GREEN SCENE

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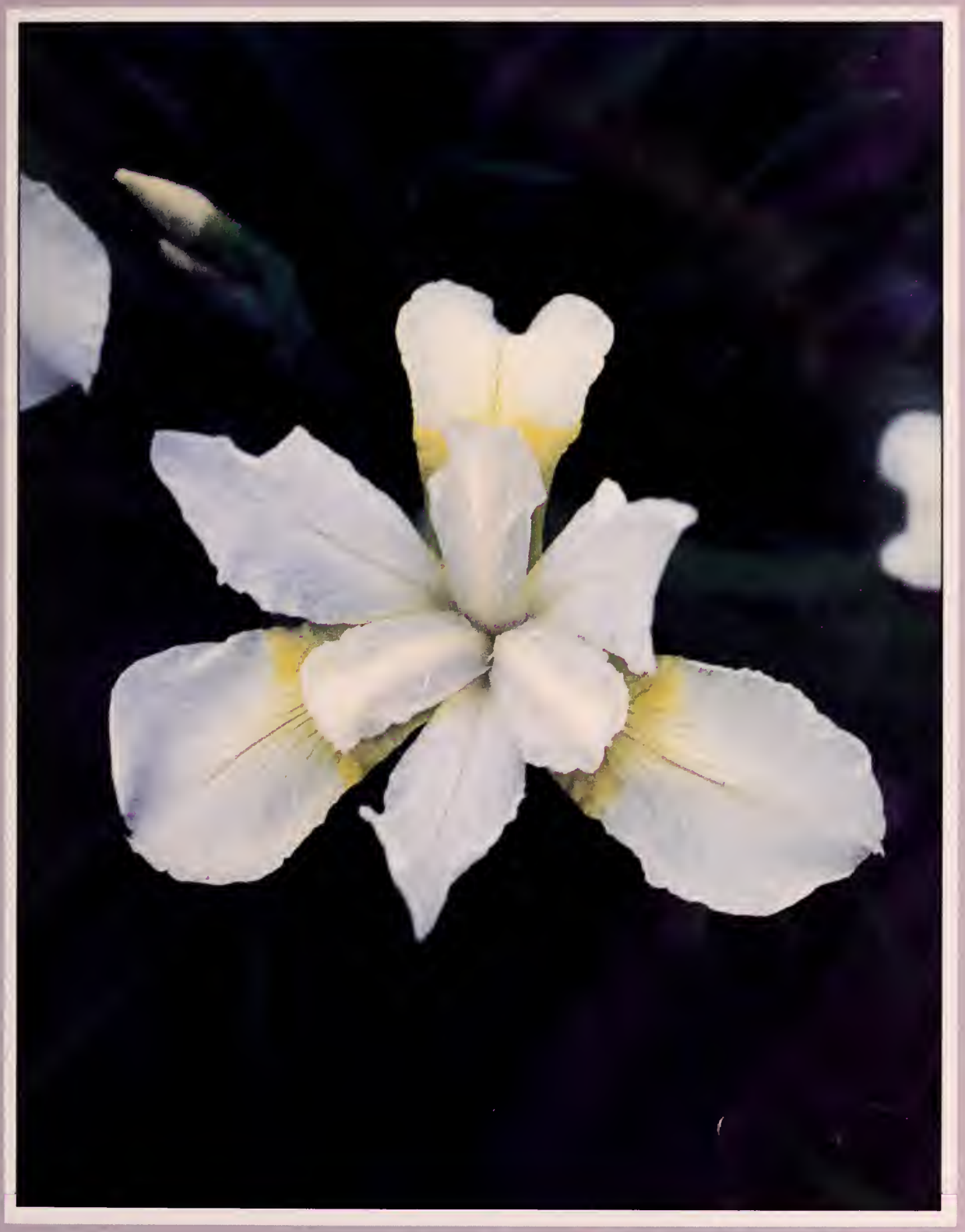

'Fourfold White,' an early Siberian iris hybridized by Currier McEwen, the preeminent iris hybridizer.
See page 4.

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Front cover: All of Currier McEwen's Siberian hybrids come from crosses between *I. sibirica* and *I. sanguinea.* 'Fourfold White' is an early McEwen hybrid, among the first double chromosomes.

Front cover: photo supplied by Currier McEwen

in this issue

CORRECTION: The wonderful photo of Jessica Olin standing in the sycamore tree in the July (1992) issue of *Green Scene,* pages 8 and 9, should have been credited to Laurie Olin, not Victoria Steiger Olin. We're up a tree ourselves about how it happened.

The Editor

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The Gardener Who Moves; Regional Cuisine Shows Off in Manhattan; and a 20 Year Index

by Jean Byrne

Michael Pollan, author of the recent gardening best-seller *Second Nature: A Gardener's Education,* wrote in July's *HG Magazine:* "It's strictly a hunch, but I'll bet that gardeners move a lot less often than the average American — who we're told, will change houses some 30 times in the course of a life . . . [I]t takes a whole lot longer to make a garden than it takes to outgrow a house." Pollan is right on the money, and he could easily have had in mind Sally Reath of Wayne, Pa. Reath, who has hosted visitors to her garden from all over the world, including heads of major public gardens and arboretums, has recently moved from her garden of 25 years and has begun another. Anne Cunningham who lived close to Sally stopped by to talk with her about how her garden evolved and how it feels to have moved on. Cunningham's story appears on page 23.

Dorothy Noble, who works closely with the Penn State University Cooperative Extension Service and who loves experimenting with new plants, has written two stories for this issue: one about harvesting eggplants, tomatoes and peppers, and one about growing peppers including some new ones not yet on the market. Shown on this page is a photo of her harvest basket of peppers that was part of a display when chefs Jack McDavid of Jack's Firehouse of Philadelphia, and Jack Czarnecki of Joe's, the famous Reading restaurant that features dishes with wild mushrooms, joined with local wine maker Eric Miller, owner of Chaddsford Winery and food historian William Woes Weaver of Devon, to dazzle chefs at the James Beard Foundation fundraiser in Manhattan. The Pennsylvania quartet were featuring regional cooking, so it was appropriate that along with their emphasis on the area's haute- or up-country cuisine, Dorothy Noble's basket of more than 50 varieties of peppers graced the decorative sideboard.

With this issue of *Green Scene,* we begin Volume 21. The July '92 issue "All About Trees" was the largest we've ever printed, eight pages more than usual, and still we had so many stories we had to shift "Common Insects That Damage Trees," the second part of a two-part series about tree pests by Lisa Blum, to this issue. Blum, who teaches at Temple University's Ambler Campus, is a new writer to *Green Scene.* We welcome another first-time *Green Scene* writer: Rosanne Minarovic, of Penn State University, whose major interest is teaching and learning about new farming techniques and systems congruent with the environment. She writes here about a Central Pennsylvania illustrator turned farmer, who specializes in Oriental vegetables.

Since our first issue in September 1972 through July 1992, we've printed 1,504 stories by 630 authors. To celebrate completion of the 20th volume, we've printed a 20-Year *Green Scene* Index of stories and authors, which will be available in late September. If you'd like a copy, please complete the form below and return with your check.

photo by Bob Ferguson

Displayed last fall at the 'Upcountry Pennsylvania' fundraising dinner at the James Beard Foundation, this basket illustrates the colorful beauty of *Capsicum* spp. Author Dorothy Noble grew the peppers, and arranged the basket for the event. See page 11 for her recommendations for cultivating peppers.

Send $15.00 to: *Green Scene* Index
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Currier McEwen: IRISES' MAINE MAN

by Natalie Kempner

A New York physician in his earlier life, Currier McEwen discovered irises when he was 50. Pictured below at his Seaways Gardens in Maine almost four decades later, McEwen is considered the preeminent hybridizer of Siberian and Japanese irises.

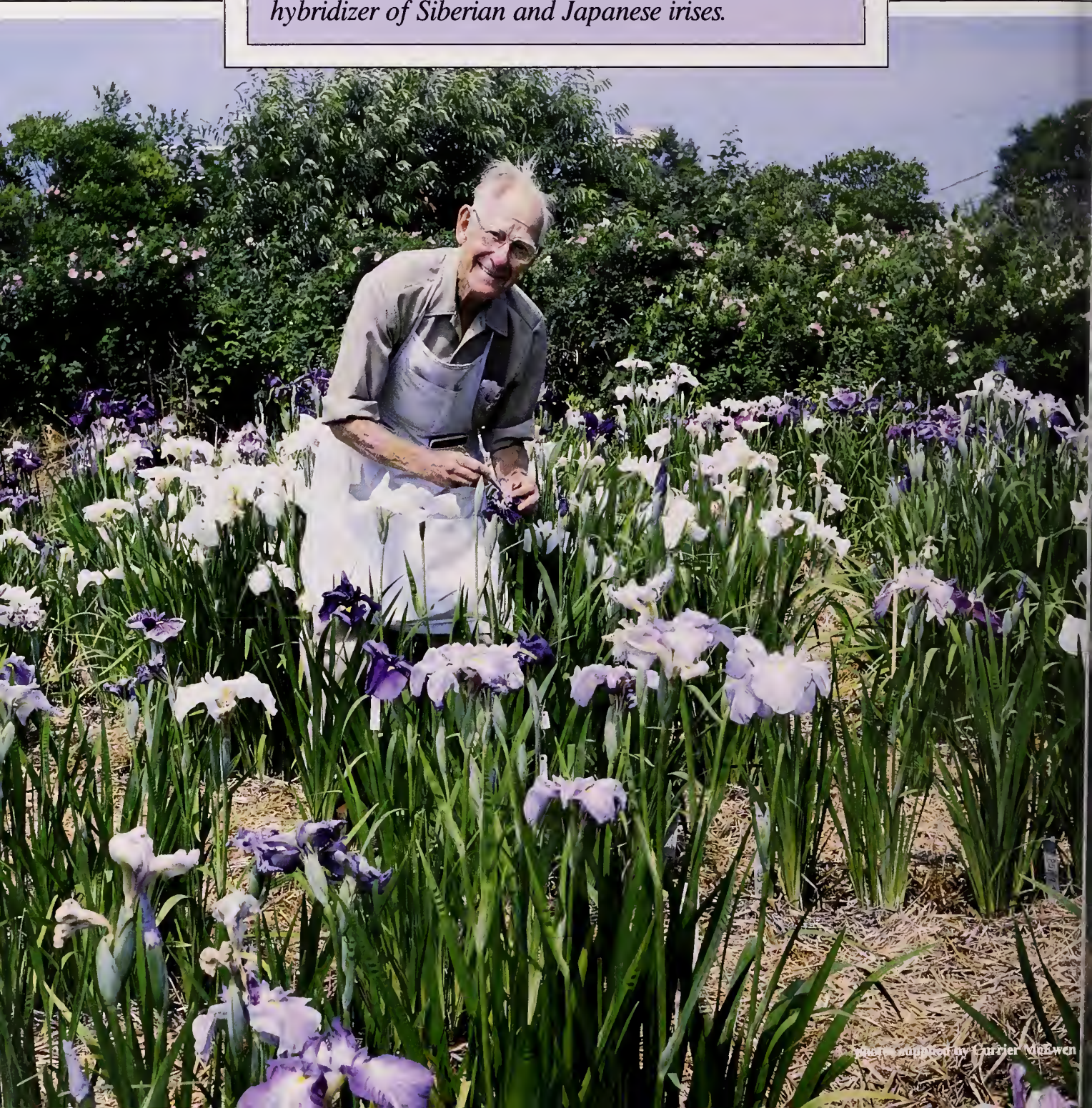

Photo supplied by Currier McEwen

'Orville Fay.' McEwen introduced to the world the first Siberian tetraploid and named it after Fay, whom he considered to be "one of the greatest hybridizers who ever lived."

Although Currier McEwen lives 40 minutes from where I now live in Maine, I first heard of him in Philadelphia. A friend, filling me in on a Perennial Plant Association conference told me: "I met a remarkable man, a doctor, who hybridizes irises by the sea in Maine. You must write a story about him," she advised, adding "Anything to meet him and his wonderful wife."

A few weeks later, on a grey mid-October day, I made my way to windswept Seaways Gardens on the peninsula of South Harpswell, Maine. There, in a workroom off his garage, surrounded by bottles, labels and plastic sandwich bags, I found Currier McEwen, professor of Medicine Emeritus, former dean of New York University School of Medicine, preeminent hybridizer of Siberian and Japanese irises, concentrating on notations in a ledger.

"My stud book," he announces, holding the ledger aloft as he rises to greet me, and to explain with enthusiasm his preparations for next season's breeding experiments. Two-ounce paper cups, in lines of 10 along numbered wooden shelves, contain the sorted seeds that hold the hope for irises hitherto unknown.

The doctor, lean and wiry, is poised for action, despite the rheumatism he says has plagued him for years. "Rheumatism is in my genes — it's why I'm a rheumatologist. I step carefully, painfully," he explains, as he dons scarf and rubbers to escort me to his gardens.

To prepare for this encounter, I had spent a day at the Pennsylvania Horticultural Society library reading about irises, named for Iris, Greek goddess of the rainbow. I discovered with delight that the Greeks planted irises on women's graves because one duty of the goddess Iris was to lead the souls of women to the Elysian Fields.

I borrowed from the library Currier McEwen's two definitive works, *Siberian Irises* and *The Japanese Iris*, and savored his gifts as teacher and writer. These thorough guides, distilling years of experience in growing and hybridizing, are so accessible, even to a novice, that I found myself plotting my own first Japanese iris plantings. Above all, they left me determined to discover more about the author whose passion for irises is carrying him into his tenth decade.

BOOKS
Available in the PHS Library:

The Japanese Iris
by Currier McEwen
University Press of New England
Hanover, NH, 1990

Siberian Irises
by Currier McEwen
The Society for Siberian Irises
Suburban Press, Hayward, 1981

These authoritative guides to the cultivating, breeding and hybridizing of Siberian and Japanese irises, illustrated with stunning color photos, include also a rich history of the two species. Appendices list display gardens, nurseries and addresses of hybridizers.

The recommended time to visit Seaways is summer, but any time is spectacular with the ever-changing waters of Merriconneag Sound stretching beyond rocky cliffs below the gardens. The three gardens on the hilltop are called, quite simply, A, B and C.

As we walk through the wet grass, McEwen stop abruptly. "Remember," he warns, "I'm not a gardener. I'm a hybridizer."

McEwen divides "the fellowship of gardeners" into three groups: those who grow beautiful and useful plants; those who specialize in particular types of plants; and those whose interest is to create new plants — the hybridizers. Understanding these distinctions is essential to understanding Seaways Gardens.

McEwen defines the hybridizer as "one who purposefully crosses one plant with another to produce hybrids." His gardens, which are for breeding and for the display of what has been bred, reflect his purposeful pursuits and distinguished achievements. Nothing random or extraneous here. Every carefully labelled plant has its reason to be, and is marked on a map in case labels are lost.

Gardens A, B and C

Nearest the house, and smallest (20 by 20 feet), is Garden A. Here grows a small vegetable patch, McEwen's single exception to hybridizing. Here, too, are one each of all his daylily hybrids and the first few of his Siberian introductions.

"I stopped growing daylilies a dozen years ago, when I got serious about Japanese irises. I may give up the vegetables. It's nice, though, to have a few. Only one of the daylilies is not mine. It was created by Howard Brooks and named 'Currier McEwen.' " He chuckles: "It's a ruffled, crumpled beauty!"

