), hay-scented ferns (Dennstaedtia punctilobula) and bunchberry (Cornus canadensis) as ground covers, with ostrich ferns (Matteuccia spp.) as accent plants and mixed azaleas as shrub masses.

If there is a slightly descending grade away from the house, the "mountain top" pattern can be used with any style of architecture, and can be formal or informal depending on your need. Here, a hard-surface path descends through a series of open spaces with random low shrub masses and ground covers helping to define the pathway. Occasional small trees provide framed views and help create a greater sense of middle ground. Stone or brick work well for the path surface, and a nice addition is small to medium-sized patios as the open spaces. Plant combinations here in New England could be Japanese tree lilac (Syringa reticulata) or hawthorn and dwarf Korean lilac (S. meyeri 'Palibin'), 'Purple Gem' rhododendron or 'Crimson Pygmy' barberry. Ground covers might be barren-
A grove of trees is echoed in a pergola, whose design can be modified according to space and financial resources.

Patios on three levels are inspired by plateaus that might be encountered on a walk down from a mountain top. The plateaus could also be a series of open spaces.

Patio #3

- SMALL TREE
- SMALL SHRUB
- MEDIUM TO LARGE SHRUB
- LOW-WALLED PATIO
- GROUNDCOVER/PERENNIALS
- STONE BENCH
- FIELDSTONE
- FENCE
- MIXED VINES
- STONE COLUMNS
- PIPE

The form I call the “running river” is broad and flat with bankings, bounded either by fields or woods. This pattern could best be used where you want to move quickly from the house to an outdoor living space. If your backyard is usually shaded and you enjoy the sun, this type of path pulls you quickly to that area both visually and physically. The straight, formal path could be bluestone, brick, concrete pavers, or even fieldstone. It is typified by low shrubby masses or benches defining the “bankings.” Behind these rise random clumps of additional shrub plantings and an occasional tree. If you are using a small scale you could use boxwood (a large prickly pear—Opuntia—species could serve this function in a desert environment) and a mixture of dwarf spirea and ‘Wardii’ yew (Taxus × media ‘Wardii’) as shrub masses. A serviceberry or shadbloom (Amelanchier sp.) in the East or a desert willow (Chilopsis linearis) in the West could be the occasional tree. You could even imbed a different colored stone in the path to mimic the small islands that sometimes occur in rivers.

These are only a few of thousands of natural pattern languages that can provide beautiful solutions to design problems. Observe nature closely. Describe what you’re seeing. Define its elements. That is how Fibonacci discovered his mathematical sequence. Pattern language may become the golden means to creating your own very personal and satisfying landscape.

Richard L. Dubé’s landscape design and consulting business, Environmental Information & Design, is in Buxton, Maine.

RESOURCES

A honey bee fills its pollen basket during a stop on a tansy.
Honey bees are not only fascinating, but they increase our yield of food crops and seeds.

BY ANNE WESTBROOK DOMINICK

LITTLE CALMS A STRESSED SOUL MORE THAN THE BUZZ OF A FEW HARD-WORKING HONEY BEES fussing about in the depths of some wide-open flowers. From the bright red tips of maples overhead to azure crocuses underfoot, bees herald spring’s earliest moments. After humming through summer’s long hot hours, their task force finishes off the year in our witch hazels (*Hamamelis* spp.) and Michaelmas daisies (*Aster* spp.) while we prepare our garden beds for the winter.

Bees don’t exist just to serenade us humans, of course. While the honey they make is certainly a bonus, they also perform a task essential to the continuation and diversity of our floral species: they pollinate plants. To discourage self-pollination—incestuous male and female contact within a single flower—blooms have evolved into forms that make it impossible. Most cross-pollinate—that is, their pollen, and the genetic information it carries, must be transported from one plant to another.
Breezes can whiff the light fluffy pollen in the inconspicuous flowers of plants like grasses and corn as far away as needed, but most plants with heavier pollen rely on insects to spread their pollen from flower to flower. Such plants have evolved complex biological and chemical advertisements of a sweet nectar reward, which enticing insects into the unwitting role of middlemen in these floral assignations. In these plants, oily pollen on the anther—the pad at the tip of male reproductive structures called stamens—sticks to an insect’s body as it rubs against the anther on the way to sweet liquid exuded by nectaries at the flower’s base. When the insect moves to another plant, some of the pollen adheres to the stigma—the sticky pad at the end of the female reproductive organ called the pistil. From there the pollen grains grow a tube down through the pistil into the flower’s ovary, through which sperm passes to fertilize each ovule. In this phenomenon lies the incredible importance of the honey bee.

First, while hundreds of insects love nectar, bees depend on flowers for all their food: carbohydrates from the nectar, fat and protein from pollen. Second, honey bees practice “flower fidelity.” A worker that starts collecting from plum trees will continue in plum trees for the rest of that trip. A honey bee in dandelions will work only in dandelions. Those that arrived at the strawberry patch will stick to the strawberries. Other insects move from species to species and care not about the mix-up. With honey bees, we can depend on pollination. While collecting their own foods, they fertilize flowers of the crops that feed the world—researchers estimate that the common domestic honey bee (Apis mellifera) pollinates about $10 billion in crops annually.

In our own yards, on a more limited scale, honey bees do the same for us. In addition to pollinating almost all fruits, from full-sized apple trees to ground-hugging blueberries, they collect from vegetables, herbs, and ornamentals. The year I finally moved my hive near the vegetable garden, the cucumbers, cantaloupes, and summer squash kept producing, and producing, and producing. Any time throughout the summer that I walk into the garden, a few bees will be buzzing deep down in the big yellow blossoms. I’ve planted another of their favorites, the blue-flowered borages—different flower colors are more attractive to certain nectar collectors; honey bees are especially attracted to blues and purples, while hummingbirds favor reds—here and there through the vegetable patch to further ensure their visits.

Having a hive nearby practically guarantees a good crop of flower seeds. Every year I collect cleome, cosmos, poppy, and nasturtium seeds for next year’s plantings. Self-seeding herbs such as chervil, caraway, motherwort, and rue have so established themselves that they have to be thinned every spring.

A new hive in a new spot takes some planning. A young colony is best started in spring so it will have the entire season to build up a strong brood with plenty of honey to get through the winter. (There is almost never enough honey to harvest the first year.) As much as we might enjoy bees in our gardens, their hive should be placed out of the way, where its main exit and entrance path won’t cross one of our own. Honey bees are mild tempered, but they can feel threatened when encountering humans along their route to and from home.

The fact that bees work constantly to keep their hive a steady 92 degrees should influence where we put it. In summer, special workers fan constantly and others bring in water for cooling evaporation. In