In summer, when hundreds of visitors

continued

'Japanese Pinwheel' is in a class by itself.

are welcomed to Seaways, Gardens B and C, several times larger than A, offer stunning displays of what is possible with Siberian and Japanese irises. Row 1 of Garden B provides a sample of each winner of the Payne Award — highest honor a Japanese iris can win. The award is named for Arlie Payne, who established the importance of the Japanese iris in this country, introducing 170 varieties in 40 years. The winners grow chronologically, beginning with the first in 1966, Payne's own 'Strut and Flourish.' They include, of course, McEwen's four winners to date: 'Purple Parasol,' 'Returning Tide,' 'Raspberry Rimmed' and 'Blueberry Rimmed.'

Row 2 and the first 10 plants in Row 3 of Garden B are McEwen's Seaways creations. The rest of row 3 is planted with gifts of Japanese irises from Mototeru Kamo of Japan's Kamo Nurseries.

"When Kamo came in 1984, I asked him to bring a few irises to add to my gene pool, and he brought 60! We spent all day the 4th of July planting them!"

Partway down the slope, between B and C, is a wooden structure, smaller than a fishing shack on a frozen lake. A built-in desk with a stool are all that fit inside. "My lab," he smiles. "Where I sit and use my microscope when my rheumatism gets to me."

A chill rain falling, we retreat to the house. Here, in a dining room with walls of windows looking to the sea, McEwen regales me with anecdotes that reveal a kaleidoscope of contrasts. The painstaking scientist is an impetuous risk taker; the careful planner is an impulsive experimenter; and the rational researcher believes firmly in luck. Extraordinary vigor and unquenchable curiosity mix with the patience that can wait a decade or two for results. He considers himself a combination of his inventive do-it-yourself grandfather Currier and his physician father.

"My first name," he begins, "is Osceola. Osceola Currier McEwen — named for a Seminole warrior hero." A promising opening for a story in this Quincentennial year of heightened consciousness of Native American history.

In the 1830s, the Seminoles, pushed off their land, took refuge in the Everglades. Under the leadership of Osceola, they persisted in guerrilla warfare for years. Osceola, invited to peace talks, entered St. Augustine under a white flag. He was taken off to prison where he died.

"It's the kind of thing we did," muses McEwen. "The rules didn't apply to 'savages.' When this happened — about 1838 — the story was in the newspapers. My great grandfather, Cyrus Currier, was so incensed that he named his newborn son in honor of the Seminole. I'm proud that great grandpa had that kind of thinking.

"Only one of the daylilies is not mine. It was created by Howard Brooks and named 'Currier McEwen.'" He chuckles: "It's a ruffled, crumpled beauty!"

Deep roots in Maine

"My roots in South Harpswell go deep. In 1866, my Currier grandfather, cruising up the coast from Newark, moored for a few days in Portland Harbor. He took the steamboat and got off at Harpswell because he was hungry. He bought a sandwich, walked up the road and saw some houses. His daughter — later my mother — had been sick and the doctor had suggested summer in a quiet place, preferably by the sea. Right on the spot, he rented one of those houses and later built his own.

"By the time my mother married my father, she'd been coming here for years, so they bought a house for themselves. That's the one I came to in July 1902, when I was three months old. I've been here every summer since, except for three years during World War II when I was in Europe.

"My father was crippled with arthritis. Trained as a surgeon, he couldn't get up from a chair without help, so he turned to pediatrics. Grandpa Currier made him a most extraordinary lazy Susan, as big around as this table, for examining babies. Rheumatology, an almost forgotten child of medicine, was a natural for me."

In 1950, when the original house could no longer contain the expanding family, McEwen and his wife bought the Seaways property with the coachman's quarters, which are part of the present house. "I built this wing myself. I'd never built anything before. I was passing through Grand Central and in the window of a book store I saw *Your Dream House: How To Build It For Less.* I kept one chapter ahead of my work. Everything I did I had to take apart and do again, but here we are."

Until he was 50, McEwen lived without gardens, content with the trees and shrubs and "few scrambling roses" that grew around his houses in Riverdale, New York, and Maine. He taught and wrote — "I'm a compulsive writer, medical articles before I was bitten by the hybridizing bug" — and sailed and enjoyed his family.

"So how did I get bitten?" He grins. "It's so silly, it's embarrassing. One day, in 1952, the postman in Riverdale left a catalog from an iris nursery in Oregon. When I tried to return it, the postman explained: "There's no such address and it's a 'Mc' name. So keep it — it's yours."

"That catalog sat on our hall table for weeks. Then, one miserable cold day I picked it up. It was packed full of pretty pictures and before I knew it, I'd sent an order for daylilies and tall bearded irises. It started with no more sense than that!"

In the catalog were also ads for the Iris Society and the Daylily Society, and McEwen promptly joined both. The first bulletin from the Iris Society had two articles on hybridizing. "I decided that's for me! And when I go into things, I go with

both feet!"

Two years later, when that order from the catalog bloomed in Maine, McEwen made his first crosses. Matching "pretties with pretties," he continued to develop pleasant surprises until 1960 when he met Orville Fay, "one of the greatest hybridizers who ever lived."

"I was in Chicago at a medical convention, and I called Fay up in a brash kind of way. He invited me out, so I played hooky."

Fay was using the drug colchicine, derived from the autumn crocus, *Colchicum autumnale,* to double the chromosomes in daylilies. "That struck home with me! Colchicine has been used for 2000 years to treat gout, so to a rheumatologist, it's an old friend. I couldn't wait to get started."

'Butter & Sugar,' the first ever yellow Siberian iris. McEwen would now like to do the same for the Japanese irises.

Most plants in nature have two sets of chromosomes, one from each parent, in each body cell, and are known as diploid, or twofold. Some plants, over eons, have doubled their chromosomes and are tetraploid, or fourfold. When a diploid becomes a tetraploid, the number of genes is doubled, doubling the amount of DNA. This can result in the exaggeration of basic characteristics, making everything a little more of what it already is. For a daylily or an iris, this could make large flowers, larger; rich colors, richer; velvety texture, more velvety; strong stalks, stronger.

Although tall beared irises are among the plants that have evolved naturally into tetraploids, Siberian and Japanese irises were, until McEwen cam along, all diploids. "There," says McEwen, "was my challenge. I went with Siberian and Japanese."

Ten years later, in 1970, McEwen introduced to the world the first Siberian tetraploid and named it 'Orville Fay.' Success with Japanese was slow, finally coming in 1979 when his first tetraploid Japanese, 'Raspberry Rimmed,' was created.

The art in plant breeding

The art in plant breeding is to select parent plants that show promise of helping toward clearly set, realistic goals. McEwen's goals for Siberian and Japanese, whether diploid or tetraploid, include new colors — such as green in Siberian and yellow in Japanese — and truer colors: true red, pink, blue.

"You may think you've seen a blue iris, but" — he illustrates with a packet of color cards — "the bluest are still violet-blue. So, logically, I keep picking the bluest blue ones and crossing them."

Logic, though, is not always relevant.

Although tall bearded irises are among the plants that have evolved naturally into tetraploids, Siberian and Japanese irises were, until McEwen came along, all diploids.

McEwen gleefully tells the story of introducing yellow into Siberians:

"In 1968, Marjory Brummit of Banbury Cross, England, sent seeds from two blue Siberians for colchicine experiments. They were seeds from natural crosses made by bees, so I knew only the mamas: 'Cambridge' and 'Dreaming Spires' (for Oxford)."

McEwen treated the seeds with colchicine and planted them. Of the 20 in each batch, about one-quarter were white, the rest blue like their mamas. Each of the two batches of whites contained a single bloom with hints of yellow. To the offspring of 'Dreaming Spires,' he gave the name 'Dreaming Yellow' because now yellow became his dream. The other he named 'Floating Island,' after the custard, most delectable of childhood memories.

"These two with yellow were absolutely bull luck. What I call McEwen luck. If I'd been after yellow, I certainly would not have started with blues! It did not, however, take any higher intelligence to think it might be a good idea to cross those two."

The result, 'Butter and Sugar,' was the first ever yellow in the Siberian Iris subseries and McEwen's hybridizing reputation was assured. "So, having introduced yellow into Siberian, I'd sort of like to do the same for Japanese. I'm working on it."

Lots of new challenges

Other goals include longer-lasting blooms, repeat bloomers and miniatures. "The striking thing about Japanese iris is their tremendous size — up to 12 inches in diameter — so maybe it's silly to want minis. But there aren't any yet, so it's a challenge."

Siberian and Japanese irises have none of the tall bearded's lovely fragrance, so fragrance is another goal. "This year, working with seedlings, I smelled a little something. I went sniffing around and lo, and behold, I found it! One Siberian with a tiny bit of fragrance. So, I have something to start with."

With 1991's introductions, McEwen's list of Siberian introductions reached exactly 100, his Japanese 32. Naming all these takes continuous inspiration. "The first four tetraploids I named for my first wife, Kay, and my three daughters. Then I ran out of women."

When he created a flaring Siberian diploid, close to true red, he named it 'Ewen' for his son. A later tetraploid Siberian, 'Dear Diane,' is named for his daughter-in-law. One brochure describes it: "Superior in every way. A marvelous parent."

Some names 'Chartreuse Bounty,' 'Marshmallow Frosting,' 'Teal Velvet' — are descriptive. 'Navy Brass' has "flaring blooms of navy blue with brassy gold signals." 'Welcome Return' is a repeat bloomer and 'Last Act' is a Siberian tetraploid whose flower is the last to bloom.

McEwen's prevailing goal is to get more people growing Siberian and Japanese irises. "Especially Japanese. Well, both. They both lag far behind tall bearded in popularity, yet they're among the easiest

continued

'Lavender Bounty': Diploid Siberian iris. A repeater. Rich lavender pink flowers with semi-flaring, ruffled form. Fantastic bloomer with three branches and up to nine buds at repeat bloom. Bloom period covers eight weeks. A marvelous parent.

Where to See Japanese and Siberian Irises

Visitors are welcome. Phone numbers are given so visitors can call to select a convenient time. For more complete lists, see Currier McEwen's *The Japanese Iris* and *Siberian Irises.*

Dr. and Mrs. Currier McEwen
Seaways Gardens
RD 1, Box 818
South Harpswell, ME 04079
(207) 833-5438
(mid-June for Siberian,
July 7-21 for Japanese)

Shirley Pope
Pope's Perennials
39 Highland Avenue
Gorham, ME 04038
(207) 839-3054

George C. Bush
1739 Memory Lane Ext.
York, PA 17402
(717) 755-0557
specializes in Japanese irises
(mid-June to mid-July)

Mr. and Mrs. Sterling V. Innerst
2700A Oakland Road
Dover, PA 17315
(717) 764-0281
Siberian and Japanese
(June 6 — July 10 for Japanese — earlier for Siberian)

perennials to grow. Bearded, beautiful as they are, are a lot of trouble, so subject to diseases and pests."

Although Siberian and Japanese iris pests are few, McEwen has a special Seaways list that includes unsupervised children and dogs, women's dangling pocketbooks and visitors with no garden manners. Sometimes style is a menace: "Remember the ballerina skirt?" McEwen groans. "One swirl, the skirt took half a dozen blooms."

Since the American Iris Society times it annual convention for the blooming of tall bearded irises, Japanese irises, which bloom a month later, are never present. Therefore, in 1985, when McEwen was president of the Society for Japanese Iris, he originated a separate convention, timed with the bloom of the Japanese. In 1990, when the convention came to Maine, it was international, with a visitor from England, one from Belgium and, most exciting, five from Japan.

Japanese iris *'(Iris ensata)'* grows wild in Japan, where it is known as "hanashōbu." By the time the Japanese iris was introduced to this country in the 19th century, four centuries of cultivating "hanashōbu" in Japan had brought it to what McEwen called "its modern state of magnificence."

The Japanese visitors to Maine in 1990 came specifically to see McEwen's tetraploids. Mototeru Kamo came again, bringing 30 more irises as well as his talented young hybridizer, Toyokayu Ichie and his wife. After the convention, the visitors from Japan stayed on at Seaways and encouraged the McEwens to return this visit.

"So in 1991 in June we went to Japan, and I've seen for myself the gardens of the photographs in my book."

The trip's highlight was the visit to Kamo Nurseries, four hours from Tokyo in the foothills of Mt. Fuji. The iris has such emotional appeal to the people of Japan that, even though Kamo does not advertise tours to his gardens, the bus companies bring 100,000 people a year. "The day Elizabeth and I arrived at Kamo, we were two of 3,000 visitors!"

I stopped at Seaways again in November, when Currier and Elizabeth McEwen were preparing to leave for their winter months in New York. The gardens were bedded down. Moistened seeds had been sealed into sandwich bags and stored in refrigerators to await McEwen's March return.

We walk along a path to the Chatterbox, a gazebo on the edge of the cliff. I'd read of a tetraploid Siberian named 'Chatter Box Belle.' The water is rough, the wind high. McEwen is exuberant.

"You should have seen it yesterday during the storm!" (That storm, we later learned, blew away part of the Bush house in Kennebunkport). He points out rocks he climbed as a boy and talks of boats he sailed.

SOURCES of Seaways Gardens' McEwen Irises

Price lists with descriptions and order blanks available on request.

Shirley Pope
Pope's Perennials
39 Highland Avenue
Gorham, ME 04038
(207) 839-3054

Available here are Currier McEwen's Japanese iris introductions and his most recently introduced Siberian irises.

Fieldstone Gardens, Inc.
620 Quaker Lane
Vassalboro, ME 04989-9713
(207) 923-3836

Available here are early as well as recent McEwen Siberian iris introductions. Catalog listing a large selection of northern-grown perennials is $1.50.

In 1970, the year of 'Butter and Sugar,' McEwen retired from New York University and moved to Maine to cultivate irises and sail his boat. It turned out there were only three rheumatologists in Maine. He was so needed, that the local hospital provided an office, and he started practicing medicine for the first time.

"I'd been involved with thousands of patients, but as a teacher. The one-to-one basis was new, and I loved it. Finally, in 1988, at 86, I saw my last patient. I don't clamber in and out of boats anymore, but I grow irises." He pauses. "A marvelous, marvelous life."

McEwen turns from the sea, motioning to the sleeping gardens. "To see a thousand irises blooming out there at one time is quite a sight. You get here next summer. June for Siberian, July for Japanese."

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Natalie Kempner is a frequent *Green Scene* contributor, who recently moved from Philadelphia to Maine. Kempner is founder and retired director of the Norris Square Neighborhood Project, an environmental education center in North Philadelphia. A fervent fan of Philadelphia gardeners, community and individual, she frequently writes about their victories in the battle to reclaim the city's wastelands.

HARVESTING EGGPLANTS, PEPPERS, AND TOMATOES

for taste and for show

by Dorothy Noble

Their graceful forms and beautiful colors place eggplants among the prettiest of vegetables. In this bountiful bevy, the familiar 'Classic' backs those in the center. From the left, other teardrop shapes are 'Violette di Firenze,' 'Louisiana Green Oval,' the striped 'Listada di Gandia' and 'Black Egg.' The long slender, mild Asian types are 'White Sword,' 'Louisiana Long Green,' and the beautiful 'Pink Bride.' Clusters of tiny 'Emerald Pearl' are scattered throughout. Resembling a blackjack, the French 'Prelane' lies in the left grouping. Seedy and somewhat bitter, 'Baby White Tiger,' 'Small Sweet Red,' and 'Turkish Orange' sport interesting stripes. And, little 'Bush White' shows how eggplants got their name.

photo by Bob Ferguson

Enjoy harvesting beautiful eggplants, peppers, and tomatoes — just be sure to enjoy it often. Dr. Peter A. Ferretti, professor of Vegetable Crops, Pennsylvania State University, advises that these botanical fruits benefit from frequent harvesting.

Harvesting for Taste

The flavor potential of a vegetable depends on its genetics. The degree to which this potential can be realized depends on a combination of factors — growing conditions, harvesting, handling, storage, and preparation. Thus, even if vegetable growing conditions are ideal, sound harvest and post-harvest practices are essential to full flavor attainment. Of course, by growing your own, you can exert superior control over all of the flavor-influencing factors. And have the very best in produce.

Eggplants

Harvest eggplants as close to cooking time as possible. Ideal maturity is difficult to judge; trial and error may be in order. Eggplants should be glossy, firm, and have seeds that are not yet dark. An eggplant picked young, before full size, will be more tender. The color should be bright for the type. Purple eggplants fade and become brownish; white kinds, yellow; and green ones turn orange or yellow-green.

Harvested at the right stage, eggplants are tasty without our having to resort to the commonly recommended technique of salting to remove bitterness. With the obvious exception of the round, seedy, bitter Asian cultivars, my experience with over 25 varieties has shown this practice to be superfluous. Salting, however, will limit the amount of calorie-laden oil that eggplants infamously absorb. Alternately, a quick microwave can provide partially cooked eggplant perfect for most recipes. Microcook a medium-size cubed or sliced eggplant only until it just begins to soften (check after two or three minutes). Drizzle with olive oil and proceed with the rest of your recipe.

Peppers

Green peppers can be harvested when they are firm and the right size for the variety. Sweet peppers become sweeter as they mature. Compared to green peppers, red peppers have almost double the Vitamin C and 10 times the Vitamin A. Peppers hold well on the plant. Leaving the peppers on to reach their final color, however, can lower yields by about 25%.

Both the flavor and heat of hot peppers change when fully mature. With ripening, most hot peppers increase in heat. The

continued

Sparkling like jewels, this tomato treasure would reward anybody's palate with a gem. Who could resist the mild sweetness of 'Great White' or 'Viva,' the full-flavored 'Cherokee Purple'; the citrusy 'Green Grape'; the surprisingly tasty 'Evergreen'; the tart tiny 'Red Currant'; the intensely sweet almost-orange cherry 'Sun Gold'; or the meaty lusciousness of 'Amish Paste' or 'Sausage'?

photo by Bob Ferguson

powerful alkaloid, capsaicin, is the heat source of chiles. Capsaicin is concentrated in the region of the seed attachment — the placenta. The seeds are fiery because of their proximity to the placental tissue. Removing this tissue, with rubber gloves, may permit one who is not a chile addict to discover the marvelous flavor nuances of hot peppers.

Tomatoes

Preferences for the Great Tomato Taste, that memorable balance of sugars, acids, and volatile compounds, is highly subjective. Even tomatoes perceived as 'low-acid' have in fact been found to be as acidic as other varieties. The difference appears to be in the sugar content. Backyard opinions and sophisticated laboratory tests agree on an important point — fully ripe is the most significant factor for that pleasing tomato taste.

Full flavor develops in the last stages of ripening. Protect the wonderful taste of your garden varieties by allowing tomatoes to ripen on the vine. Pick just before using, and since the volatiles dissipate rapidly, slice right before savoring.

How to tell when the white and green cultivars are ripe? White ones lose their greenish tinge and green-when-ripe tomatoes develop a slight yellow cast.

Guarding the Flavor

Optimum storage conditions for eggplants are 45°-50°F., with 90% relative humidity. A cool cellar may be preferable to refrigeration, especially if the refrigerator is a frost-free model. Chilling injury develops if these vegetables are held below 45°F. for more than a few days. If there are no alternatives, place peppers no more than two to three weeks and eggplants for only one week in the warmest part of a refrigerator. Use immediately after removal.

Please do not refrigerate tomatoes. Temperatures below 50°F. permanently ruin flavor. Hold ripe tomatoes at about 65°F. At the end of the season, mature green tomatoes of any variety can be ripened. Spread in a single layer, away from bright light, *not* in a sunny window, and keep at 65°-70°F. Longer storage with a corresponding decrease in taste is possible at lower temperatures.

HARVESTING FOR SHOW

General Tips

Thoroughly study the rules. If a point scale is available, prepare your entry accordingly.

If possible, preregister to save time for yourself and the staff. Complete the entry tags in advance. It is much too time-consuming amid the confusion to do this at the show.

Survey your plots a few weeks before the show. Note what is likely to be in top condition by showtime. Start taking precautions, such as elevating fruit, to protect any prime specimens from damage. About a week before the show, if a magnificent specimen is maturing too fast or too slowly, you may be able to change the rate by manipulating its environment.

Enter only perfect specimens. Any damage, whether due to insects, diseases, or mechanical causes, detracts enormously and costs points.

If the rules in a class require three specimens for example, enter that amount, not two or four. Match the specimens as closely as possible.

Be certain all exhibits are correctly identified. Improperly tagged entries may be disqualified. Some competition rules, for example PHS's, require correct botanical nomenclature for certain award eligibility.

While the vegetables themselves should be paramount in a display, attractive presentation enhances overall effect.

Try to estimate the time it takes to prepare a large number of varieties or entries. After I harvested the peppers in the rain, cleaned, trimmed the foliage off the tiny pepper clusters with cuticle scissors, polished, assembled, labeled, and checked 72 varieties of peppers most of the day and night before the show, an hour of sleep at 6 a.m. beckoned. Possibly I should not have indulged — the tomato cultivar list was written en route to the show, and after unloading, we had only 10 minutes to spare before the entry deadline.

Pack and load carefully. Include extra specimens in case of damage in transit.

Allow enough time to rearrange at the show if necessary.

Specifics for Eggplants, Peppers, and Tomatoes

The variety of a vegetable can make a difference in competition. With individual entries select cultivars with attributes that show the particular vegetable type at its best. For example, seek a very glossy, nicely-shaped eggplant; a symmetrical, vibrant pepper; and a well-contoured, uncracked tomato with a pretty color. Large size can be desirable if other measures of quality are met. For collections, an array of different varieties and types with a pleasing distribution of colors, sizes, and shapes illustrate a vegetable's diversity.

Harvest at the stage just before the vegetable reaches best eating quality. Handle carefully; wrapping each specimen in a kitchen towel prevents damage. Do not wash. Remove soil with a soft brush — I use a pastry brush or a natural bristle paint brush. Wiping can result in sand-scarring.

Please do not refrigerate tomatoes. Temperatures below 50°F. permanently ruin flavor.

Keep the vegetables cool but do not refrigerate.

For a basket entry, sketch before arranging to lessen handling. Line the basket with an attractive cloth to prevent the basket itself from piercing the vegetables. Condition any material such as herbs; place in a container of water concealed in the basket.

Some eggplant stems have spines; to keep them from stabbing each other, it may be preferable to remove them.

When entering peppers individually, closely examine for maturity. Don't enter a green/red streaked pepper in the red class, for example. In a collection, such as the PHS 'Bounty,' you may wish to choose for color.

Bear in mind that the judges won't be eating the tomatoes. If heavy rains are forecast, this is one time to *not* let the tomatoes vine-ripen. Tomato cracking will be considerably reduced if the immature fruit is picked about a week before the show and held at cool room temperatures.

If not yet at the proper stage of maturity, tomatoes or peppers can be placed with an apple in a paper bag and held at room temperature. The natural ethylene emission from the apple will hasten ripening.

Enjoy the Show

While winning can boost your ego, don't take competition too seriously. Judges are human.

Learn from others' exhibits.

Enjoy yourself. Relax and contemplate the wondrous beauty of our harvest bounty.

Good luck.

•

Dorothy Noble experiments with specialty vegetables, particularly solanaceous crops. She has won blue ribbons at the Kimberton and West Goshen community fairs; the county fairs at Allentown and Reading; the interstate fair at York; and the PHS Harvest Show. She was the recipient of the 1991 'Bounty by the Basket,' blue ribbons for eggplants and tomatoes, and the Bronze Medal for Peppers in 1991.

CULTIVATING PEPPERS

by Dorothy Noble

Resplendent in their diversity, peppers are one of the most difficult genera to classify botanically. This basket of 72 varieties of *Capsicum* includes the species *C. annuum, C. baccatum, C. chinense,* and *C. frutescens.* The assortment contains experimental as well as old-fashioned cultivars. Sweet and hot peppers are about equally divided. The herb in the center is 'Pineapple Sage.'

photo by Bob Ferguson

continued

photo by Bob Ferguson

Notice the root development in these seven-week-old transplants. Also observe that 'Rainbow' has buds developing, but its root system is inadequate for sustained fruiting. If setting out a plant such as this, pinch off the buds, fertilize with a high phosphorus solution, check wilting by careful watering, and protect from sun, wind, and cold. With many unusual varieties of chiles, the foliage is spectacular even when very young. 'Valentine,' *Capsicum baccatum* v. *pendulum,* comes from Peru. 'Variegated Long' can even produce variegated peppers. Although the seed for these originated in remote areas with climates unlike ours, a little coaxing can make them — and you — happy in the Delaware Valley.

photo courtesy of Vilmorin, Inc.

'Ori' — a new cultivar from the organization regarded as the world's oldest seed company. Vilmorin, Inc., celebrating 250 years in the seed business, is distributing this magnificent pepper throughout the United States this coming season.

Archaeological records reveal that peppers were used in Mexico as early as 7000 B.C. Although not quite what the explorers sought, the New World plants introduced to Europe became much more valuable than all the gold taken to Spain from the Americas. Of these, peppers were the most readily accepted in Europe and soon afterward became very important in the Old World tropics. Once cultivated, peppers spiced native cuisines as never before.

No wonder. What culinary treasures the *Capsicum spp.* are. Imagine the dishes of the Basque region of Spain without pimientos; Hungarian food minus paprika; or Szechwan, Thai, and Indian cooking without their hot pepper seasonings. Today, the capsicum peppers are second only to black peppers among the world's spice plants. And *Capsicum spp.* are a significant vegetable as well.

Attain the ultimate pleasures of the pepper realm, and grow your own.

Planning

Plan your pepper patch in the fall. Begin by improving the soil with any required amendments, such as limestone and compost. A soil test is essential. The Extension Service soil test reports analyze soil pH and nutrient levels and provide crop-specific fertility recommendations. Important for any vegetable, this information is vital for high pepper yields.

Choose a sunny, well-drained site for the pepper plot. To minimize harmful insects and diseases, plant where neither peppers nor other members of the solanaceae family, which includes eggplants, peppers, potatoes, and tomatoes, were grown for one, or preferably, three years.* Also, avoid placing peppers between solanaceous vegetables. Separate sweet from hot varieties by at least 20 ft. Otherwise, cross-pollination can result in curiously hot sweet peppers and disappointingly tame hot ones.

Remember that pepper plants, especially some of the hots, are gorgeous in landscaping.

Get a good start

For unusual varieties, master the technique for starting seeds. Growing peppers from seed is not difficult if you adhere to three principles: sanitation, temperature, and light.

A sterile soilless mix formulated for seed starting helps prevent the fungus that causes damping off, that frustrating situation where the seedling just falls over and dies at the soil line. If reusing plastic containers, soak them for 10 minutes in a solution of one part chlorine bleach and 10 parts water; dry before using. Jiffy-7s are convenient, and seed starter kits simplify matters. Take care not to overwater. The medium should be moist, not soggy.

Sow the seeds ¼- to ½-inch deep. Treated seeds are less susceptible to disease. The recommended range within the medium to germinate pepper seeds is 75°-85°F. Heating cables and propagation mats designed to supply uniform bottom heat have worked well for me. Some pepper fanciers report good results from using a warm part of the house. Germination should take one to two weeks; hybrids usually are faster than open pollinated kinds.

*Jane Pepper, president of The Pennsylvania Horticultural Society, notes that those who garden in small spaces don't have the option of rotating crops as suggested here. She reports she has successfully grown tomatoes and peppers in the same spot for 10 years but is always careful to use disease-resistant tomato varieties.

As soon as the seedlings emerge, provide sufficient light. Undesirable spindliness is generally caused by inadequate light. An economical source of artificial light is a fluorescent light fixture with ordinary cool white lamps. (The more expensive 'grow' lamps are advantageous only for flowering plants.) Place the lights about six inches from the seedlings for 16 to 18 hours per day. Grow seedlings between 70°-80°F. during the day and 60°-70°F. at night.

When true leaves appear, transplant into 2½- to 3-inch wide, 3½-inch deep pots. Use a mix formulated for that purpose; I used Fafard Growing Mix #2 for the bounty of peppers shown.

Plants need to be 'hardened' for about 10 days before transplanting into the ground. This slowing of their growth rate prepares them for outside conditions of wind, temperature stress, and water shortages. Lowering the growing temperatures 10°F. and withholding water — but not to the point of wilting — accomplishes this toughening. Acclimate the plants by placing them outdoors for an increasing duration daily.

Peppers take six to eight weeks to reach the ideal transplant stage. Whether growing them yourself or choosing them at a garden center, transplants should not be overly large. Dr. Michael D. Orzolek, professor of Vegetable Crops, Pennsylvania State University, explains that an overgrown top has too great an evaporative surface — the plant will lose water faster than the roots can provide it. A transplant should not have blossoms or fruit; i.e., it should be in a vegetative rather than a reproductive state. A bright green, bushy, actively growing transplant, with six to eight true leaves, less than 10 inches tall, and with a well-developed root system, should perform well. If for some reason you are unavoidably late when setting out the plant, remove any fruit and open flowers.

Grow them well

Peppers are a tender, warm-season crop. Planting too early will result in arrested growth and possible frost damage. Without season extenders, such as covers, one or two weeks after the frost-free date is generally recommended. By mid-May there are usually no more spring frosts in the Delaware Valley; however, numerous microclimates deviate from the norm.

Try to set out your peppers in cloudy weather or late afternoon. For root development and a faster start, use a solution of high phosphorus starter fertilizer such as 10-55-10. Staggered double rows, 12 to 15 inches apart, with plants 12 to 18 inches apart, use space more efficiently than single rows. Three feet between rows is probably adequate.

Fertilizer requirements are detailed on the soil test report. Use the correct amount and proportions. Especially avoid excess nitrogen, which produces lush foliage but few peppers.

Staking provides more attractive fruit. Sunscald is reduced, and less soil comes in contact with the vegetables.

If rainfall doesn't supply at least one inch per week, watering may be necessary. One inch of rain is equivalent to 65 gallons per 100 square feet. Be sure to water deeply; frequent light watering encourages shallow root systems unable to cope with stress. Water early enough in the day so that the foliage dries before dusk. In drought-stricken areas in Pennsylvania last season, irrigated commercial pepper fields yielded as much as 300% more than non-irrigated.

Mulches keep weeds down and conserve moisture. Straw and sawdust mulches cool the soil. With early spring plantings, plastic mulches that raise soil temperatures typically give earlier peppers. If using mulch without underground irrigation, apply water as needed to bring soil moisture to field capacity** at the time of laying. Do not use plastic mulch on sandy soil without trickle irrigation.

Pepper problems

All crops have some plagues. Here are some of the most disconcerting that occur in the Delaware Valley.

Very sensitive to temperature extremes, peppers grow best between 70°-80°F. Blossom drop is likely when night temperatures fall below 70°F., and fruit sets poorly when day temperatures exceed 85°F.