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>BOTANICAL NAME</th>
<th>COMMON NAME</th>
<th>BOTANICAL NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willows</td>
<td>Salix spp.</td>
<td>Hollies</td>
<td>Ilex spp.</td>
</tr>
<tr>
<td>Spring Heath</td>
<td>Erica carneae</td>
<td>Thymes</td>
<td>Thymus spp.</td>
</tr>
<tr>
<td>Snowdrops</td>
<td>Galanthus nivalis</td>
<td>Bachelor’s-Button</td>
<td>Centaurea cyanus</td>
</tr>
<tr>
<td>Crocuses</td>
<td>Crocus spp.</td>
<td>Basswood or Linden</td>
<td>Tilia americana</td>
</tr>
<tr>
<td>Spicebush</td>
<td>Linderia benzoin</td>
<td>Mints</td>
<td>Mentha spp.</td>
</tr>
<tr>
<td>Dogwoods</td>
<td>Cornus spp.</td>
<td>Borage</td>
<td>Borago officinalis</td>
</tr>
<tr>
<td>Redbud</td>
<td>Cerasic canadensis</td>
<td>Malva spp.</td>
<td>Echinacea spp.</td>
</tr>
<tr>
<td>Rosemary</td>
<td>Rosmarinus officinalis</td>
<td>Purple coneflowers</td>
<td>Verbena spp.</td>
</tr>
<tr>
<td>Magnolias</td>
<td>Magnolia spp.</td>
<td>Vervain</td>
<td>Koeheneria paniculata</td>
</tr>
<tr>
<td>Pea Trees</td>
<td>Caragana spp.</td>
<td>Golden rain tree</td>
<td>Esodis danielli</td>
</tr>
<tr>
<td>Oregon Grape</td>
<td>Mahonia aquifolium</td>
<td>Fireweed</td>
<td>Epilobium angustifolium</td>
</tr>
<tr>
<td>Fruit Trees</td>
<td>Prunus and Malus spp.</td>
<td>Summer-sweet</td>
<td>Colebra alhifolia</td>
</tr>
<tr>
<td>Tulip Poplar</td>
<td>Liriodendron tulipifera</td>
<td>Traveller’s joy</td>
<td>Clematis vitalba</td>
</tr>
<tr>
<td>Sourwood</td>
<td>Oxycodendrum arboreum</td>
<td>Morning glories</td>
<td>Ipomoea spp.</td>
</tr>
<tr>
<td>Black Locust</td>
<td>Robinia pseudoacacia</td>
<td>Marjoram</td>
<td>Ornagium spp.</td>
</tr>
<tr>
<td>Honey Locust</td>
<td>Gleditsia triacanthos</td>
<td>Sages</td>
<td>Salvia spp.</td>
</tr>
<tr>
<td>Forget-me-nots</td>
<td>Myosotis spp.</td>
<td>Teasels</td>
<td>Dipsacus spp.</td>
</tr>
<tr>
<td>Snowberries</td>
<td>Symiporcarpus spp.</td>
<td>Sunflowers</td>
<td>Helianthus spp.</td>
</tr>
<tr>
<td>Penstemons</td>
<td>Penstemon spp.</td>
<td>Anise hyssop</td>
<td>Agastache anethiadora</td>
</tr>
<tr>
<td>False Indigo</td>
<td>Baptisia spp.</td>
<td>Mountain mint</td>
<td>Pycnanthemum pilosum</td>
</tr>
<tr>
<td>Salal</td>
<td>Gaultheria shallon</td>
<td>Goldenrods</td>
<td>Solidago spp.</td>
</tr>
<tr>
<td>Virginia Creeper</td>
<td>Parthenocissus quinquefolia</td>
<td>Michaelmas daisies</td>
<td>Aster spp.</td>
</tr>
<tr>
<td>Lavenders</td>
<td>Lavandula spp.</td>
<td>Garlic chives</td>
<td>Allium tuberosum</td>
</tr>
<tr>
<td>Indian Blanket</td>
<td>Gaillardia pulchella</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PLANTS FOR BEES

Here are a few ornamentals that tickle the fancy of Apis mellifera, listed in order of blooming from winter through fall.
A honey bee swarm, top, makes an awesome sight, but its collective consciousness is focused on homing, not stinging. Late-season bloomers favored by bees include teasel, left, whose spiky seedheads remain decorative through fall and winter, and fireweed, above, which develops capsules that open to show seeds with feathery hairs.
Honey bees rarely sting. When collecting in the field, they would rather flee than protect the richest blossoms. When swarming, their collective mass is far more interested in starting a new hive than bothering with humans. Only when they fear that their home is under attack will they strike. Even then, as few as deemed necessary take part in the battle, for once a honey bee stings, it dies.

Other stinging insects are the real villains. I’ve been stung by all except the bumblebee (which is about as mild tempered as any beast can be, but supposedly packs a mighty wallop when pushed beyond its limit), and I agree with the experts that wasps, hornets, and yellow jackets cause far more pain than the honey bee. The long, slender, shiny black paper wasps, which would as soon live inside the house as out, seem to enjoy surprise stinging. Their bites often swell and ache for several hours. Yellow jackets, those vicious hole-in-the-ground dwellers, operate in groups of half a dozen or more. They attack quickly, repeatedly, and they hurt. Hornets, if at all aggravated, emerge in massive and chase their tormentors fairly long distances. They, like the others, will sting repeatedly and live to sting again.

By comparison, when beekeepers dismantle hives to collect honey, honey bees are little more than a slight annoyance. To keep trouble to a minimum we wear a veil over our heads, long gloves, and a loose white or yellow cotton shirt or coverall tucked in around the ankles. (Wool and dark colors incite bees.) To tranquilize the bees, we pump smoke around the hive and work at a steady, deliberate pace. We actually expect occasional stings and find that after working around hives for a short time, the stings become barely noticeable—a prick as mild as a tetanus shot given by a skilled nurse.

Between one-half and one percent of the population is severely allergic to the stings of honey bees and other members of the Hymenoptera family. For them, an excessive production of antibodies in response to an earlier sting causes them to react to subsequent stings with swelling of the face, nausea and dizziness, and bronchial constriction. If this happens to anyone, particularly a child, an allergist should be consulted. About 50 Americans die each year from such reactions, and it’s impossible to predict when a reaction will be mild and when it will be severe. Obviously, a person with such an allergy should not become a beekeeper. (People who have had sting allergies diagnosed usually carry a medication that they can inject to neutralize their body’s reaction to a sting.)

Most of us suffer no more than a brief swelling. As we work with bees and receive an occasional sting, swellings eventually cease to occur even when we’re stung in such tender places as the eyelid or lip.

There are real reasons for concern about the African, or so-called “killer” bees that have migrated north through Central America and across our southern borders. These bees tend to claim a larger territory than honey bees and sting as a group, often inflicting hundreds of stings at a time. They can move into existing honey bee hives and leave a queen that will produce a more belligerent brood as the current hard-working, mild-mannered residents die off. But by replacing queens with known honey bee queens every year, beekeepers are keeping the threat in check. In most of North America, African bees should never be a problem, since they cannot survive our winters.

—Anne Westbrook Dominick

Ideally the hive’s opening faces south to give workers the longest possible day. Next best is the east for the earliest sun and the quickest warm-up. Light shade during the hottest part of a summer day is okay, but in order to work from early morning to late afternoon, bees need full sun most of the day. Full shade will shut down the hive.

If no pond or stream is within a half mile, bees appreciate a small container of water, such as a birdbath, with plenty of floating chips or cork on the surface for landing. Yet it is essential that the hive itself be kept dry. Raising the hive off the ground a few inches with cement blocks or a wooden stand will prevent decay, keep the hive warmer in winter, and prevent vegetation from blocking the entrance.

The landscaping in the vicinity of the hive can do a lot toward governing the bees’ behavior. Although you want to avoid blocking the sun, an eight- to twelve-foot-high hedge around the grounds will make the workers fly up and over it on the way to favorite fields, thus decreasing the likelihood that they will travel along people’s walkways. My hive is set on a south-facing slope looking over my vegetable garden. East, south, and west of my cleared acre lot is a deciduous woodland. While a couple dozen honey bees may drop into the garden, the others rise straight up and pass over the trees to get to their favorite sources.

Even fairly large home gardens cannot supply enough nectar to satisfy even one hive. They need acres. The 40,000 to 50,000 workers (all non-reproducing females), couple hundred drones (non-working males), and one queen, need 500 to 600 pounds of honey per year for themselves. One worker on one trip, which can be up to three miles long, will collect from as many as 100 to 1,000 flowers of the same species. Workers can fly a total of 50,000 miles just to collect one pound of honey. Even the richest gardens can’t supply that.