Aphids must be controlled. Those horrid tiny soft-bodied green, pink, or yellow insects lurk under the leaves, sucking plant juices and spreading disease. Twisted, curled leaves signal aphid feeding. Insecticidal soaps, superior oil sprays, rotenone, and other pesticides labeled for use on peppers can provide good control when used according to directions. Since pesticide registration changes rapidly, contact your County Extension office; The Pennsylvania Horticultural Society Hotline (215-922-8043); or a farm/garden center, such as Agway, for current pest management recommendations.

**Field capacity: amount of water remaining in the soil moisture reservoir after applied surplus has leaked away.

Allowing peppers to fully ripen to their glorious colors unfortunately increases the likelihood of anthracnose. Just as ugly as it sounds, this disease appears on the fruit as circular sunken brown spots, oozing pink spores. Cleaning up plant debris helps. And, as with any vegetable plant, avoid working around plants when they are wet.

If you spot any mottled, twisted, and stunted plants, or any with wilt on only one side, ruthlessly rogue the plants. Also, do not compost them.

Do not smoke near pepper plants, nor touch them without thoroughly washing hands exposed to tobacco. The infectious tobacco mosaic virus stunts the plants and spoils the fruit of solanaceous vegetables.

Happily, with a little care, peppers will produce until frost.

VARIETY SELECTION

Selecting pepper varieties can seem overwhelming whether one is a novice or a connoisseur. Choosing from the dazzling assortment of colors, shapes, and sizes is compounded by the wide variations within a type. And new varieties are continually being developed. Apparently not all are winners. Dr. Ernie Kerr, director of Research for Stokes Seeds, reports that of the 100-150 pepper varieties in each year's trials, about three-fourths are eliminated. Stokes evaluates all their offerings for taste as well as for vigor.

So many choices

How to decide? The intended culinary use is one way to begin. Ornamental value is another consideration.

Green or red, the size of 'Cherrytime' is just right for pickling whole. Its tanginess when red also makes it a good fresh-use pepper. The upright conical fruits of 'Sweet Pickle' — yellow with purple shadings, orange, and red, usually all at once — are as decorative as many flowers.

The squat, cheese types — 'Yellow Cheese Pimiento' and 'Gambro' — stuff beautifully.

Top-shaped pimientos, such as 'Pimiento Grande,' are among the sweetest peppers when red. These are often canned.

'Mini Bell' and 'Mini Red' make delightful hors d'oeuvres.

The thin-walled Italian types are scrumptious for frying. Try both red and yellow versions of 'Corno di Toro.'

Sweet bells, used not only for stuffing but also to add zest to cooked dishes, create spectacular salads and crudités with their radiant colors. Apart from their superior

continued

taste, 'Choco,' 'Dove,' 'Gold Crest,' 'Purple Bell,' 'Oriole,' 'Secret,' and many others are worth growing for their beauty. Not all bells start green and turn red. 'Sun Bell' begins a pretty yellow, progresses to orange and finally, red. 'Blue Jay' and 'Islander' put on quite a display, ripening green/violet/grape/pale orange/dark red.

Europeans favor the lamuyo, or elongated bells. It is easy to see why. Beautiful by any standard, crisp, thick-walled, the superb-flavored 'Vidi' epitomizes this type. Antonio Neves, the North American manager for its developer, the French seed company Vilmorin, Inc., also suggests a green ripening yellow lamuyo, 'Ori,' which will appear in several seed catalogs next season.

Hot, hotter, hottest

The heat intensity of hot peppers ranges from the relatively mild 'Anaheim'; the moderate 'Pasilla,' 'Poblano,' and 'Jalapeño'; through the very hot 'Serrano' and 'Chiltepin'; the fiery 'Cayenne'; to the scorching 'Habanero.' As confirmed 'chile-heads' have discovered, the degree of pungency usually — but not always — decreases with pod size.

While most hot peppers are open pollinated, there are three new hybrids that have received wide acclaim, including the All-American Selections Award. 'Mexibell' is an interesting cross between a hot and a sweet. 'Super Chili' and 'Super Cayenne' are both highly prolific.

In Southeastern Pennsylvania, the thin-walled varieties, such as the cayennes, dry best.

The paprika peppers and the rocotillos, 'Mushroom' and 'Yellow Mushroom,' are so scarce in markets, you may have no choice but to grow them.

'Aurora,' 'Bellingrath Gardens,' 'Pretty Purple,' and 'Rainbow' are positively stunning, with pretty foliage as well as unusual pods.

If unfamiliar with chiles, consider starting with a package of assorted standards sucsh as one available from Burpee.

If earliness is important, choose peppers bred for the Northeast. Robert Johnston, Jr., president of Johnny's Selected Seeds, recommends their new 'Yankee Bell.'

Organic gardeners and novices may wish to select for disease resistance.

Colorful mulches

Ready for a rainbow garden? Researchers are experimenting with almost as many colors of plastic mulch as there are pepper colors. Reportedly, potatoes do best with white, turnips with orange, and tomatoes favor red.

Each of the pepper cultivars shown was grown on red, IRT (green), and black Climagro plastic mulch. In last summer's heat and drought, the sweet peppers exhibited noticeably less mid-day wilt with the Climagro red mulch than with black or green. Some varieties even bore larger peppers when grown on red.

SOURCES

Pepper Seeds

Chris Weeks Peppers
P.O. Box 3207
Kill Devil Hills, NC 27958
SASE

Gleckler's Seedmen
Metamora, OH 43540

Horticultural Enterprises
P.O. Box 810082
Dallas, TX 75381-0082

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

The Pepper Gal
Jenny Jacks
P.O. Box 12534
Lake Park, FL 33403-0534
Listing SASE

Pinetree Garden Seeds
Route 200
New Gloucester, ME 04260

Redwood City Seed Co.
P.O. Box 361
Redwood City, CA 94064
Catalog $1

Seeds Blum
Idaho City Stage
Boise, ID 83706
Catalog $3

Tomato Growers Supply Co.
P.O. Box 2237
Fort Myers, FL 33902

Seeds and Starting Equipment

W. Atlee Burpee & Co.
300 Park Avenue
Warminster, PA 18974

The Cook's Garden
P.O. Box 535
Londonderry, VT 05148
Catalog $1

Johnny's Selected Seeds
Foss Hill Road
Albion, ME 04910-9731

Park Seed Co.
Cokesbury Road
Greenwood, SC 29647-0001

Shepherd's Garden Seeds
30 Irene Street
Torrington, CT 06790

Stokes Seeds
P.O. Box 548
Buffalo, NY 14240-0548

Climagro Plastic Mulch

Climagro
3235 Sartelon Street
St. Laurent, Quebec
Canada H4R 1E9
(request list of dealers)

Penn State Soil Test Kits

Available from your county Cooperative Extension Service office (price is $6 - $6.50 depending on whether you pick it up or have it mailed).

Chile, Chillie, or Chili; Pimiento or Pimento?

What's the preferred spelling?

It seems that wherever peppers are concerned, confusion is the norm. Even the term 'Capsicum peppers' appears redundant when the botanical nomenclature is known. However, this term developed in non-scientific literature to distinguish the vegetable from the pepper commonly used with salt. Black peppercorns come from *Piper nigrum,* which is unrelated to any of the *Capsicum spp.* 'Pimento,' often used for 'pimiento,' properly denotes allspice or the allspice tree, as cited in *Webster's Third New International Dictionary.*

Happily, the increasing popularity of hot spicy foods in the United States has built a consensus on one point. 'Chile' is now the preferred spelling for the zesty pepper pods and plants, according to Dr. Paul Bosland, director of the Chile Institute, New Mexico State University. This ends the confusion with another food of the Americas — the bowl of beans.

THE HARVEST SHOW: WHEN IT'S A TEAM SPORT

photo by Gina Burnett

The pepper plantation. The dark green leaves against the trellis will bear purple yard-long beans.

by Libby Goldstein

The Southwark/Queen Village Community Garden has been entering the Pennsylvania Horticultural Society's Harvest Show for more than 17 years. Here are some tips they've collected over the years for growing, for showing, and oh, yes, for winning.

In 1975, Southwark/Queen Village Community Garden decided that I should do our entry for the Community Gardeners' Harvest Show. I put together a harvest basket. At the show door, a staff person suggested that we enter our butternut squash separately even though it had a scratch on one side. We removed the squash and rearranged the bounty basket before entry. The squash got honorable mention. I've always believed the basket would have got first instead of third prize had it been full and entered as originally arranged. Competitive? Who? Me?

That was the last time I took an entry to the Harvest Show without feeling as though I was going off to take a final. Still, it's a great way to learn. And everyone involved, from other gardeners to passers, section chairs and judges is likely to be kind and sure to be keen on plants and gardening and sharing what they know.

Entering the Harvest Show is a mix of planning and last minute choices. Planning ahead includes reading the show schedule *very* carefully as soon as you get it. If you don't read the instructions first, terrible things might happen. You might bring your entries at 10 a.m. Saturday when the show opens only to find that entries were meant to be brought in on Thursday evening or first thing Friday morning. You bring two perfects heads of garlic or a jar of your very best jelly. The program says three. So do the kindly but firm passers.

Winter melon, fuzzy gourds and bitter melon

Of course, passers (and the other show volunteers) aren't **always** wide awake. My friend Jane and I once passed a last minute community garden entry as a watermelon. The placers put it in the watermelon class without a word. One set of judges gave it a blue ribbon. Another gave it the bronze medal. Later, Bill MacDowell, who'd been president of Burpee Seeds, said, "Come look at this winter melon *(Benincasa hispida).*" Everyone of us had missed its obvious, tell-tale waxy coat.

In the teeny minute the bamboo spent in the vase on the way from the yard to the truck, Raspberry, the grass-eating cat, did one stalk in.

It wasn't even the first winter melon at the Harvest Show. The Chinatown Community Garden had entered a winter melon in the squash class, won a blue ribbon and then brought it back as part of their harvest table exhibits for two more years. It had even been on TV. I'd grown its small cousin, the fuzzy gourd also named *Benincasa hispida.*

Picked young and defuzzed by rubbing with a towel, raw fuzzy gourd tastes like a cucumber drizzled with lemon juice. Fully ripe ones can be stored for months in a cool dark place and used like any other winter squash, stir-fried, stuffed or added to soup. Winter melon is usually used as a soup pot and served with the soup. Both of them are incredibly easy to grow. They don't seem to suffer from the usual cucurbit pests and diseases. Southern Chinese gardeners grow them on trellises. The super heavy winter-melon fruit is supported by slings tied to the trellis. (Old tee shirts are excellent slings.) Fuzzy gourds don't need extra support.

Sow fuzzy gourd seeds right in the garden when the soil is warm enough for cucumbers, mid-May. If your trellis is still full of snap peas, plant the fuzzy gourd in late June. No problem. No wilt. No mildew. Just lots and lots of fuzzy gourds from one or two vines. Growing fuzzy gourd and cucumbers next to one another does seem to protect (or just hide) the cucumbers from cucumber beetles.

Bitter melon, also known as bitter gourd or balsam pear *(Momordica charantia),* is grown just like fuzzy gourd, but its vines and leaves are much more delicate (and decorative) so it doesn't protect interplanted cucumbers so well. It looks great in bounty baskets and in medicinal plant and other arrangements. Traditional Italian gardeners put very young, tiny, bitter melons into bottles tied to the trellis. The melons grow into the bottles. When the melon is grown, they cut the bottle off the vine and fill it with whiskey or schnaaps. After a month or so the liquid is used as a medicine. It's probably good for malaria. Bitter melon is bitter because it contains quinone.

Easing into exhibiting/winning

If you're still queasy about entering the Harvest Show, remember that all the volunteers and staff want as many exhibits as possible to show off the riches of Delaware Valley gardens. Had it not been for a firm but kindly passer, who probably wanted to make sure that her section had lots of entries, my Ponderosa lemon tree *(Citrus*

continued

photo courtesy of American Takii, Inc.

Winter melon *(Benincasa hispida),* a member of the cucurbit family and a perennial Harvest Show exhibit. An annual vine with squash-like fruit, it is a versatile Asian vegetable. Preserves and sweet pickles are made from it, and the unripe fruits are used in curries. An integral ingredient in winter melon soup, it also enhances Oriental stir-fries. Other common names for *Benincasa hispida* are round wax gourd, chinese winter gourd, chinese preserving melon, chinese water melon, white gourd of India, Don gwa, and Zit-kwa.

FLEX YOUR MUSTARDS

at the 1992
Pennsylvania Horticultural Society's
Harvest Show
HARVEST OF CHAMPIONS

September 26-27, 1992
Fairmount Park Horticulture Center

With more than 300 classes to enter for ribbons and awards, anyone who gardens in the ground or in containers, arranges flowers, presses or dries plants, or puts up preserves might have something to show off at the 1992 Harvest Show. A special preview for PHS members will be held on September 25th, followed by two days of fun for kids and grownups as we celebrate fall's bounty with exhibits, lectures, demonstrations, the Gardener's Marketplace and lots of activities for young people including this year's special Autumn Games like the Sock Putt and the Pumpkin Push.

Pennsylvania Horticultural Society members automatically receive a schedule of Harvest Show classes and awards every spring; if you are not a member and would like to receive a copy, contact Liz Hauck, Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106-2777, Phone (215) 625-8250.

Come and show us your stuff!

limon 'Ponderosa') would never have been shown. Our harvest window committee decided they didn't want it. As I was contemplating what to do next, the passer suggested that I remove a few leaves, fill out a tag and enter it in another class. I did. It got a bronze medal.

Ponderosas grown from plants or seeds, are easy enough for a rank beginner. They'll grow and bloom in 12- to 14-inch pots as close to a sunny window as you can get them. They do prefer summering outdoors. Mine begins blooming in April. The earliest flowers are males with stamens but no pistils. Later blooms have both stamens and pistils. When the pistils get sticky, I pollinate the flowers by hand even though they'd probably pollinate themselves. And fruit sets. Every month or so I feed it Citrus and Avocado Food that I got by mail from Raintree Nursery, and I water it when the soil feels dry or the leaves begin to look a mite droopy.

I grew the Ponderosa under lights on a propagating mat until I discovered that it would do perfectly well in the living room. To keep it from getting burned or tangled in the light fixture (a two lamp, 48-inch shop light hung on chains), I trained it to grow more or less horizontally by hanging wooden clothespins and punch board hooks on stems that were getting too close to the lights. Thin stems might take one hook, stronger branches might take three or four. The tree developed an unintentional weeping bonsai shape.

I didn't think of exhibiting the lemon tree until a couple of weeks before the show. After a summer in the backyard, it looked swell. It even had a huge ripe yellow lemon. At show time, anything is fair game. If a container-grown plant, flowers, green branches or some bamboo stalks look terrific, they're a potential entry.

When the show committee decided that community gardeners could enter the individual classes and have their entries count towards the Community Garden Sweepstakes Award, I looked at the stuff in my yard with predatory eyes. My bamboo *(Arundinaria viridistriata)* had three lovely stalks that weren't wind shredded or brown on the edges and were actually marked with the characteristic gold stripes. I cut them immediately and thrust them into a vase of warm water. In the teeny minute they spent inside on the way from the yard to the truck, Raspberry, the grass-eating cat, did one stalk in. Two bamboo do not an entry make. Deciding to enter the bamboo was certainly spontaneous. A little extra planning, a cat guard, perhaps, might have gotten it to the show.

Arundinaria viridistriata is a dwarf bamboo that grows three feet high and doesn't mind a lot of shade. It's a slow-running bamboo, not a clump-forming type, but mine stayed where it was planted for 10 years or so. I'd put it in the center of three large stones over an old concrete pad thinly overlaid with soil. The bamboo couldn't run until showers of sunflower hulls from my bird feeders raised the soil level.

Starting off with bounty baskets

While in 1975 we won only a third prize, in 1990 we won the bronze medal for a "vegetable, fruit/and or nut" Bounty By the

Basket that Edith Bradley and Carla Puppin arranged. And in 1991 Carla's Floral Bounty got a bronze. Bounty Basket classes are great for launching a Harvest Show career. All you need are five kinds of flowers or vegetables (no more than three of one kind) and a basket or vase to arrange them in. If your squash has a scratch, put the scratched side down. The judges will **not** pick it up to look at the other side. Your bounty basket can hold one perfect cucumber and five super greenbeans, a squash, a couple of tomatoes and your last fat ear of corn. You can arrange fruits, nuts and vegetables in a basket and add cut herbs in tiny hidden water containers. If the Ronninger's catalog got to you and you've just harvested five or a dozen different kinds of potatoes, you can enter a potato basket in the "any other vegetable" class. Remember, the basket is to be "arranged for effect." Think of a centerpiece or pictures in glossy catalogs and magazines.

In the vegetable, fruit or flower classes you may need three perfect cucumbers, 10 perfect greenbeans, and three perfect light orange marigolds. (It helps a lot if they're perfectly matched.) Late September is a hard time to find three or 10 perfect anything, which is why bounty baskets are so neat. But the way to beat the late September blahs is to plant late. Find out how many days are needed to harvest your veggies or to cut your flowers. Count backwards from the Monday of Harvest Show week. Add a couple of days for good measure, and use that as your planting date. It may well be as late as mid-July. Late planting works especially well for container-grown annuals and vegetables.

In 1990, we grew seven different kinds of eggplant . . . 'Small Ruffled Red,' 'Thai Green,' 'Asian Bride,' 'Little Fingers,' 'Easter Egg,' 'Casper' and 'Listada de Gandia' (Queen Villagers are curious and competitive). We started most of the seeds indoors in early March and planted them in the garden in mid-May to be certain of ripe fruit for an eggplant basket. It takes an eggplant about 11 weeks from seed to fruit. The people who were growing them in containers planted their seeds in mid-July so they could have glowing young plants flush with flowers and fruit. We had eggplants in every possible class and did very well, indeed.

photo by Walter Chandoha

Immature Chinese fuzzy gourd *(Benincasa hispida)* tastes like cucumber drizzled with lemon juice; older specimens can be stuffed with meat, rice and vegetables and steamed. Before steaming, remove the fuzz by rubbing the skin of the fruit with a towel.

photo by Derek Fell

Balsam pear, fruit of many uses: Ornamental and medicinal in European gardens, *Momordica charantia* is stir-fried or stewed in meat dishes, or used as a soup ingredient, in the Philippines and southern China.

We've grown and entered collections of hot peppers like 'Habanero,' 'Long Afghan,' 'Thai Hot,' 'Bird,' 'Yatsafusa' and 'Serrano' the same way. (Hot peppers of all sorts are much easier to grow here than bell peppers.) One of our dried 'Thai Hot' strings got a blue ribbon. The secret of dried pepper strings, garlic braids and onion braids is in choosing peppers, garlic or onions that match and making sure the string is no longer than the program says. We won a bronze for a garlic braid. One of us grew the garlic; one of us braided it. Unfortunately, the braider has since moved to the country. We may never enter another braid. Like Chinatown's winter melon, it was a fixture in our Harvest Tables and Windows for years.

Good garlic isn't hard to grow. Just plant it in the fall if you want nice fat heads. I've planted garlic as early as mid-September and as late as early November and got good crops. It likes lots of sun and lots of organic matter in the soil. It also seems to like our high pH (7.2 at last test. Our garden used to be a brick schoolhouse). Separate the individual garlic cloves from the head . . . carefully . . . and plant the very fattest ones, pointy end up, about an inch under the soil. (Use the skinny cloves for cooking.) For truly fat heads, plant the cloves at least four inches apart. In late May or early June the leaves yellow slightly. The garlic is beginning to head up. It will need at least a gallon of water per foot of row or bed each and every week 'til harvest. Cut any flower stalks as soon as you see them. The leaves die at harvest time. Dig way down into the soil with a trowel to loosen the head and then gently take up the whole plant. (Don't pull garlic. You can end up with a handful of leaves and a bulb that still has to be dug.) Wash the heads and let them dry in the sun for several days. Then, trim the roots and peel off some of the messier outer skin. If you're not going to make a braid, remove the leaves. Garlic will last for months in your hydrator if you air dry it for a week or so first.

The wing-it harvest company

While we had planned our eggplant, garlic and pepper plantations well ahead of harvest, the gimlet eyes of Wing-It Harvest Company (the committee who pick and

continued

photo by Gina Burnett

It was Southwark/Queen Village's Vincent Van Gogh year — even the dried wreath had sunflowers and all of it "for sale" in Vincent's Shop, a harvest window exhibit.

sort the stuff we're going to take to the show at the last possible minute) make all the difference between entering and winning. They look for the most beautiful vegetables, flowers, herbs and fruit and arrange them in matched sets. They make sure that everything is perfectly clean, not an aphid on the collards, not a speck of soil on the potatoes, not one scrungy leaf on the flowers.

The committee carry the program and a ruler with them the whole time. If our best zinnias measure between 2 and 4 inches, we'll only need three, but if they're under 2 inches, the program calls for five. We don't have five really nice ones? Maybe we can use three in floral bounty or in the harvest window. Sometimes the committee divides itself into program readers and plant choosers to make sure that all of our really great looking or unusual stuff get into the show in one class or another.

Entries with correct botanical and cultivar names get more points than ones that just say "tomato" or "hot pepper." We label everything we plant with actual plastic labels, not seed packs that fade over the summer. Labels do get lost. The committee keeps catalogs and other reference materials on our sorting table as they work so we can be sure we know what we have and can fill out entry tickets and plant lists correctly.

The committee also makes sure that we get to the show with more stuff than the program calls for. You just never know what might happen on the way from the garden to the passing table or the Harvest Window display. Spares are vital, and if they're not needed, they can usually be eaten.

Last year we grew five oreganos: 'Maru' *(Origanum vulgare* 'Compactum Nanum') a species with short stems; *O. microphyllum* with tiny leaves and little mauve flowers; *O. pulchellum,* which looks a lot like Dittany of Crete, 'Syrian' and 'Sicilian.' Except for *O. microphyllum* and *O. pulchellum,* they looked so much alike when they were cut, that we made labels for each kind and kept the labels with them right up to show time. Each oregano was properly labelled whether it was part of a dried wreath, a fresh herb collection, a collection of dried herbs or our Harvest Window.

The Nichols and Sandy Mush catalogs list 'Maru' and 'Sicilian' oregano as hardy. Some years they are, some years they're not. Since they both taste terrific, I always take cuttings in the fall. They root easily in a small pot of soil set on a pebble tray with bottom heat, propagation mats, heating cables, a much-used TV set or a water heater. *O. microphyllum,* which Sandy Mush said was tender dried last winter under a row-cover protected by Christmas tree branches recycled after New Year's. *O. pulchellum,* also tender, came back with the same treatment. All of the oreganos have been easy to grow. They don't need lots of water, a great plus when there's no rain and you have to walk around the block to water your garden. They prefer a well-drained, neutral to limey soil and lots of sun. I don't know how they respond to being walked on, so they might not be good substitute for a lawn, but they do make neat ground covers.

Like Dittany of Crete, *Origanum pulchellum* (and *O. rotundifolium* and *O. sipyleum,* which look a lot alike) is lovely in hanging baskets. All it needs is good sun, good drainage and a low nitrogen fertilizer to set wands of bract-enclosed pink flowers. It may not bloom during the winter, but it will grow very nicely in a sunny window.

If it blooms in June, dry it

Oreganos (and thymes, roses and larkspur) air dry very well. You don't need an attic. Just tie them in small bunches and hang them up or put them in containers to dry standing up. The ones in containers may actually droop prettily forming nice curves. I hang mine from push pins stuck into the edges of the kitchen bookshelves. In really hot damp weather, the air conditioner that keeps my computer and me up and running also keeps the kitchen relatively cool and dry.

Sages take a little more work to keep their leaves from curling and looking more like food than an exhibit. Spread them carefully on newspaper on a flat surface and weight them down with another section of the paper. You can dry sorrel *(Rumex scutatus* or *R. acetosa)* the same way. Rue *(Rue graveolens)* dries best neatly spread on newspapers in a 160° oven with the door cracked just a bit. I've never had any luck drying potential exhibits in the microwave. The leaves get all crispy, and the stems stay moist or get cooked. But don't be afraid to experiment. It's half the fun.

We entered an arrangement of dried herbs when the class was new. I dried 15 different herbs: in the oven, hanging, in containers and lying about on newspaper all over the house. My neighbor, a retired florist, mentored us through the arranging process. It was the only entry in the class. It got second prize. But we learned a lot about drying herbs.

If you're planning to enter a dried herb wreath, call one of the chairs first. Last year, the instructions called for an 8-inch wreath. We assumed they meant outer edge to outer edge and used 6-inch frames so that when we added the herbs, we'd be within the limit. The West Philly folk called the chairs to ask if the instructions meant inside or outside dimensions (they wanted to do big wreaths). Since they had questioned the instructions, the chair said, "either way." This year's rules say, "Over-

photo by Gina Burnett

Thyme (low in foreground), sage (foreground) grow beneath a four-year-old raspberry bush at Southwark/Queen Village Community Garden; some of these herbs are dried for the Garden's Harvest Show exhibit.

all size of wreath not to exceed 12 inches." Is that area, circumference or diameter? Decide what you want to do, then call the chairs to see if you can get away with it.

Ready . . .

If you pick lettuce with some roots, spray it, wrap it in damp paper towels and refrigerate it, it'll be all sparkly and ready to show. Yard-long beans won't. They'll be crispy and good for your wok, but if you take them to the show after a couple of days in the fridge, they turn all dull and limp. Basil should never be stored below 55°. It gets dark spots all over. Just cut or pinch it, put it in a plastic bag with just a few drops of water and close the bag. The basil will sit comfortably on a kitchen counter until you're ready to arrange it.

Last year, I decided to include artichoke *(Cynara scolymus* 'Sicilian Purple') leaves in one of our medicinal plant arrangements. I hardened them off in warm water on the cool, dark cellar steps. They made it to the show and past the passers. They looked great early Friday morning, but just as the judges were coming down the line, they collapsed. So did everything else in the arrangement but the hollyhocks. They bloomed. I suspect them of emitting ethylene gas that made everything else get old quick.

Theoretically, it's possible to grow artichokes as an annual crop in the Delaware Valley and up into New England. Plant the seeds in 3- or 4-inch pots as early as you can get them, January or February, if possible. Give them a little bottom heat and cover the pots with plastic to keep the soil moist until germination. Then grow them on about 65° to 70° soil temperature under bright lights. They can be hardened off and transplanted in late March or early April, earlier if it's a warm spring. Artichokes that come back for a second year, leaf out then. That's how I learned not to wait until May to transplant artichokes. It's too late for them to bloom before frost. I also learned not to plant artichoke near 'Black Hollyhock' *(Alcea rosea* 'Nigra'). It gets a rust that is not good for artichokes. They die back, come up again, and get frost bite just before they can set buds.

Once in the garden or in a 12-inch container, give your artichokes lots of sun and excellent drainage. They don't need immense quantities of water, but you might want to try pushing them with a low nitrogen houseplant fertilizer or some liquid seaweed applied to the soil and to the foliage. That's what I'm doing. If I don't get actual artichokes this year, I quit. Some experiments take too much space in the garden for too many years.

Get set . . . go

After years of flowers that wilted, sometimes before judging, collard leaves that had to be removed by the committee after judging and other embarrassing moments, we've learned a little about what to do after we've picked, plucked and harvested. We never even begin picking flowers, herbs and leafy greens without having lots of containers of warm water with us. As soon as they're cut, they go right into the water, and stay there until we get to the show. Packing our buckets into boxes with newspaper and packing the boxes close together using more newspaper to fill up empty spaces usually keeps the water from spilling all over someone's car. Of course, a plastic drop cloth and some bungee cords help, too, but they aren't critical. Just don't pour out all of the water to keep seats and floormats from getting wet. We know someone who did that. The stuff he brought in looked a lot like compost. Some of it revived, but it was touch and go.

We arrange our bounty baskets, floral bounty and herb collections before we take them to the show, usually on Wednesday night or Thursday afternoon. It's easier to concentrate. We have all our tools and container contenders right there. We can run to the local florist for last minute blocks of Oasis (or Sierra for dried herbs) and to the corner store for extra cardboard boxes. We pack the arrangements in the boxes with newspaper to hold the container steady and tape the box tops so they stand up and protect the plant material. (We also take along extra plant material wrapped in damp newspaper in plastic bags. Accidents can happen.) We've taken arrangements to the show in the back of an open pick-up truck and had no problems.

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Libby J. Goldstein is chair of Southwark/Queen Village garden and writes a lot about food and gardening.

CATALOGS

Johnny's Selected Seeds
Foss Hill Road
Albion, ME 04910-9731
(207) 437-4357
Catalog/free

Nichols Garden Nursery
1190 North Pacific Highway
Albany, OR 97321
(503) 928-9280
Catalog/free

Raintree Nursery
391 Butts Road
Morton, WA 98356
(206) 496-6400
Catalog/free

Ronninger's Seeds
Star Route
Moyie Springs, ID 83845
(208) 267-7938
Catalog/$2

Sandy Mush Herb Nursery
Route #2, Surrett Cover Rd.
Leicester, NC 28748
(704) 683-2014
Catalog/$4, credited to purchase

Seeds for the World
Vermont Bean Seed Company
Garden Lane
Fair Haven, VT 05743-0250
(802) 273-3400
Catalog/free

photo by Steve Tressler

ORIENTAL CROPS BOOM IN CENTRAL PENNSYLVANIA

by Rosanne E. Minarovic

Would you believe a demand in central Pennsylvania for 'foo gwa'? That's Chinese for bitter melon, a small, football-shaped vegetable. There is a demand for it there; and for 'dow guak,' 'gai lohn,' and 'yien chou' as well. For farmer Chuck Mothersbaugh, Chinese vegetables are the way to go. Mothersbaugh attributes his success to finding a niche market and supplying the demand with a quality product.

"Before you ever order the seed, you've got to have a market for it," says Mothersbaugh, owner of a five-acre vegetable farm in Spring Mills, a small rural town not far from Penn State University.

"In this business there's an old saying, you either sell it or smell it."

Mothersbaugh's been selling it — all of it. His innovative temperament has turned his part-time business into a full-time operation and his innovative farming practices produce beautiful, oriental vegetables.

It all started eight years ago when Chuck, then employed as a technical illustrator, listened to the needs of an Asian coworker Keith Liu. He asked Chuck to grow vegetables for Asian families in the area. Alice Liu, Keith's wife, advised Chuck about which vegetables to grow, how to cultivate them and what volume was needed. She even helped him to draw up a marketing plan with contacts in the area's Asian community. At the time, Chuck grew what he calls "western vegetables," all-American favorites: tomatoes, peppers, and sweet corn, to mention a few (all of which he still grows). Vegetable farming was a part-time venture and a needed outlet from his confining and intricate work. Over the years he sold his produce roadside and at the downtown State College farmer's market that he helped organize in 1973. Every Friday during the summer a street is blocked so farmers can market their goods. Chuck loads up the truck and heads for that same spot (stir-fry lovers know it) in downtown State College.

The area has an expanding Asian population (about 1,400 Asian university students, plus employees).