On the other hand, we can plant some of their favorite plants (see sidebar, page 30) to entice a few to work in our yard. Honey bees like hundreds of species, and one of beekeeping’s rewards is that it teaches us a lot about various flowers. For example, I thought the bee balm (Monarda didyma) would be a honey bee treat, but after I planted it, I could see that their tongues are too short to reach its nectar.

Bee balm was named for the bumblebees that work a good stand by the dozens. On the other hand, honey bees will devour the sweet drinks from another genus member, the horsemint (M. punctata).

Favorite plants don’t need to be next to the hive. Scouts survey the entire area to pinpoint the richest offerings. Yet on cloudy or cool days they much prefer working closer to the hive.

Dandelions begin blooming here at a time when we often have many gloomy days, and those who can be relaxed about their lawn’s make-up, as I am, will want to
let them stay, since they are a reliable, lush, and nearby nectar source. Poor dry sections in a yard are ideal for wild thyme (Thymus serpyllum), and a lawn seed mix with short clovers in the standard grass crop will delight the workers.

Any wasteland in a yard can be turned over to a nectar-rich ground cover. Any clover—a flower that yields one of the universal, all-time favorite honeys—or alfalfa will both enrich the soil and treat the bees. Goldenrods will aggressively take over large plots, brighten the days as fall arrives, and, from my experience, make an exciting honey that soothes a sore throat like nothing else. Wild gardeners who can enjoy even plants that are usually considered a nuisance will find that bees love the pretty beggar-ticks (Bidens spp.) that will happily fill in abandoned areas.

During the warm days in February and March, honey bees really benefit from strategic planting. On the few days when temperatures reach 55 degrees, many will work at cleaning the hive while a few of the hardiest will prowl out a half mile or so looking for fresh pollen and nectar. (Pollen is important in spring when the production of young gets under way, since those in the larval stage are primarily fed pollen.) The earliest crops are undoubtedly the various pussy willows, which prefer a damp growing area but once established will bloom winter after winter. Because they put on their show here at a time when snow may still be on the ground, we love them, as do the hungry honey bees. In March, soon after the willows bloom, the sap of maples starts running and their bright red tips open, so that on warmish days the air overhead fills with a busy peaceful buzz.

One of the greatest benefits of having your own bee hive is, of course, the ability to harvest and enjoy the unprocessed honey. About four percent of fresh honey is extrinsic materials, including pollen from various plants, which provide its distinctive color, scent, and flavor. Most of the vitamins in honey are due to its pollen content. While honey remains edible for decades, those delicate flavor combinations disappear within months.

Bees will visit whatever blossoms are most profuse and yielding nectar most copiously. As gardeners, what we supply is an isolated source that will bring a few in around us to ensure bountiful fruit and vegetable crops and prolific amounts of seed for next year’s flowers.

Anne Westbrook Dominick is a free-lance writer, gardener, and beekeeper in Hinsdale, New Hampshire.

**RESOURCES**

The ABC and XYZ of Bee Culture. A bible of beekeepers. $25 plus $4.20 shipping and handling. A. I. Root Company, P.O. Box 706, Medina, OH 44258, (800) 289-7668.

*Beekeeping in the Midwest* by Elbert R. Jaycox. Great for beginners in that part of the country. $5.50. Publications Office, 67 Munford Hall, 1301 West Gregory, Urbana, IL 61804. Make checks payable to the University of Illinois.

*The Bee-Man of Orn* by Frank R. Stockton is a children’s book recently reissued with illustrations by Maurice Sendak. $4.95 paperback, $8.95 hardcover. Harper-Collins Children’s Books.

*A Book of Bees* by Sue Hubbell. This paperback by the author of *A Country Year* is less a how-to than an exploration of the rhythms of country living. Priced at $8.95 from Ballantine Books, New York.

*The Dancing Bees* by Karl von Frisch. A bee book that is enjoyable to read and popularizes some of the work that earned the author a Nobel prize.

*Starting Right with Bees*. A slim introductory paperback. $7.99 plus $4.20 shipping and handling. Also from A.I. Root.
Knotty But Nice

Species pelargoniums’ odd posture makes them the Quasimodo of windowsill plants.

By Tovah Martin

Heaven knows, I have never been a great fan of botanical “freaks of nature.” The contortions and deformities exhibited by certain cacti do not excite me in the least, and the swellings of caudiciforms leave me cold. But somehow, the swollen stems and knobby joints that adorn species pelargoniums are a different matter entirely. The lower sections of species pelargoniums are a tad homely, perhaps. But perched on top of those plump, gnarled stems and brittle, strangely shaped leaves stand umbels bristling with reassuringly familiar flowers. The base looks like something out of a science fiction movie; the blossoms look like something your grandmother grew on her windowsill—these plants are a delightful contradiction in terms.

If you’re scratching your head and wondering what on earth I’m talking about, it’s little wonder. First of all, “pelargonium” is not a household word, not in this country anyway. And yet you’ve undoubtedly encountered pelargoniums at every street corner—masquerading under the name “geraniums.” In fact, pelargoniums were classified as geraniums by Linnaeus and the scientists that followed until 1789, when the French botanist Charles-Louis L’Heritier de Brutelle established Pelargonium as a separate genus within the Geraniaceae family. The tender South African species and their hybrids were called pelargoniums, distinguished from the hardier geraniums such as herb Robert (Geranium robertianum) that grow wild in our woods. The British eventually adopted the new-fangled name. But 200 years later, Americans are still stubbornly clinging to the nickname geranium, much to the confusion of everyone.

Compared to the pelargoniums that carpet cemeteries on Memorial Day and line up dutifully in window boxes later in the season, species pelargoniums have received scant attention. To be sure, their blossoms aren’t quite as riveting as the brightly colored, round-petaled crowd pleasers that bristle atop their cousins. But species pelargoniums definitely have a certain charm. Part of their beauty lies in the fact that they are eminently suitable for growing on the average windowsill. They are just the right size and they thrive in just the right atmosphere to share our living quarters comfortably.

I like to think of the species pelargoniums as the Rumpelstiltskins of the Geraniaceae. If you like streamlined plants that can be shaped into neat mounds with predictable curves, these are not the botanicals of your dreams. Species pelargoniums
tend to be bent in places; their stems come out at weird angles and jut awkwardly into the air. Some trail down and form clumps of sorts, but even the most compact species sport blossoms that dangle akimbo on long, wiry stems.

Besides their similarity in blossom structure, species pelargoniums share few physical traits. Many—but not all—are tall with large, segmented leaves on woody stems that look ages old, even when they’ve only been propagated a few months previously. They all have a succulent quality to their appendages. And, in fact, species pelargoniums are often featured in catalogs of succulents. The stems are often swollen, scaly, rough, and capable of storing water in a drought, and the leaves are generally furry and brittle—obviously engineered to take a beating from sun rays. The beauty of these pelargoniums lies in the checks and balances they’ve developed as survivors.

If species pelargoniums ever had a yearbook in which one was designated “most likely to succeed,” then *Pelargonium inquinans* would certainly win the vote. This rather tall plant with felted green leaves is crowned by umbels of lipstick-red blossoms. Used as a headache and cold remedy as well as a body deodorant in its native South Africa, it reached Britain in 1714 and was cultivated in the garden of Henry Compton, the Bishop of London. Despite its being lanky and slightly ill-kempt, gardeners immediately saw the species’ potential as a parent. Bred to the pink-flowering *P. zonale* and rebred again through dozens of successive generations, the offspring blossomed in an incredibly broad range of flower colors. Their petals were more rounded, the umbels held more florets, and the progeny boasted a less cumbersome growth habit than either of their parents. To make a long story short, *P. inquinans* fathered a slew of hybrids that went on to fill window boxes throughout the world. These are the plants we’ve come to know, love, and refer to erroneously as geraniums. (They are often called “zonal” geraniums in reference to the horseshoe-shaped leaf band that they inherited from their other, lesser-known parent.)

*P. inquinans*, however, is a rather staid member of a genus known for its gimmicks. *P. lobatum* is much wackier. From the foliage, you’d hardly guess that this is a close relative of our common patio plants. The foliage is almost grapeleaf-shaped with many deeply felted segments and notched edges. The leaves sprout from scaly tubers that plunge into the ground like many species pelargoniums, Pelargonium reniforme has sprawling stems that make it a natural for a hanging basket.
but also poke above the soil's surface. In autumn, tall spikes hold a constellation of five-petaled black blossoms edged in yellow. As if that weren't sufficiently entertaining, after dark those macabre black blossoms emit a delightful scent, akin to freshly ground cinnamon.

Another little oddity is *P. gibbosum*, a species famed for woody stems and swollen joints that look uncomfortably reminiscent of arthritic knees and elbows. In fact, it's been nicknamed "the gouty pelargonium." The new growth is tender and pea green with widely spaced celerylike leaves, but within mere months it hardens into stems that look prematurely aged. The blossoms come throughout the autumn, winter, and early spring. They're a drab, pale yellow, but form hightulturin, many-bristled umbels and give off a faint evening scent. To be sure, *P. gibbosum* isn't the cutest geranium you've ever encountered, but it is definitely a conversation piece.

*Pelargonium lobatum* is not readily available in this country and *P. gibbosum* is a little ragged for the average windowsill. *P. × glaucifolium*, a hybrid derived from the marriage between these two species, is both more available and more adaptable. To the hybrid's credit, it doesn't follow in *P. gibbosum*'s footsteps. Instead, it takes after *P. lobatum* in both foliage and flower. And come evening, *P. lobatum*’s delightful scent wafts from its black blossoms. Yet thanks to its other parent, *P. × glaucifolium* doesn't skulk along the ground but stands upright on gnarly, woody stems. It really inherited the best of both, but drew one flaw out of the gene pool. In early summer, it goes dramatically dormant, dropping most of its leaves and looking rather pitiful indeed. Mercifully, the slumber period doesn't last long. By the end of summer, *P. × glaucifolium* is again fully clothed.

To appreciate the majesty of *P. gibbosum*, *P. lobatum*, and *P. × glaucifolium*, you really have to possess a taste for the absurd. *P. echinatum*, on the other hand, is a little closer to the mainstream, at least from the flower-stem up. Known as the sweetheart pelargonium, *P. echinatum* has snow-white blossoms with tiny red hearts enhancing the upper two petals. The flowers appear in profusion beginning in late summer and continue until Christmas and sometimes beyond. It really is quite a pretty show. The flowers are held on gray, hard-wooded, prickly stems that aren't particularly good-looking, but they do the job. Without proper pruning, you're apt to see a little too much of those spiny gray appendages. But if you cut *P. echinatum* back occasionally, the handsome, velvety, heart-shaped leaves mask the stems quite nicely.

Not all species pelargoniums must make excuses for their stems. *P. crithmifolium* is grown for both its smooth, succulent tan stems and abundant, pale green, parsley-like foliage. The name alludes to the resemblance of the juicy leaves to the foliage of *Crithmum maritimum*, the herb known as samphire that is often grown in Elizabethan gardens. The contrast between the elephantine stems and the lacy leaves springing from them is rather comely. The small, slender-petaled white blossoms are usually overlooked.

Not so with *Pelargonium tricolor* (formerly known as *P. violareum* and generally still sold under that name). In this species, both foliage and flowers vie for your attention. The leaves are silvery green, softly felted, deeply notched, and lanceolate with a marked crease down the center. From midsummer until midwinter, copious blossoms smother the leaves. The flowers are as broadly petaled as any of the hybrid zonals and pure white with blush pink stains suffusing the upper petals. In fact, the blossoms look for all the world like those of pansies, and the plant's compact stature compounds the ruse.

There are other species pelargoniums. There is *P. fulgidum*, which has scarlet red blossoms on top of adorable, silver-felted leaves that emit a hideous musky scent when touched. There is *P. reniforme*, with sprawling stems, cute little kidney-shaped leaves, and many umbels of violet-pink flowers that spill from the leaves and look absolutely lovely in a hanging basket. Equally appropriate for draping over the edges of a hanging container is *P. ionidiflorum*, which has tiny, parsley-like leaves on woody stems and an omnipresent supply of thin-petaled blush pink flowers. And there is *P. abrotanifolium*, with foliage that looks so much like the herb southernwood, *Artemisia abrotanum*, that it could easily fool the most astute horticulturist. In fact, there are upwards of 280 species pelargoniums, and I could continue for page after page describing these odd fellows. But you get the picture. Better to devote some space to the secrets of their cultivation.

Since species pelargoniums are so very diverse, it's difficult to lump them within one set of growing instructions. And yet they do share some common ground. In their native South Africa, many of these plants can be found in coastal regions. They thrive in the poor soil of rocky, exposed, wind-swept areas that provide plenty of sun but scant nutrition. So it stands to reason that species pelargoniums prefer a sandy soil such as you might concoct for cacti. They prefer clay pots with very good drainage and they detest over-watering. The roots want to be tightly bound rather than thrashing about in an overly generous container, and they should only be repotted in autumn when new growth is vigorous—never in spring or summer when the dormant period is in the offing.
Above all, species pelargoniums crave sun. They can thrive indoors in a window, but only if that window has an unobstructed southern outlook. In summer, they might go outdoors under the brunt of unfiltered sun, but they must be protected from drenching downpours. Once they have sun, however, species pelargoniums really don’t have demanding dispositions. They cheerfully tolerate the low humidity levels typical of the average home. In fact, they prefer a dry atmosphere—a dank, clammy environment will lead to stem rot and fungal infections.

The dormant period can be disquieting if you aren’t clued in to the dramatic leaf drop and growth halt that comes in spring and summer. Once you’ve witnessed this behavior and experienced the reassuring regrowth that begins in autumn, the sequence really becomes quite bearable. Many gardeners find it rather convenient that these house plants slip backstage when the garden outdoors is in full tilt. Of course, not all species pelargoniums plummet into a dramatic slumber. Some merely cease active growth for a short period. But they should all be watered sparingly and fertilizer should be withheld until new growth begins again in late summer or early autumn. Even when growth is vigorous, these plants shouldn’t be fed generously. Once every four to six weeks with 20-20-20 or any balanced feed should do it.

Some species pelargoniums can eventually become gangly if they aren’t checked by stern pruning. Since the stems so quickly become woody and/or bloated and tough, it’s wise to begin pruning early in a pelargonium’s career, always dusting the wound with a fungicide afterwards. Fortunately, most species pelargoniums are painfully slow-growing plants, which will prove a blessing for windowsill gardeners trying to hold the line spacewise. This lethargy is also a relief for gardeners who might be squeamish about wielding pruning shears.

Propagating species pelargoniums isn’t a fast and easy process. Of all the pelargoniums, cuttings from these plants take the longest to send down roots. Wait until new growth has hardened slightly—young, limp slips rarely take hold as cuttings. Sink the cuttings into sand and wait patiently for a month or two, sprinkling the sand with water only when necessary to keep the cuttings from wilting. Seed is an easier method of increasing the bounty, and these species often set seed. When they do, the resulting seedheads look like stork’s bills. *Pelargon* means “stork” in Greek, and these seedheads run throughout the genus. They are the common ground that links these odd fellows with their more familiar kin. And like the swollen stems and succulent leaves, like the intricate blossoms in offbeat colors, they are strangely beautiful—one more of the many attractions of species pelargoniums.

*Tovah Martin is horticulturist at Logee’s Greenhouses. Her most recent book is Tasha Tudor’s Garden, published by Houghton Mifflin.*

---

**Sources**

Logee’s Greenhouses, 141 North Street, Danielson, CT 06239, (203) 774-8038. Catalog $3.