"I'm always looking for opportunity," remarks Chuck.

Today, the 49-year-old retired technical illustrator, farmer at heart, devotes his time to his vegetable farm. He has a list of regular customers, retail and wholesale, since his is the only Asian vegetable market garden in central Pennsylvania. Chuck listens to his customers for marketing ideas and ways to improve the quality of his produce.

"Quality is our first priority," says Chuck. "I try to give the customers what they want. My customers tell me the bok choy sold in supermarkets is overgrown. I'm able to supply the leafy, green vegetable at the size when it's most tender. It can't get any fresher."

Chuck picks it the day it's sold. Some of the other favorites he offers, yard-long beans, hollow stem, and Chinese spinach are specialty items not always available in supermarkets.

The back portion of his farmhouse has been converted to a packaging and storage facility. Chuck built his own walk-in cooler and improvised to create a hydrocooler from an old milk cooler he bought at an auction. His system is efficient; he cools down his vegetables after harvest and places them in the cooler until he's ready for market. The fresh white walls of his packaging room display a large colorful map of China. Chinese customers enjoy talking about their country and locating their hometown on the map while Chuck packages their order. He bundles neat little bunches of Chinese chives — a quarter pound. It's just what the customer wants.

A continuous supply

By planting crops at one-week intervals, starting in April, he can continuously supply vegetables for the market throughout the season. He plants three crops per season of bok choy, Chinese mustard, Chinese radish, bitter melon, winter melon, and Chinese broccoli. Through his own research and support from Penn State Extension professors, Chuck learned viable practices that benefit his farming enterprise.

Black polyethylene mulch and trickle irrigation are used on all his vegetables except corn. He improvised and built an apparatus that lays the irrigation drip tape and mulch simultaneously.

"I try to use high-tech principles of physics and science with a low-tech budget."

The black plastic mulch conserves soil moisture, provides a barrier to plant pathogens, reduces weed germination, and helps repel insects. By using the mulch Chuck reduces herbicide use by 50% because he applies it only between the rows. Weeds are still a problem though, and Chuck

continued

photos by Steve Tressler

Top left: In July Chuck Mothersbaugh harvests spoon cabbage, used for stir frying. While spoon cabbage primarily grows in the cooler Northern climate in China, Chuck reports the 40-day maturing plant does just fine in the Penn State University area through the summer. Chuck plants the spoon cabbage at weekly intervals to keep crop available all season long. **Top right:** Chuck prepares green stem bok choy, Ching jung chi, for his Monday trip into town, where he sells to a group of more than 100 Asian families: people from China, Korea, Japan, Indonesia, Cambodia, Vietnam, Thailand and the Philippine Islands. The fennel-like bulb at the bottom can be split lengthwise, steamed and served with a super hot sauce or chopped and stir fried. **Bottom:** The leafy-viney flowering plant crop in the right hand corner is winter melon, Don gwa. The winter melon is started in peat pellets in the greenhouse and transplanted when it's three inches tall. The melon is transplanted under mulch and watered with drip irrigation until its 96-day maturity. Its waxy coat preserves it in a cool dry place for a long time, although Chuck harvests it before a hard frost hits. (See photo of mature winter melon on page 16.)

spends hours in the field riding up and down the rows on his yuppie-buggie, a three-wheeler, tending to the weeds.

Irrigation

The trickle irrigation system provides precise control and management of soil moisture during the life of the crop. The system reduces water use by 50% or more compared to an overhead system. Because the system requires low water volume, Chuck feels no threat of running his well dry. Since a trickle system is on the ground it provides uniform coverage at all times because it is not affected by the wind. The water is applied directly to the root zone allowing the plant to remain dry, thus reducing foliar disease and insect damage. Again, potentially, the use of fungicide and insecticide is reduced. If a pesticide is applied, it remains effective longer because it won't be washed off. With the turn of a screw, the plastic tubing allows site-specific irrigation and fertilization. Fertilizer is measured and released with an emitter through the watering system. This controls leaching because the nutrients are applied directly to the root zone where nutrient uptake is immediate. The trickle system accommodates Chuck's method of interval planting. Exact water and fertilizer requirements can be applied to specific rows that have different growth stages. In addition, if rain doesn't come, no need to worry about plant stress. During last year's drought, Chuck's crop was saved by his 6,000 feet of trickle irrigation.

Although the farm is only five acres, Chuck practices crop rotation for disease control and to balance soil nutrient levels. It helps with disease and pest problems, but with all the leafy, green vegetables grown, Chuck has more than his share of flea beetles. To distract the beetles from his bok choy seedlings, he experimented with trap plants within the row. A trap plant is larger and more appealing than the tiny seedlings. He used cabbage plants among the seedlings as a lure to distract flea beetles away from the bok choy seedlings. It was effective, but a pesticide approved for a leafy green vegetable had to be applied eventually. Early in the season, Chuck covers his crop with floating row covers. A sheet of spun polyester fiber draped over the plants keeps insects out and raises the temperature about 12° which insures against frost on early spring crops.

Chuck takes special care when harvesting to maintain the quality of his produce. Napa — Chinese cabbage — is cut at the base; the outer leaves are peeled back in the field, so fresh, clean leaves remain. Other vegetables that are low growing are neatly stacked in baskets and sprayed with chilled ice water (43°F) to remove soil and lower the temperature. All vegetables are stored at 38°F until packaged and marketed.

Winter melon, which is like a cross between a cucumber and zucchini, is a popular late season crop. Harvest begins in August and continues until the first hard frost. The white-fleshed melon is popular with soups and dumplings. A classic cooking method for this basketball-size melon is to cut off the top, remove the seed cavity, and steam it. The deep green outer skin looks beautiful with carved designs of dragons and other oriental symbols. The inside is filled with soup stock and vegetables and the entire creation is steamed, wrapped in cheesecloth. When the soup is served, a scoop of the melon flesh is served with it.

As fall arrives, Chuck is in the field harvesting late crops of bok choy, Chinese broccoli, napa, winter melon, and Chinese mustard until early November. These vegetables like the cooler weather. After the season, what's next?

"It's been my goal over the years to develop a customer base — farmer's market, wholesale, retail, roadside, auction," says Chuck.

Always looking for new avenues to explore, Chuck has considered producing oriental vegetables during winter in a greenhouse since the demand continues after the summer season.

"It's being done in Thailand and Taiwan during off-season. Why not do it here?" Chuck queries.

Greenhouse vegetables

This fall, Chuck will initiate his first crop of greenhouse vegetables. He has erected a 27 ft. x 96 ft. gothic arch greenhouse. The door at one end of the house is large enough to bring in his tractor to till; all planting will be in 3 ft. beds in the ground. He'll start by seeding some of the cool-weather crops such as bok choy and Chinese broccoli, which will tolerate night temperatures of 40°F. Although he has heat, it won't be necessary until nighttime temperatures drop below 40°F. Marketing is taken care of, he has a list of regular clientele.

During the summer months the greenhouse won't lay idle. Some of the tropical varieties such as: hollow stem, bitter melon, and cee gwa (loofah sponge gourd) can be grown in the greenhouse with better success than out in the field.

The addition of Chuck's greenhouse will provide continuous production. As other growers wind-down the season, Chuck looks forward to a propserous winter crop. His part-time venture has turned into a year-round operation, but that's OK, Chuck's happy doing what he likes best... farming.

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Rosanne E. Minarovic is a freelance garden writer and received her Master's degree in Extension Education and Horticulture from Penn State University. Her goal is to support environmentally sound farming by working with interdisciplinary teams (e.g. sociologists, horticulturists, agronomists, etc.) to develop farm systems and educational programs.

CHINESE VEGETABLES
Grown at Mothersbaugh Farm

Chinese Name	English Name
Bai choy	White stem bok choy
Ching choy	Green stem bok choy
Don gwa	Winter melon
Dow guak	Yard-long beans
Foo gwa	Bitter melon
Gai choy	Chinese mustard
Gai lohn	Chinese broccoli
Gow choy	Chinese chives
Ho lon dow	Snow peas
Lobok	Chinese radishes
Napa	Chinese cabbage
Tong ching chai	Hollow stem
Tong Hao	Garland chrysanthemum
Tsai shim	Flowering bok choy
Yien choy	Chinese spinach

SEED COMPANIES
for Oriental Vegetable Varieties

Abbott & Cobb, Inc.
P.O. Box F307
Feasterville, PA 19053

Burpee Seed Co.
Warminster, PA 18974

Harris Seeds
60 Saginaw Drive
P.O. Box 22960
Rochester, NY 14692-2960

Hung Nong Seed America
3065 Pacheco Path Highway
Gilroy, CA 95020

Stokes Seed Inc.
Box 548
Buffalo, NY 14240

Sunrise Enterprises
P.O. Box 33058
West Hartford, CT 06133-0058

An Era Ends; Another Begins

by Anne S. Cunningham

After 25 years, Sally Reath, a talented gardener with an international reputation for her horticultural knowledge and skills, leaves her garden to begin again.

When plant curators at the United States National Arboretum heard Sally Reath was selling her house in Devon, Pa., they drove from Washington, D.C. with a crew of three to dig up her rare Asian birch, *Betula albo-sinensis.* Even though the seeds came from the Arboretum after the first Sino-American Botanical Expedition to Western China in 1980, it seemed that almost no one, including the Arboretum, had success growing from that crop, except Sally Reath.

continued

After Sally Reath had planned and planted her garden for only 14 years, it had already become a popular destination for horticultural tours.

photo by Doug Mellor

photo courtesy of Sally Reath

photo by Anne S. Cunningham

photo by Anne S. Cunningham

photo by Anne S. Cunningham

Top: A view of Sally Reath's garden in '79. **Middle left:** By May of 1992, the newly constructed wall around Reath's terrace in her new garden holds her favorite bonsai, small topiaries and trough gardens. **Middle right:** The peaceful Japanese garden, only one week old, demonstrates her love of rock formations intermingled with specialty plants such as the small leafed *Clematis alpina* and 'Betty Corning' and a gossamer Japanese maple, *Acer Palmatum* 'Dissectum Filigree Lace.' **Bottom:** The view of the terrace by the end of May shows how determined Reath was to integrate plants into her new life.

An Era Ends

Stories about Reath's garden, and her reputation as a propagator and perfectionist, appear in horticultural publications throughout the world. She has no precise record, but stray clippings include an Australian magazine photograph taken by the director of the Australian Horticultural Society while touring her garden; something from an Italian newspaper showing her granddaughter standing next to a matched set of impeccable topiary myrtles; photos in Time-Life publications; entries in just about every book on topiary; and personal clippings from dozens of newspapers and horticultural magazines.

When she moved to Devon nearly 25 years ago, Sally Reath decided to start from scratch. She asked her physician husband, J. Pancoast Reath, if she could move a few rocks to accent her new garden. After he saw the bill for two front-end loaders to haul massive boulders around three acres, he decided the new property should be named Got Rocks.

10 hours a day in the garden

With an artist's eye, she laid out woodland paths and a formal patio garden with a tiny pool and fountain. Functional areas blended with living space, so her lath house and greenhouse were right outside the kitchen door. New cold frames and propagating beds sprouted like mushrooms whenever she ran out of space to try new plants. At the height of her horticultural intensity, Reath could spend 10 hours a day in the garden with a full-time helper beside her.

Her regular stalwart garden helper was John Duffin, a quiet, dedicated Irishman who didn't know very much about plants when he first came to the Reaths but who became adept at following directions, mowing and digging and lifting.

Reath's garden assistants were another story. Inspiration speaks for itself, and the majority of both men and women who started out working for her went on to full-time horticultural careers, including Jane Pepper, current president of The Pennsylvania Horticultural Society. Says Pepper, "Sally Reath gave me my first summer job, and I was terrified." Pepper recalls how Reath handed her a flat of lobelia and told her to use her imagination, so the enthusiastic apprentice put them in a hanging basket.

As a mentor, Reath hammered the word **Observation** over and over. She taught her apprentices to know plants by observation, not to ask needless questions about what should be done — just observe, and to look so closely at a plant that it would almost call out if it needed more water, less

fertilizer, more sun or shade.

For someone who is essentially a perfectionist, Reath is surprisingly tolerant of those less talented. She uses only Latin names when referring to plants, but has no problem with beginners who stumble over the English common names, as long as they try. And the thousands of plants she gives away each year, are truly gone; she doesn't follow them, expecting a report on their condition in someone's garden or compost heap.

Her generosity manifests itself not only in the form of plants given away, but also in garden tours and talks. Each spring for several months, tours from all over the world were scheduled only days apart. Often she invited the guests to stay for dinner, whether they were research botanists at the National Arboretum or Ferris Miller, director of the only arboretum in South Korea, who stopped by on his way to England to bring her a handful of special seeds.

Propagates rare plants

Reath spent much of her time propagating rare and unusual plants that are not even recorded in books. She found that raising plants from seed helped them adjust to new climates, making them hardier than the 'experts' claimed. After seeds, her preferred method of propagation was by cuttings, using a medium of 1/2 peat moss, 1/2 perlite with small but different amounts of sharp sand (not builder's sand) added, depending upon the species. The mixture sat on a bench in the greenhouse in combination with an overhead mister and a bottom heat system.

Her reputation as an impeccable propagator drew attention from experts in many of the horticultural organizations she joined. A brief sampling of her involvement includes past member of The Pennsylvania Horticultural Society's Council and present member of the Society's Gold Medal Plant Award Committee, administrative director and trustee of the American Holly Society, participation at several levels within both the British and American Hardy Plant Societies and Rock Garden Societies, membership in the Dendrology Society, and on and on. Reath worked diligently as the Garden Club of America's Horticulture chairman, promoting the GCA Plant Exchange and disseminating knowledge.

Purified vs. natural well water

Her family supported her gardening with different levels of enthusiasm. One of her three daughters remembers wearing several layers of clothes to bed on frigid winter nights because the house had to be kept cool for the plants. Daughter Sheila has memories of an ongoing discussion between her "father the doctor," who wanted a water purifying system put in the house, and her "mother the plant lover," who wanted only natural well water for her plants. The plants won. Today all three daughters have small gardens and fond memories of their old home.

Just as her family supported her garden, the garden buoyed up the family when times were tough. Dr. Reath developed Alzheimer's Disease in the early 1970s, and Sally Reath's plants became her solace. "Being in the garden lifted my spirits," she says, "and was good therapy for me when I was upset."

The garden was good therapy for her husband, too, when she could give him appropriate jobs. He loved to deadhead daylilies, but after a while started cutting off the buds along with the spent flowers, so she directed him to a huge old *Chamaecyparis obtusa.* The brown in it worried him, and she let him prune it, "until there was almost nothing left." After all his years of patience and pride in her gardening accomplishments, Dr. Reath spent his final years working in the garden, too.

When the house went on the market last spring, members of her Garden Club, Four Counties, were some of the earliest beneficiaries. Special potted plants went to Aldys Davis and Hutchie Cummins, and they helped organize a greenhouse garage sale of containers and tools and newly propagated plants, to raise funds for Garden Club projects. The only problem occurred when outsiders heard of the sale. Arboretum directors and presidents of rare plant societies lined up with wish lists in hand, and invariably left with portions of carefully divided perennials. The main quandary was how to deal tactfully with the *hundreds* of gardening acquaintances who wanted to "sneak just one or two plants from her garden," claiming, "she'll never miss them."