Richter’s, Goodwood, Ontario, L0C 1A0, Canada, (905) 640-6677. Catalog $2 Canadian, $1.60 U.S.

Shady Acres Herb Farm, 7815 Highway 212, Chaska, MN 55318, (612) 466-3391. Catalog $2.

Sunnybrook Farms, 9448 Mayfield Road, P.O. Box 6, Chesterfield, OH 44026, (216) 729-7232. Catalog free.

---

*The flowers of Pelargonium tricolor, often called by its former name, *P. violareum*, look like those of pansies.*
Conservation of native Hawaiian orchids is one of many projects under the auspices of David Lorence, director of research at the National Tropical Botanical Garden in Kauai.

How many orchid species do you think are at home on the islands of Hawaii? “Must be zillions” is the typical reply. If this was your first guess, don’t feel bad—you’re among the company of noted botanists.

As incredible as it may seem, there are only three orchid species native to the Hawaiian Islands: Anoectochilus sandvicensis, a jewel orchid; Liparis hawaiiensis, whose common Hawaiian name awapuhi-Kanaloa translates roughly to “the ginger of Kanaloa”—a Hawaiian deity; and Platanthera holochila, a fringed orchid.

David Lorence, director of research at the National Tropical Botanical Garden (NTBG) in Kauai, Hawaii, says it’s actually not all that surprising that Hawaii is home to only three orchid species. Some authorities have suggested that orchid seeds, which are among the smallest of any flowering plant, could have hitched a ride to Hawaii millions of years ago on migratory birds. But Lorence maintains that before humans arrived on the islands, the most likely way for such plants to naturalize was for the nearly microscopic seeds to have been carried to the isolated archipelago by the jet stream.

Once seeds actually made it to Hawaii, other challenges to successful colonization awaited. “If it had a short seed life,” says Lorence, “the seed would not be viable by the time it arrived at the islands. Also, orchids require a mycorrhizal fungus to germinate.” Lacking the food store carried by larger seeds, the embryonic orchid relies on sharing the nutrients that are assimilated from organic matter by soil fungi that “infect” the orchid by means of tiny threads called hyphae. The arrangement is usually mutually beneficial, but occasionally the fungus overcomes and consumes a weak orchid, and vice versa.

Even if the orchid seed did manage to link up with the appropriate fungus, there was a good chance it could never reproduce. “Orchids many times have very specific mechanisms for pollination,” explains Lorence. “There may have been a lack of suitable pollinators.” Since it was between five million and 10 million years ago that the westernmost and oldest island of the volcanic Hawaiian chain emerged from the Pacific Ocean, successful natural migration of orchids averaged less than one in a million years.

Despite their tenacity, the native orchid species are not very showy. The orchids commonly seen hanging from trees or cascading in a profusion of color alongside walkways in local parks are not indigenous. “These are orchid species that were originally brought to Hawaii for the purpose of cultivation,” says Lorence, “and they naturalized.” The four most common naturalized species are Arundina graminii-
folia, the bamboo orchid; *Phaius tankervilleae*, Chinese ground or nun's orchid; *Epidendrum × obrienianum*, a hybrid commonly called scarlet or butterfly orchid; and *Spathoglottis plicata*, the Malayan ground orchid, which has a history of colonization—*S. plicata* was among three orchids found on what little was left of the denuded Indonesian island of Krakatau 13 years after its eruption in 1883. The orchid was likely spread by wind from nearby Java. With the exception of *Epidendrum*, which is epiphytic (its Latin name means “upon a tree”), the major imported orchids are terrestrials that were introduced to the islands between the 1920s and the 1940s.

Orchid species fall into two broad groupings based on whether they usually grow on trees or on the ground. Epiphytic orchids, which comprise the majority of orchid species and are most common in the tropics, typically grow in the upper canopy attached to tree limbs. Terrestrial orchids are found predominantly in temperate regions, where they grow in meadows, open forests, and along stream banks. Whereas epiphytes are usually equipped with a fleshy water-storage organ called a pseudobulb that helps them withstand dry periods, most terrestrials require a steady supply of moisture to survive. Except for a few bog-dwelling species, terrestrials also require well-drained, open soil, which means that the ground must be “fluffy” with humus or

Of the orchids native to Hawaii, *Liparis hawaiensis*, left, is the most common, its inflorescence rising from two leaves at the base of the stem. *Platanthera holochila*, above, on the other hand, is quite rare and is a candidate for listing as an endangered species.
layered with dead and rotting vegetation. Because they are easier to grow than their terrestrial counterparts, epiphytes account for the vast majority of orchids sold commercially. Terrestrial orchids are still not completely understood and are extremely challenging.

Even orchid specialists can be stumped by terrestrials. The terrestrial native orchids of Hawaii have proven difficult to propagate. “We attempted to grow two of the [endemic] species here at the arboretum,” says Charles Lamoureux, director of the University of Hawaii’s Harold Lyon Arboretum in Honolulu. “but we weren’t very successful.” In addition to other problems, it appears the orchids were negatively affected by the lower altitude in Honolulu.

Of the indigenous species, the most common is Liparis hawaiensis, which comes from a fairly cosmopolitan genus of more than 200 species. Its name is derived from the Greek liparos, which means oily or smooth, and refers to the glossy surface of the species’ two bright-green leaves. L. hawaiensis is unlikely to be cultivated for its blooms, but is abundant and easily viewed. Its small pale-green flowers are held erect on terminal inflorescences during its flowering period from May through July. Though primarily terrestrial, L. hawaiensis has been found growing on moss-covered trees. More commonly, it can be found growing under bushes, on bare wet ground, in seasonally wet ground in mesic forests, and in bogs. Its altitude range is from 1,300 to 6,600 feet.

Anoectochilus sandvicensis is a member of the “jewel orchids,” known for their multicolored foliage. A better-known member of this group is the beautifully foliaged terrarium-grower, Liparis discolor. The Hawaiian species does not have the brilliant foliage of L. discolor; its leaves are dark green on the upper surface and pale green below, and its two- to six-inch spike of pale yellow-green flowers appears between August and November. According to John Obata, a retired school teacher and long-time orchid fancier who is one of the few people to have seen all three native species, the blooms of Anoectochilus sandvicensis “are the prettiest of the three species.” A. sandvicensis can be spotted growing in dense shade on wet ground or on the lower parts of tree trunks. On rare occasions it has been spotted growing epiphytically on tree ferns in wet forests. Its preferred altitude range is from 900 to 5,600 feet.

Unfortunately, the largest and most recognizable of the Hawaiian orchid species, Platanthera holochila, is in danger of extinction and is a candidate for immediate listing as threatened or endangered under the federal Endangered Species Act. Joel Lau, a botanist working for the Nature Conservancy on the Hawaiian National Heritage Program, says that only five sightings of P. holochila have been made within the last decade, although about a year ago a new population of about a dozen plants was found on the Nature Conservancy’s Kapunaakea Preserve on Maui. Lau says the known population of P. holochila is now between 25 and 30 plants. Under the auspices of the U.S. Fish and Wildlife Service, Lau and other staff at the Nature Conservancy are collecting data on P. holochila to be used in preparing a draft proposal for listing the species as endangered.

The cause of its demise is not certain. Lorence suggests it may be a combination of factors, including the loss or destruction of lower elevation habitats by the creation of cattle pastures, collection prior to its endangered status, rooting by feral pigs, low seed viability or poor germination, and competition from invasive imported plants. “Most native plants evolved away from competition and are not very vigorous,” explains Lorence.

P. holochila is only found at high altitudes in remote areas on the islands of Kauai, Maui, and Molokai. It has not yet been seen on “the big island” of Hawaii, the easternmost and youngest island in the chain. When blooming, its tall spike covered by greenish yellow flowers makes it easy to spot. Of the three native species, it has the longest blooming season, beginning in June and continuing through September. P. holochila is truly terrestrial, with stems rising from subterranean tubers and pale green leaves that are simple and alternate.

According to Obata, P. holochila never was very common. “It has not been spotted on Oahu since the early ‘40s,” he says. Obata spent 40 years trying to view this rare orchid. With the help of a guide, he finally found it in the boggy inner recesses of Kauai’s Alakai Swamp. This was no casual field trip. “It was back a few years before there was a boardwalk,” he relates. “Once we got through the forested area, we had a nearly vertical, moss-covered climb... pulling ourselves up from branch to branch. After this we had to cross a thigh-deep stream and another bog.” For
Obata it was all made worthwhile by the rare sight of a P. holochila population. But today, even with the boardwalk, he warns prospective explorers: “If you don’t know the way, you may never come out.” The Alakai Swamp has claimed the lives of more than one inexperienced hiker.

Efforts to propagate P. holochila have been frustrating at best. Greg Koob, graduate assistant for Lyon Arboretum, has “rescued” an impressive number of endangered native Hawaiian plant species, but P. holochila has so far defied all his efforts.

Using the delicate laboratory methods necessary to germinate and grow all orchid seeds, Koob was able to germinate seeds received from the NTBG and get them to the protocorm stage, where the testa, or seed coat, splits, and the embryo normally turns green and develops fine hairs on its underside. “But they never got past that stage. They lived for about four or five months, stayed white, never turned green, didn’t get any roots or shoots,” he laments.

When Koob realized Platanthera was being stubborn, he tried different tactics in hopes of activating the plants to the next stage. “I tried different media studies, light and dark regimes, and cold and warm regimes,” he relates. “Nothing could get them past that protocorm stage.”

Koob believes that P. holochila “may need the association with a mycorrhizal fungus to reach the next stage.” He is ready to test his theory in the laboratory using a fungus commonly found in soil around the plant in the wild. He may also test a nonspecific mycorrhizal fungus that is known to be symbiotic with several orchid species. “The trick will be keeping the fungus from outgrowing and killing the orchid, since the fungus grows well in the medium and doesn’t need the orchid to survive.” Koob adds, “There’s a fine line I’ll have to walk to make this work.”

Researchers hope P. holochila will hold out long enough to be saved, but Lorence is concerned this may not be the case. “The one clump that was used last year to obtain the seed pods is not increasing its population,” he says. As with other endangered species, only time will tell . . . and the race is on.

Joan Hustace Walker is a free-lance writer who lives in Mechanicsburg, Pennsylvania.
P. rostriflora P. rah-stih-FLOR-uss
P. rydbergii P. rid-BERG-ee-eye
P. pseudospectabilis S. soo-dee-spek-tuh-BIL-iss
P. strictus P. STRIK-tus
P. tenax P. TEN-vee-iss
P. venustus P. veh-NUS-tus
P. tehippeanus P. whi-poo-LAY-ness
Petalostemon foliosum teh-rah-oh STEE-mum foh-leer-OH-sun
Petola tuberculata buh-TOL-uh-kuh-tur-luh
Phaius tankervillii FAH-yus tan-kur-VIL-lee-eye
Pilos drummondii FLOKS drum-MON-dee-eye
Physostegia sp. fie-so-STEY-juh
Picea glauca PIE-seh-uh GLAW-kuh
P. martana T. mahr-ee-AN-uh
P. rubens P. ROO-hens
Pinus banksiana PIE-nus ban-kay-see-AN-uh
P. strobus P. STROH-bus
P. styraciflua PI-stuh-flee-uh
Platanthera holochila pluh-TAHN-thurr-uh hoh-lo-CHIH-luh
Polonium reptans pahl-eel-MO-nee-us REP-tanz
Prunus spp. PREW-nus
Pycnanthemum pilosum pik-NAN-tuh-mus pil-LOW-sun
Ratibida columnifera rah-TIH-bi-dah kol-UR-tuh
Rubinia pseudocodiax rod-BIN-ee-eye soo-dee uh-KAY-suh
Rumex crispus RY-mex CRISP-us
Salix spp. SAY-likes
Salvia azurea SAL-vee-uh as YEW-ree-uh
S. farinacea S. fahr-in-uh SEE-uh-ree-uh
Sidalcea malvaeflora sild-AY-lee-uh mal-vuh-FLOr-uh
Silene latifolia SY-laneh luh-syn-EYE-uh
Sisyrinchium angustifolium ihs-sih-RHING-kee-um ang-guss-uh-TH flaw-ESS-iss
Solidago spp. sol-ih-DAY-go
Spathoglottis plicata spat-oh-GLOT-tiss ply-KAY-juh
Symphoricarpos spp. sym-fuh-koh-RAH-poz
Symmera menieri siih-REE-NG-guh MEE-ner-eye-er
S. reticulata S. reh-tik-yew-LAY-juh
Tagetes erecta tah-JEE-tee uh eh-REK-juh
Tanacetum vulgare tan-uh-SUE-vul-GAY-ruh
Taxus x media TAK-suh MEE-dee-uh
Thermopsis carolina THAIR-mo-SPIS see-kair-OHN-ee-AN-uh
T. montana T. mon-TAH-uh
Thymus serpyllum TY-mus sur-PILL-uh
Tilia americana Tl-lay-uh-ahl-muh-ihh-KAN-uh
Trapa bicornis trow-PEE-uh-lum MAY-juss
Verbena hastata ver-BEE-uh-nah-hast-a-TAY-juh
Veronicastrum virginicum ver-on-ih-KEE-vi-RING-kum vir-JIN-uh-kum
Victoria amazonica voi-TAH-oh-ree-uh ah-muh-ZAHN-ih-huh
Viola canadensis VI-oh-ee-kan-uh-DEH-siss
V. pubescens V. pyew-BESS-ens
Zauschneria arizonica zoah-NEH-ree-uh air-ihh-ZOWN-ih-huh
Zinnia elegans ZIN-ee-uh EL-ih-ganz

Classified Ad Rates: All classified advertising must be prepaid. $1.25 per word; minimum $25 per insertion. 10 percent discount for three consecutive ads using the same copy, provided each insertion meets the $25 minimum after discount. Copy and preparation must be received on the 20th day of the month three months prior to publication date. Send orders to: AHS Advertising Department, 2300 South Ninth Street, Suite 501, Arlington, VA 22204-2320, or call (703) 892-0733.

THE AVANT GARDENER

FOR THE GARDENER WHO WANTS MORE FROM GARDENING! Subscribe to THE AVANT GARDENER, the liveliest, most useful of all gardening publications. Every month this unique news service brings you the newest, most practical information on new plants, products, techniques, with sources, feature articles, special issues, 26th year! Awarded Garden Club of America and Massachusetts Horticultural Society medals. Curious? Sample copy $1. Serious? $2 full year (req. $18). THE AVANT GARDENER, Box 489M, New York, NY 10028.

AZALEAS

SELECT! DON'T SETTLE!—Growing over 1,000 varieties of northern-acclimated Azaleas and Rhododendrons. Catalog and Color Cue Card for FREE! CARSON'S GARDENS, Box 305-11H294, South Salem, NY 10590.

BOOKS

HORTICA—All-Color Cyclopedia of Garden/Flora, with Hardiness Zones, also INDOOR PLANTS, $100 photos, by Dr. A. B. Graf, 259. TROPICA 4 (1992), 7000 Color photos of plants and trees for warm environments, $165. EXOTIC HOUSE PLANTS, 1,200 photos, 150 in color, with keys to care, $8,95. Circulairs gladly sent. Shipping additional. ROEHS CO., Box 125, East Rutherford, NJ 07073. (201) 959-0090. FAX (201) 959-0091.