While Reath would not make exceptions to the strict list of trees and shrubs she was removing from the property, she gave away most of her beloved topiaries. When she decided to part with an intricate miniature ivy, with a wire frame she had designed in an oriental theme to match its bonsai container, she carefully considered gardeners of the younger generation who'd won top prizes with topiaries in the Philadelphia Flower Show. Then she called Patty Wurts of Blue Bell, Pa., and offered the magnificent specimen. Wurts jumped in the car and immediately sped to Reath's house. Says Wurts, "I was so excited, but what a responsibility!"

Reath's next garden

The list of plants and shrubs Reath took to her new home in a retirement community fits on one page. The only tree taller than five feet, was a rare Chinese *Sapium japonicum* she'd raised from seed that came from Korea. Reath loves the tree for "the shape of its leaf, its disease resistance, and although the flower is insignificant, its smashing multi-hued fall color." Shrubs include a *Virburnum nudum* 'Winterthur' and a rich-smelling *Daphne odora.*

"Gardens of the future will be smaller," says Reath. "No one has space for a huge *Picea omorika,"* the elegant Siberian spruce that can grow to 100 feet tall. Her new garden features only about two dozen small shrubs and small plants, though not necessarily dwarfs. Tiny delicate anemones and a hosta no bigger than her hand, *Hosta* 'Swarthmore Surprise,' confirm her desire to scale down.

A few topiaries, some bonsai and her original English trough gardens grace a new terrace wall. The detailed miniature landscapes of the troughs, filled with alpines and other rock garden plants, will have to satisfy her love of pruning and perfection.

Reath's new gardening challenge is a compact atrium, open to the elements, with two walls of glass, along her hallway and a small office. She wants the serene, uncluttered look of a Japanese garden. In one corner sits a newly purchased black bamboo; the rest of the space is covered with undulating moss hillocks and cool rock paths, interspersed with only a few delicate ferns, miniature *Clematis alpina* and *Clematis* 'Betty Corning' ready to climb wire netting, a gossamer Japanese maple, *Acer palmatum* 'Dissectum 'Filigree Lace,' and several other carefully chosen specimens.

As for her old garden, Reath refuses to look back. It's now in the hands of an energetic young family that loves plants. They're determined to do nothing to the garden (except weed) for a year, while they watch it evolve through the seasons, so they can fully understand her design. Their plans for the house begin with a new glass wall off the kitchen, to get a better view, a glass extension off an eating area facing a section of the garden, and a mullioned glass sitting room overlooking steps interplanted with early spring bulbs. Clearly they appreciate their new surroundings.

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Anne S. Cunningham, a garden writer, is on the long list of grateful recipients and unabashed beggars who nourish a Sally Reath plant in their gardens.

SAUERKRAUT

by Bea Weidner

When I was a girl, my grandmother liked to tell me that French people loved cabbage so much they they used the word as a term of endearment. Instead of "honey" or "sweetie," they called children "my little cabbage." Time and experience have explained "mon petit chou," and I have enjoyed cabbage, in some form or other, every month of the year. Maligned for its heavy taste and bad odor, its reputation is enhanced by a gentle touch in cooking and handling. Eaten raw, sliced to a thin slaw, it rivals any other salad green. Delicately braised with butter and cream, it can make a debut as a tart. Or it can take center stage hollowed out and filled with some delicious mixture. Its easy abundance and economy cause it to be overlooked and taken for granted. It merely waits for you to make it special.

Cabbage began life, not as a splendid sphere, but in prehistory as a leafy plant that was gathered along with tender shoots of willow and birch, nettles, ferns and waterweeds. More like its relatives, the kales and collards, early cabbage was a loose-leafed, ragged affair. Roman gardeners held it in high regard; they developed a number of varieties. The word cabbage comes from the Latin word kaput, meaning head. Cool weather is required for cabbage to bundle itself into a ball. Consider cabbages, after having enjoyed a languorous life by the Mediterranean, being transported to northern European hinterlands. The summers' brevity forced them to a swift conclusion, not to mention the rude coolness of the nights. Tender young plants were forced to clutch their leaves close and huddle against the cold. They learned a careful folding procedure. They pulled themselves in as tight as a Victorian lady's corset, which produced one of the most perfect packages ever invented and one that gardeners and grocers alike have been happy with ever since.

Of course a gardener must take care. The sight of the delicate white cabbage moth could mean later chopping into a great city of worms. Lack of limestone can result in clubroot. Crop rotation is a must. They crave variety. Carefully pick a different location for your cabbages to spend each succeeding summer. When all troubles have been safely avoided and blue

illustrations by Bea Weidner

ribbons awarded for a lovely harvest, the next thing to ponder is what to do with them.

Cabbages may be stored by hanging them in a cool cellar. They may be held out-of-doors in a most curious and practical way. Bury them head first in a mound of soil, leaving only the root to mark their location. Protected from frost, their moisture stays intact. Another more exotic way is to have them continue their life in a pickle, that is to salt the cabbage and allow the fermentation that produces sauerkraut. If the tale is true, this ancient idea originated in China and was brought to Europe by Marco Polo.

Aeons ago, when I was 12 years old and my family moved from a city rowhouse to a country place named Perkiomenville (Pa.), a garden taught me all I know about cabbages and lots more. A new part of our life was caring for an 80-foot-square vegetable patch. In summer it fed us heartily, to overflowing, with a bounty we felt obligated to preserve. My mother bought a pressure cooker, and after eating all the vegetables we could hold, we spooned the rest of the summer into Mason jars. Our house possessed a cool root cellar, and we placed the jars on shelves where they sparkled like the crown jewels — my mother's pride and joy. But the cellar's walls spoke of things laid by for the winter we had yet to discover. That first year, 'round Hallowe'en, a family tradition began.

When the moon was full and the frost touched the garden with its shivering fingers whispering winter's approach, only the pumpkin and cabbage families remained among the shrouds of dead leaves, their chubby cheeks aglow amidst the gloom. We left the pumpkins for jack-o-lanterns. But as for the cabbages, it was "off with their heads." With a whoop and a holler, we children scolded them for staying out so late and for getting so fat and heavy to carry. Laughing, we loaded them into our wagon and rode them through the door and into the kitchen where our mother waited with a great stoneware crock.

Then it was fun to pretend we were witches conjuring a brew as we quartered, cored, and sliced the cabbages, layering the leaves with salt until they began to weep. Pressing down hard with our fists, the shredded cabbages finally gave up their moisture and fairly floated in their own sea of salty tears. The finale was to weight the whole thing down with a great "boulder," seal it and leave it to grumble and bubble and ferment. It was ready by Christmas to test with a roasted duck. Then we cooked it royally, with roast pork and all the trimmings for good luck on New Year's Day. Many a convert has been made who first screwed up his face at the mention of sauerkraut.

For devotees of Choucroute Garnie, I offer my easy foolproof, guaranteed not to fail, sauerkraut recipe. As for cooking the actual Choucroute Garnie (braised sauerkraut garnished with meat and sausages), a trip to Alsace and Julia Child's *Mastering the Art of French Cooking, Book I,* taught me all I know.

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Bea Weidner is an illustrator, writer, self-taught cook and gardener. The pleasure of sharing this recipe is second only to the care and feeding of family and friends.

SAUERKRAUT

This homemade sauerkraut is so superior to the commercial product, so different in taste and texture that once you've made it successfully, you're sure to be hooked. It's also an excellent way to deal with a beautiful cabbage harvest after you've tired of coleslaw, stuffed cabbage, cabbage soup, cabbage strudel, braised cabbage.

To make about 10 gallons you will need:
- a washed and scalded 10-gallon crock
- 50 pounds of firm, mature cabbages, late cabbage is best because of its higher sugar content
- 3 cups of coarse salt

1. Begin by shredding about five pounds of cabbage, after you've discarded the tough outer leaves and cored and quartered it. I prefer to do this by hand with a very sharp knife. The quality is more rustic.

2. Put the shredded cabbage into a large bowl, sprinkle it with 3 Tbsp. of salt and mix thoroughly.

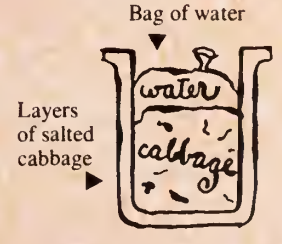
3. Pack the salted cabbage, batch by batch, into the prepared crock repeating the shredding and salting process. Push down hard after each addition and juices will form. Continue until the crock is filled to no more than 5 inches from the top. (Figure that this is a slow and easy process, spaced out within the course of a day, much the same as the time required for the raising and baking of bread.)

4. Let the mixture stand until the cabbage is completely submerged in its own juices. (I have allowed it to stand overnight in a cool kitchen draped with a clean towel.) If there is still not enough liquid to cover the cabbage, make addition brine by adding 1½ Tbsp. of salt to four cups of boiled water. Cool this to room temperature before adding it to the crock.

5. At this point you must weight the cabbage down to hold it under the brine. Do this by fitting two large plastic bags, one inside the other for strength, filled with the brine solution (1½ Tbsp. of salt to four cups of boiled water). Place the filled bag on top of the cabbage and tuck down all around the inside perimeter of the crock so that it fits snugly and is not exposed to air. This prevents the formation of yeast or mold and keeps the cabbage submerged. Twist the bag tightly to seal. Drape the crock with a clean towel and store it in a place where it can be left undisturbed.

For best quality sauerkraut, a room temperature of 75° is ideal; fermentation will take place in about three weeks. At 70°, allow four weeks; at 65°, allow five weeks; at 60°, allow six weeks. Temperatures above 75° may cause spoilage. Record the time and temperature so that you will know when to make a test. At that time, uncover the crock and tap the side gently. Fermentation is complete when bubbling has stopped and no bubbles rise to the surface.

6. Now you can store the sauerkraut in a cool place where the temperature does not exceed 38°. It will keep for up to three months. Or you can process it in jars that make lovely gifts.



CUTAWAY VIEW OF CROCK

COMMON INSECT PROBLEMS OF TREES: Part II*

by Lisa S. Blum

To maintain healthy trees, home gardeners would be wise to learn all they can about their insect pests and to use integrated pest management techniques (IPM) to control these pests. IPM means keeping trees free from stress, accepting a certain level of insect pests, accepting the natural aging and death of trees, checking out safe methods of pest control and then using chemicals where necessary. This article guides gardeners through identifying the problem; it offers some solutions they can manage on their own, and makes them aware of other pest problems that may require a professional solution.

Insects, the animal kingdom's largest group, attack trees and causes them great damage. Insects can ruin the most beautiful landscape designs, destroy our most cherished specimen trees, make futile the most aggressive maintenance programs, and cost millions of dollars.

The foundation for any integrated pest management (IPM) plan is knowing the key pests and plants found in the landscape. This awareness is especially important since the majority of insects found on any tree cause **no** damage to that plant. Some insects such as lady beetles, predatory wasps, and lacewings benefit the tree because they attack the true plant pests. The accurate identification of insect problems is also crucial to tree care since different insects require different forms of management. Poorly timed applications of improper pesticides not only do not help a tree, but waste pesticides, harm the environment and the applicator.

Because space is limited and there are so many different insect problems, I've highlighted those of particular concern in the Delaware Valley.

Scale

Scale insects are widespread in tree plantings. We can identify these insects by their hard scale-like covering; they can appear as tiny brown, red or cream pimples on tree trunks, branches, or foliage. They belong to the insect order Homoptera; they have two pairs of membranous wings and mouthparts adapted for piercing and sucking their plant hosts. They gradually metamorphose from eggs to young mobile crawlers to adults, which become immobile and cover themselves with their scales. As they pierce plant tissue and suck plant sap, foliage becomes yellow, the tree becomes weak, and heavy infestations can kill branches. In addition to damaging the tree directly, scale insects secrete large amounts of sugary excrement called honeydew, which attracts dark sooty mold fungi, that is both sticky and unsightly.

photos by Lisa S. Blum

Fig. 1 White peach scale on hawthorn *(Crataegus sp.)*

Fig. 2 Symptoms of tulip tree scale on tulip tree *(Liriodendron sp.)*

One of the most commonly encountered scale insects is **obscure scale** on red oak, scarlet oak, and willow oak, which appears in and on trunk crevices as gray or white spots. Obscure scale is difficult to control since the insects tend to settle close together resulting in layers of scales, which makes it hard to kill them with chemicals.

Cottony maple scale is one of the largest and most conspicuous scale insects. Its favored host is maple, and can be identified in late spring as the female lays her characteristic white egg sacs. Many wasp and fly predators and various lady beetles feed on immature scales. The English sparrow is believed to be an important factor in limiting cottony maple scale populations.

The **white peach scale** attacks species of flowering cherry, peach, chinese elm, golden raintree, red bud, and dogwood trees. It's especially serious on Kwanzan cherry, still an enormously popular ornamental tree. This scale is easy to spot as the waxy covering of the adult male is bright white (Figure 1). Populations build up rapidly, covering the bark of limbs and twigs. The twice stabbed lady beetle and many wasp parasites have been reported to be predaceous on this scale.

Tulip tree scale (Figure 2) is a serious pest of tulip trees, certain magnolias, and linden. One of the largest of the soft scale insects, it can completely cover all of the host's branches precipitating the tree's rapid decline. Sooty mold and hornets are attracted to its prolific honeydew. Common natural enemies, such as lady beetles and predatory wasps, seldom control infestations.

* Part I, Common Tree Diseases, appeared in *Green Scene,* July, 1992.

Recommendations for chemical control of these scale insects include horticultural spray oil as a dormant treatment, followed by formulations of acephate, carbaryl, chlorpyrifos, cyfluthrin, or insecticidal soap applied at the crawler stage, which begins from May through August depending on the specific scale: spray for white peach scale in late May, early June and again in late July, early August; tulip tree scale, spray for crawlers in August. Spray for obscure scale in late July, early August, and cottony maple scale, late June or early July — just once.

Aphids and leafhoppers

Aphids, also members of the Homoptera order, have mouthparts that affect plant tissues like scales. Aphids may be winged or wingless, and vary greatly in color from yellow to red, brown, or black. Aphids are common and persistent pests, but in most cases, the feeding activities of aphids produce inconspicuous stippling of the foliage especially on tulip tree, flowering crabapple, hickory, and linden. Aphids are more troublesome to trees because they transmit viruses, such as apple mosaic virus.

Leafhoppers also transmit viruses, mycoplasmas and bacterial diseases such as elm yellows. The **potato leafhopper** has been especially troublesome the past few years. Usually these leafhoppers damage trees as adults that migrate here from the South, but with the recent warm winters, they can stay here and cause more tree injury. Adults are 3mm long and green with six white spots on their backs. They produce dwarfed and distorted leaves, kill twigs and small branches, and subject infested trees to winter injury. Seriously injured trees include species of maple, birch, hornbeam, red bud, and oak. Aphids and leafhoppers can be treated with horticultural spray oil and many different chemicals (see Moorman, 1991). It is difficult, however, to cover all infestations, and since many of these insects are tiny and very mobile, complete control is usually impossible for large trees over 30 ft. Partial control of these insects is still desirable if leaf distortion on branch dieback is bothersome.

Hemlock wooly adelgid

During the past few years *(Adelges tsugae)* **hemlock wooly adelgid** has become a serious pest of forest and ornamental hemlock trees. This insect is closely related to aphids, although in a different family, and sometimes is also referred to as hemlock woolly aphid. The hemlock woolly adelgid was first observed in the Eastern United States in Virginia in 1951, and because it is extremely cold-hardy and dispersed by wind, birds, animals, and humans, it is spreading at an alarming rate throughout the Northeastern United States.