BULBS

DUTCH BULBS for fall planting, 12cm Tulips, D11N Daffodils, Hycanthus and Miscellaneous. Catalog Free. Paula Parker DBA, Mary Mattierson Van Schak, IMPORTED DUTCH BULBS, P.O. Box 32AH, Cavendish, VT 05142. (802) 226-7653.

CATALOGS

RARE AND EXOTIC PLANTS from around the world. Catalog, $2, refundable. ABBEY GARDEN CACTUS, P.O. Box 2249, La Habra, CA 90632-2249. (805) 684-3112.

CARNIVOROUS PLANTS

CARNIVOROUS (Insectivorous) PLANTS, seeds, supplies, and books. Color brochure free. PETER PAULS NURSERIES, Camadaquia, NY 14424.

EMPLOYMENT

We at the American Horticultural Society are not in a position to offer full placement services to candidates or employers. However, as a service to our members—jobseekers and employers alike—we welcome the resumes and cover letters of individuals seeking job changes and employers seeking candidates. All responsibility for checking references and determining the appropriateness of both positions and candidate rests with the individuals. AHS's participation in this activity is only to serve as a connecting point for members of the Society. Inquiries and informational materials should be sent to HORTICULTURAL EMPLOYMENT—American Horticultural Society, Dept. 1294, 7931 East Boulevard Dr., Alexandria, VA 22308-1300.

PROFESSIONAL CARETAKER AVAILABLE. Expert property care. Horticultural expertise. Upkeep and improvement skills. Estate, farm or ranch position sought in Rural West or Rocky Mountain States. L.S., P.O. Box 761, Ojai, CA 93024.

EXPERIENCED ESTATE MANAGER/Hands-on Farm Manager to oversee a 450-acre farm in foothills of the Blue Ridge in Virginia, 1½ hours from Washington, D.C. Extensive experience with formal garden designs, small orchards, greenhouses, vegetable and herb gardens and grounds maintenance, as well as with cattle, horses and general agricultural activity is necessary. Interest in and experience with organic methods are desirable. Machinery maintenance and repair and the ability to work with others are required. Excellent housing provided; top pay and benefits to qualified candidate or couple. Forward resume to G. KNOX, 1627 1St., N.W., #610, Washington, D.C. 20006.

FEEDSTOCK

GENESIS (1-1-1) Composted Poultry Manure for indoor and outdoor gardening. Send $5 check or money order for a 2-lb. starter bag to: GENESIS, 85 C Mill St., Suite 101, Roswell, GA 30075.
HOUSE PLANTS


HYDROPONICS/GROW LIGHTS

COMPLETE HYDROPONIC SYSTEMS starting at $65. High intensity grow light from $114. Free catalog. Send postcard to GREEN-TREES, 2244-H South Santa Fe Ave., Vista, CA 92084, or call (800) 772-1997.

LOTIONS


PALMS

RARE AND EXOTIC HAWAIIAN-GROWN PALM AND CYCAD SEEDLINGS from around the world. Carefully shipped to anywhere in the USA. Please send 8¢ for price list to KAPOHO PALMS, P.O. Box 3, Dept. A, Pahoa, HI 96778. (808) 936-2582.

PERENNIALS

AKIN'S BACK FARM—Large selection of perennial and herb plants. $2 for descriptive catalog (refundable). P.O. Box 158C, Buckner, KY 40010.


PHOTOGRAPHY

MAUREEN MURPHY, PHOTOGRAPHER. Specialist in flower and garden photography of private and public gardens. Illustrations for publications. Documentation for plant collections. One World Trade Center, P.O. Box 32363, Long Beach, CA 90832-2363. (310) 432-3703.

PLANTS (UNUSUAL)

OVER 2,000 KINDS of choice and affordable plants. Outstanding ornamentals, American natives, perennials, rare conifers, pre-bonsai, wildlife plants, much more. Descriptive catalog. $3. FORESTFARM, 990 Tetherow Rd., Williams, OR 97594-9599.

When contacting advertisers . . .

Mention you saw their message in American Horticulturist

It helps your Society help you.

TILLANDSIAS (AIR PLANTS)—Easily grown without soil. Great plants for indoors, patios and craft making. Send for free brochure. PULLIWOG PRODUCTS, P.O. Box 21134, Dept. I-AH, Castro Valley, CA 94546.


RARELY OFFERED SOUTHEASTERN NATIVES, woody, herbaceous, nursery-grown. Many hardy worthwhile. Also newly introduced exotic selected for Southern gardens. Send $2 for extensive mail-order list. WOODLANDERS A.H., 1128 Colleton Ave., Aiken, SC 29801.

JOY CREEK NURSERY perennials and native plants. Catalog $2, refundable. JOY CREEK NURSERY, Bin 2, 20300 N.W. Watson Rd., Scappoose, OR 97056.


ROSES

HARDY ROSES, OWN ROOT ROSES. We propagate Canadian Explorer and Parkland Roses, Rugosa hybrids, OGR’s, David Austin English Roses and Minatures, all on their own roots. Color catalog $2 (credited). No import permit required. HARDY ROSES for the NORTH, Box 2048AH, Grand Forks, BC CANADA V0H 1H0, or Box 273AH, Danville, WI 99121-0273. FAX (800) 442-3122.

HORTICULT'S LARGE CROP of heavy roses available from mid-November on. Over 700 varieties, including new show roses and ground covers; English garden roses by David Austin; miniature roses; antique and classic roses by Peter Beales; miniatures by Rennie; 6 thornless HT varieties; hardy types—Ottawa Explorers, Laurian and the fabulous Pavilion roses. A superb collection from our fields that are known to be virus-free. Orders shipped by our catalog-controlled truck to UPS depots in the USA for local distribution. Catalog $3. Separate catalogs for roses, shrubs (§ lurers), and perennials. New: Video on roses by English rose hybridizer Peter Beales, $25. HORTICULT, INC., 723 Robin Rd., Waterdown, ON CANADA LOR 2H1. (905) 689-6984. FAX: (905) 689-6566.

200 PRACTICAL ROSES FOR HARD PLACES. Species, Old Garden, Rugosa, Cana- dian, Austin, Hardy Shrub, Climber, Rambling. Groundcover. Free 22-page catalog. Nurtured color 50-min video supplement: $5 prepaid. The Roseraie at Bayfields, P.O. Box R(AH), Waldoboro, ME 04572.

SEEDS

SEED SAVERS, HERB GROWERS, CRAFT-ERS. Imprinted seed packets, information, glassine envelopes, 4-mil. zip-polybags. Sample and list, SASE. V. L. PRICE HORTICULTURAL, 56 Grove Avenue, Catarissa PA 17820-1000.

TROPICALS

TROPICAL SEEDS AND BULBS—Thousands of types including chocolate, cinnamon, tea, coffee, banana, heliconia, gingalea, ananas, chicle, plus palms and much more for your tropical greenhouse or outdoor sunroom. Send $3 for catalog. THE BANANA TREE, 715 N. Hamp­ton St., Easton, PA 18042.

TROPICAL PLANTS from Hawaii. Young sprouted seedlings, seeds, and roots. Orchids, anthurium, stephanotis, streptcalis, guava, macadamia nut, passion fruit, papaya, and other exotics. Free catalogue. EARTH STAR, 3449 N. Newhall Street, Milwaukee, WI 53211.

Our catalog tells you how to grow plants, not just how to buy them. Complete descriptions and advice on over 1000 varieties of perennials, ornamental grasses, prairie wildflowers and vines. Send $1.00.

American Garden Tours

The classic English watering can in sterling silver, $95. 14K gold, $345. $4 shipping. In NY add tax.

Catalogue on request. VISA/MA/AMEX 516-734-0402. Or send check:

MILANO'S GARDENS, 4838 Douglas Ave, Racine, WI 53402-2498

Gardener's Pin

The classic English watering can in sterling silver, $95. 14K gold, $345. $4 shipping. In NY add tax.

Catalogue on request. VISA/MA/AMEX 516-734-0402. Or send check:

EAST END SILVER

Dept. A6, P.O. Box 151, New Smyrma, FL 32108

European Garden Tours

Our unique tours offer the vacation of a lifetime. Memorable visits to fine gardens balanced with full sightseeing. Experience the magic of Europe at a gentle pace with a small select group.

The Villas and Gardens of Italy

The serene beauty of the Italian Lakes and Tuscany and the treasures of Venice, Florence and Rome.

The Chateaux and Gardens of France

The countryside and the castles of France and the enchantment of Paris.

TOC (800) 505-2505

4200 N. Freeway Blvd. #210

Sacramento, CA 95814
1994 INDEX

Author

Barad, Gerald S., Review: The Complete Book of Cacti and Succulents, Feb., 44.
Cappiello, Paul E., Review: Gardening with Groundcovers and Vines, Feb., 42.
Dominick, Anne Westbrook, "What's the Buzz?," Dec., 29.
Druse, Ken, "Desert Diversity," Apr., 38.
Foster, Steven, Review: Tales of a Shaman's Apprentice, Feb., 41.
Fuchs, Lucy, "Plant Sales," Feb., 5.
Hicks, June L., Review: Green Byways, Apr., 41.
Lindauer, Ethel Evans, "The Quiet Garden," Feb., 32.
Trager, James, Review: Complete Garden Guide to the Native Shrubs of California, June, 17.
After July—Agastache, Aug., 32.
All-American Cottage Gardens, Dec., 16.
Avian Gardener, Aug., 18.
Bred in the USA, Oct., 39.
Carrot Capers, Apr., 13.
Desert Diversity, Apr., 38.
Dwarf Conifers, Feb., 25.
Eureka!, Oct., 41.
Flora of the Big Apple, Apr., 12.
Fragrance of Fir, Dec., 10.
Garden Videos, Dec., 12.
Gentian Pinkroot, Apr., 10.
Gesneriads, Feb., 20.
Great Notion in Grand Rapids, A, Aug., 27.
Grooves of Academe, The, Feb., 36.
Heathers, Feb., 15.
Heirlooms of a Revolutionary, Apr., 33.
Hues to Blame, Oct., 27.
Hydrangeas—So Pasé, So Today, June, 25.
Indelible Impressions, June, 15.
Intrepid Trio, Dec., 38.
Knotty But Nice, Dec., 34.
Kuenzler Hedgehog Cactus, Dec., 9.
Life in Hull, Apr., 20.
Mantis Metamorphosis, Aug., 37.
Minnesota Celebrates Its Children, Aug., 12.
Natural Inspirations, Dec., 23.
Northern Wild Monkshood, Feb., 9.
Of Twiners, Tendrils, Hooks, and Blebs, June, 30.
On Fire for Phlox, June, 38.
Patently Superior, Feb., 29.
Penstemon Heaven, Oct., 35.
Plant Sales, Feb., 8.
Play It Again, Sambucus, June, 35.
Poached Parklands, Oct., 19.
Quiet Garden, The, Feb., 32.
Refreshing Gaultherias, Aug., 39.
Remembrance of Flowers Past, June, 5.
Starting Trees Right, June, 13.
Storytelling, Feb., 12.
Texas Trailing Phlox, June, 11.
Through a Glass Darkly, Feb., 10.
Tippy of the Jungle, Oct., 11.
Tracking the Natives, Apr., 26.
Virginia Creeper, Feb., 8.
What Goes Around, Apr., 5.
Wild Roses, June, 10.
Woodies From the Wetlands, Apr., 15.

The Complete Book of Cacti and Succulents, Feb., 44.
Complete Garden Guide to the Native Shrubs of California, June, 17.
Crazy About Gardening, Aug., 17.
Creating a Garden for the Senses, Aug., 15.
Gardening with Groundcovers and Vines, Feb., 42.
Green Byways, Apr., 41.
Life Processes of Plants, Apr., 41.
The Natural Habitat Garden, June, 17.
Seeds of Change: The Living Treasure, June, 16.
Tales of a Shaman’s Apprentice, Feb., 41.
The Undaunted Garden, Dec., 13.

Lacecap hydrangeas, June.

Water Gardener, Apr., 42.
“Indelible Impressions,” June, 15.
“Texas Trailing Phlox,” June, 11.
“Hues to Blame,” Oct., 27.
Fruit: “Play It Again, Sambucus,”
June, 35.


---

Stokes Seeds
1725 Stokes Bldg., Box 548
Buffalo, N.Y. 14240-0548

Get high quality Stokes seed at grower prices; send for your free Stokes Seed Catalog today!

Name:

Address:

Zip Code:

Stokes Seeds
1725 Stokes Bldg., Box 548
Buffalo, N.Y. 14240-0548

FREE Stokes Seed Catalog

Featuring 112 full color pages, Stokes seed catalog is a complete guide to gardening for the beginner and the professional. The catalog lists over 2,500 varieties of vegetables, flowers and herbs, including more than 250 Stokes Exclusives. Stokes also carries a full line of helpful garden accessories for around the home.

Stokes Seeds
1725 Stokes Bldg., Box 548
Buffalo, N.Y. 14240-0548

YES! Please send my FREE Stokes Seed Catalog to:

Name:

Address:

Zip Code:

Stokes Seeds
1725 Stokes Bldg., Box 548
Buffalo, N.Y. 14240-0548
FEBRUARY 18-25, 1995
GARDENS OF PUERTO RICO
AND THE VIRGIN ISLANDS
The yacht-like M.V. Nantucket Clipper will sail
us from Fajardo, Puerto Rico, to St. Thomas,
U.S. Virgin Islands. Ports of call will include
the Puerto Rican Islands of Caja de Muerto,
Culebra, and Vieques, where a night visit has
been arranged to Bioluminescent Bay. In the
Virgin Islands, ports of call include Tortola and
St. John. Among the program’s unique high-
lights are the homes and gardens of AHS
members Suzanne Murphy-Larone in Old
San Juan and Alison Frier in Vieques. We
will also stop at Sandy Cay, a small private is-
land owned by Laurance S. Rockefeller,
where a barbecue lunch has been organized
ashore. Participants are invited to receptions
at the residences of Governor and Mrs. Pedro
Rosillo at La Fortaleza in San Juan and Gov-
ernor Peter Pentfoil at Government House in
Road Town, Tortola. Leading this program is
AHS President H. Marc Cathey and his wife,
Mary, along with former Board Member Roy
Thomas and his wife, Margaret.

APRIL 18-28, 1995
GARDENS OF THE MISSISSIPPI
Explore exceptional private and public gar-
dens along the Mississippi on a steamboat voyage on the Mississippi
Queen from New Orleans. Stops along the river include Natchez, Baton
Rouge, and Houma, where a special “flag stop” will be made to allow
members to visit Houmas House for a special luncheon reception.
Included in the itinerary will be a visit to the home and gardens of AHS
Members Drs. Robert and Bettina Barnes, along with Elms Court,
home of Grace McNeil, which was featured in Architectural Digest,
February 1990. The itinerary includes an overnight stop in New
Orleans, which will allow time for a tour and special luncheon at
Longue Vue, along with a number of exceptional garden visits in the
Garden District. Leading this program will be long-time AHS Board
Member Josephine Shanks of Houston, Texas.

Leonard Haefter Travel Company, 7922 Bonhomme Avenue, St. Louis, MO 63105.
(800) 942-5566, (314) 721-6300 (in Missouri).