The two native eastern hemlocks, *Tsuga canadensis* and *Tsuga caroliniana* are extremely susceptible to the wooly adelgid. The adelgids overwinter as adults on the hemlock where they lay eggs, and in the spring produce both winged and wingless generations. The adelgids suck sap and inject a toxic saliva into the host. This causes rapid drying out, discoloration of the needles and the tree's death within four years. These insects are easy to recognize on tree branches with their white woolly secretions (Figure 3).

Control of the adelgid can be difficult and has made the hemlock a less desirable choice for landscape plantings. No natural controls have been found, although recently a number of pesticides have been shown to be quite effective when applied appropriately. A 2% horticultural oil should be sprayed once in March or April, a 1% horticultural oil should be applied once during the summer months and 2% horticultural oil should be applied again once in the fall months of October or November. In addition to these oil applications, insecticidal soap can be sprayed any time from May through November if adelgid populations increase.

Another control to consider: avoid feeding hemlock trees with a high nitrogen fertilizer, which only increases the succulent tissue and makes the plant more susceptible to the adelgid attack.

Lacebugs

Lacebugs are a common tree pest (insect order Hemiptera). They have two pairs of wings, the forewings thickened at the base, and piercing and sucking mouthparts. There are many species of lacebugs in the genus *Corythucha,* which are host specific. The most common lacebugs in our area attack sycamore, hawthorn, oak, cherry, hackberry, pieris, or alder. The adults are beautifully sculptured and resemble a lacy network. They lay eggs in the spring on the undersides of leaves, leaving a brown sticky substance. The nymphs emerge and feed with their sucking mouth parts, causing the characteristic chlorotic flecks, visible on the upper side of the leaf (Figure 4). Control recommendations include spraying with dormant horticultural oil early in the spring when the young nymphs emerge,

Fig. 3 Hemlock woolly adelgid on hemlock *(Tsuga sp.)*

Fig. 4 Lacebug injury on cherry tree *(Prunus sp.)*

and again later in the season with insecticidal soap, making sure to cover the bottom of affected leaves.

Beetles

A large group of insects that damage trees extensively are the beetles in the insect order Coleoptera. These differ from the insects already discussed. The adults have forewings that form *hard* wing cases that cover the hindwings when at rest. They have chewing mouth parts, and go through a complete metamorphosis in their life cycle from egg, to young larvae, which usually eat voraciously, to the inactive and covered pupae, to emerging adult. Both larvae and adult can injure trees, mostly by feeding on the foliage, stem, or roots.

Among the best known beetle is the **Japanese beetle** *(Popillia japonica).* This insect has invaded most of the Northeastern United States attacking a large range of hosts. Although the rose is its favorite woody plant, they can also seriously injure flowering crabapple, flowering cherry, maples, gray birch, sycamore, linden, and elm. The Japanese beetles overwinter

continued

TREES AND INSECT PESTS DISCUSSED IN THIS ARTICLE

Common, Botanical Name	Pest Problem	IPM Recommendation
Alder, *Alnus* spp.	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
Apple, *Malus* spp.	Aphids	Spray with Hort. Oil.
	Gypsy moth	Barrier bands: destroy egg masses, mulch, feed, and water trees. BT, Carbaryl, or Acephate.
	Eastern tent caterpillar	Destroy tents, prune infested branches, use BT, Soap, Acephate, Carbaryl.
Ash, *Fraxinus* spp.	Ash borer	Monitor with traps, Chlorpyrifos or Lindane. Mulch, feed, and water; avoid wounding.
Basswood, *Tilia* spp.	Gypsy moth	Barrier bands; destroy egg masses, mulch, feed, and water trees. BT, Carbaryl, or Acephate.
Beech, *Fagus* spp.	Two-lined chestnut borer	Mulch, water, and feed; prune infested branches. Lindane or Chlorpyrifos sprays, pastes and paints.
	Eastern tent caterpillar	Destroy tents, prune infested branches, use BT, Soap, Acephate, Carbaryl.
Birch, *Betula* spp.	Leafhoppers	Spray with Hort. Oil.
	Japanese beetle	Pick; Trap; BP; beneficial parasites; Neem, Pyrethrum, or Carbaryl.
	Bronze birch borer	Mulch, water and feed; prune infested branches. Chlorpyrifos or Lindane sprays, pastes and paints.
	Gypsy moth	Barrier bands, destroy egg masses, mulch, feed, and water trees. BT, Carbaryl or Acephate.
	Birch leaf miner	Acephate spray in May or Systemic (Toxic) Dimethoate applied as band on trunk
Black locust, *Robinia pseudoacacia*	Bagworm	Pick bags; prune infested branches; BT, Soap, Acephate or Carbaryl.
Cherry, *Prunus* spp.	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticida! Soap later.
	Japanese beetle	Pick; trap; BP; beneficial parasites; Neem, Pyrethrum, or Carbaryl.
	Eastern tent caterpillar	Destroy tents; prune infested branches; use BT, Soap, Acephate or Carbaryl.
Kwanzan Cherry, *Prunus serrulata* 'Kwanzan'	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Crabapple, *Malus* spp.	Aphids	Spray with Hort. Oil.
	Japanese beetle	Pick; trap; BP; beneficial parasites; Neem, Pyrethrum, or Carbaryl.
Dogwood, *Cornus florida*	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
	Dogwood borer	Monitor with traps; mulch, feed, and water trees; avoid wounding. Chlorpyrifos or Lindane.
Elm, *Ulmus* spp.	Japanese beetle	Pick; trap; BP; beneficial parasites; Neem, Pyrethrum or Carbaryl.
	Spider mites	Watering of tree and leaves; Hort. Oil early; Varied chemicals, predatory mites
American elm, *Ulmus americana*	Elm bark beetle	Prune infected branches immediately. Spray with methoxychlor only for valuable trees.
Chinese elm, *Ulmus parvifolia*	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Eastern red cedar, *Juniperus virginiana*	Bagworm	Pick bags; prune infested branches; BT, Soap, Acephate or Carbaryl.
Fir, *Abies* spp.	Bagworm	Pick bags; prune infested branches; BT, Soap, Acephate or Carbaryl.
Golden raintree, *Koelreutaria paniculata*	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Hackberry, *Celtis* spp.	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
Hawthorne, *Crataegus* spp.	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
	Gypsy moth	Barrier bands; destroy egg masses; mulch, feed and water trees. BT, Carbaryl or Acephate.
	Eastern tent caterpillar	Destroy tents; prune infested branches; use BT, Soap, Acephate or Carbaryl.
Hemlock, *Tsuga caroliana, Tsuga canadensis*	Hemlock woolly adelgid	Avoid high nitrogen fertilizers, 2% Hort. Oil early, 1% Hort. Oil during growing season, 2% Hort. Oil in Fall; Soap throughout May-November.
Hickory, *Carya* spp.	Aphids	Spray with Hort. Oil.
	Spider mites	Water tree and leaves; Hort. Oil early; varied chemicals, predatory mites.
Honeylocust — thornless, *Gleditsia triacanthos inermis*	Spider mites	Water tree and leaves; Hort. Oil early; varied chemicals, predatory mites.

Common, Botanical Names	Pest Problem	IPM Recommendation
Hornbeam, *Carpinus* spp.	Leafhoppers	Spray with Hort. Oil.
Lilac, *Syringa* spp.	Lilac borer	Monitor with traps; mulch; feed and water trees; avoid wounding. Chlorpyrifos or Lindane.
Linden, *Tilia* spp.	Tuliptree scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos, or Cyfluthrin at crawler stage.
	Aphids	Spray with Hort. Oil.
	Japanese beetle	Pick; trap; BP; beneficial parasites; Neem, Pyrethrum, or Carbaryl.
	Spider mites	Water tree and leaves; Hort. Oil early; varied chemicals, predatory mites.
Magnolia, *Magnolia* spp.	Tuliptree scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Maple, *Acer* spp.	Cottony maple scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
	Leafhoppers	Spray with Hort. Oil.
	Japanese beetle	Pick; trap; BP; beneficial parasites; Neem, Pyrethrum or Carbaryl.
	Bagworm	Pick bags; prune infested branches; BT, Soap, Acephate or Carbaryl.
Mountain ash, *Sorbus* spp.	Spider mites	Water tree and leaves; Hort. Oil early; varied chemicals; predatory mites.
Oak, *Quercus* spp.	Leafhoppers	Spray with Hort. Oil.
	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
	Gypsy moth	Barrier bands; destroy egg masses; mulch; feed and water trees. BT, Acephate or Carbaryl.
	Spider mites	Water tree and leaves. Hort. Oil early; varied chemicals; predatory mites.
Willow oak, *Q. phellos;* Red oak, *Q. rubra;* Scarlet oak, *Q. coccinea*	All with Obscure scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos, or Cyfluthrin at crawler stage.
Peach, *Prunus persica*	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Pieris, *Pieris japonica*	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
Pine, *Pinus* spp.	European pine sawfly	Acephate spray in May.
Poplar, *Populus* spp.	Gypsy moth	Barrier bands; destroy egg masses. Mulch, feed and water trees. BT, Carbaryl or Acephate.
Redbud, *Cercis* spp.	White peach scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
Rosa, *Rosa* spp.	Japanese beetle	Pick; trap. BP; beneficial parasites; Neem; Pyrethrum or Carbaryl.
Sassafras, *Sassafras* spp.	Japanese beetle	Pick; trap; BP, beneficial parasites, Neem, Pyrethrum or Carbaryl.
Sweetgum, *Liquidambar* spp.	Gypsy moth	Barrier bands; destroy egg masses; mulch, feed and water trees; BT, Carbaryl or Acephate.
Sycamore, *Platanus* spp.	Lacebug	Spray bottom of leaves with Hort. Oil early; Insecticidal Soap later.
	Japanese beetle	Pick; trap. BP, beneficial parasites, Neem, Pyrethrum or Carbaryl.
	Bagworm	Pick bags; prune infested branches; BT, Acephate or Carbaryl.
	Spider mites	Water tree and leaves; Hort. Oil early; varied chemicals; predatory mites.
Tulip Tree, *Liriodendron* spp.	Tulip tree scale	Hort. Oil early; Soap, Acephate, Chlorpyrifos or Cyfluthrin at crawler stage.
	Aphids	Spray with Hort. Oil.
Willow, *Salix* spp.	Gypsy moth	Barrier bands; destroy egg masses; mulch; feed and water trees. BT, Carbaryl or Acephate.
	Eastern tent caterpillar	Destroy tents; prune infested branches. Use BT, Soap, Acephate or Carbaryl.

CHEMICAL CONTROLS MENTIONED IN THIS ARTICLE:

Chemical Name	Brand Name*
Acephate	Orthene
Bacillus thuringiensis (BT)	Dipel, Thuricide
Carbaryl	Sevin, Sevimol
Chlorpyrifos	Dursban, Pageant
Cyfluthrin	Tempo
Diflubenzuron	Dimilin
Dimethoate	Cygon
Extract of neem tree	Margosan-o
Horticultural oil spray	Agway Spray Oil; Sunspray Ultra-Fine; Volck Spray Oil
Insecticidal soap	Safer Insecticide Concentrate
Lindane	Lindane
Milky spore disease *(Bacillus papilliae)*	Doom (Pest Management Supply; see Buying Guide)
Parasitic nematodes *Heterorhabditis Steinernema*	Biosafe (Pest Management Supply; see Buying Guide)
Parasitic fly *(Isochaeta aldrichi)*	(Still in research stage; not available commercially.)
Pyrethrum	Pyreth-it, Pyrenone
Viris NPV	Gypchek

* The products listed here are not an endorsement; they are listed to assist you in your search for specific products. We suggest you ask about these and alternative brands at your preferred garden product suppliers.

below the soil line as grubs, immature wormlike beetles. In the spring these grubs do much damage to the roots of grasses and ornamental nursery stock plants. They pupate near the soil surface, and in the spring the adults emerge flying first to low-growing plants and bushes, and later to trees. There they devour the foliage between veins leaving a lacy type of skeleton (Figure 5). They prefer plants growing in full sun, and are most active in the heat of day.

You can remove beetles by handpicking in the early morning, or by vacuuming with a dust buster. Beetle traps can be effective, but only if placed at least 50-60 feet *away* from affected host. A parasitic fly *(Isochaeta aldrichi)* shows promise in controlling the beetle population.

Long-term control involves not only the adults, but the grub population below the soil line. Milky spore disease *(Bacillus popilliae),* a bacterium that kills the grub, is best applied to the soil in early spring or late summer when the grubs are detected. Two parasitic nematodes, *Heterorhabditis* and *Steinernema,* available commercially, effectively control grub populations when mixed with water and applied to the soil.

If unavoidable, you can treat Japanese beetles with chemicals. An extract of the Neem tree keeps the adults from feeding, and pyrethrum-based products suppress the adult population. A harsher chemical, carbaryl, can also be applied for control.

Borers

Many beetles, in their larval stage, are called borers. Some borers, such as the bronze birch borer, damage shade trees by tunneling into the conducting tissue, while others, such as elm bark beetles, open the tree trunk to fungal infections like dutch elm disease. Borers usually attack trees already stressed or weakened by adverse weather, poor site location, or other insect and disease problems.

The **bronze birch borer**, *Agrilus anxius,* and the **twolined chestnut borer**, *Agrilus bilineatus,* which attacks oak and beech, are both prolific in this area. They deposit eggs near the outer bark of trees in late summer, and when white or cream-colored larvae emerge, they tunnel into the xylem. Here they make elaborate galleries and interfere with the water supply to the crown. Trees affected show sparse foliage and dying branches. Borer holes in the trunk and their galleries found underneath the bark confirm diagnosis. The boring larvae can stay in the trunk for one to two years and can kill the entire tree.

photo by Lisa S. Blum

Fig. 5 Japanese beetle chewing injury on *Sassafras sp.*

The best control is preventive: keep the trees vigorous with adequate watering and fertilizing. Prune infected branches before May. Spray trees thoroughly from late May to early June with chlorpyrifos, or lindane (toxic). Pastes can be injected into the borer holes, and paints applied to the trunk's surface during egg laying. (See also lilac, ash and dogwood borers under Moths.)

Moths

Another large group of insects are the moths (in the order Lepidoptera). Although most of the adult moths (butterflies) are not too damaging to trees, many of the moth larvae, called caterpillars, are destructive to trees. The adults' bodies are covered with dust-like scales, and they feed with siphoning mouth parts largely on the nectar of flowers. As larvae, these insects have chewing mouth parts and eat voraciously on host plants.

The **gypsy moth**, *Lymantria dispar,* is one of the most notorious hardwood tree pests in the eastern United States. Gypsy moth was accidentally introduced into the U.S. in 1869, and since 1980 has defoliated close to one million forested acres each year. This moth prefers oak, apple, sweetgum, basswood, gray and white birch, poplar, willow and hawthorn. When populations of gypsy moth are dense, however, larvae feed on almost any vegetation. Despite strict quarantine regulations and control programs, gypsy moth continues to spread south and westward, as people transport egg masses, pupae, and larvae on nursery stock, forest products, equipment, and trucks and camping vehicles.

Adult gypsy moths are large; with 2-inch wingspans. The male is dark brown and the female is nearly white with blackish bands across the forewings. In July and August, they deposit eggs covered with buff-colored hair on branches and tree trunks in masses of 100-600. The larvae hatch from early April to late May, are easily recognized with their hairy form, five pairs of raised blue spots and six pairs of raised red spots on their backs. During this stage the larvae feed intensely on the tree's foliage during the night. When the sun comes up they crawl down the trunk to hide under crevices in the bark or under branches. When populations are high, however, gypsy moths will feed during the day and strip the whole tree. Between mid-June and early July the larvae enter the pupal stage and emerge 7-14 days later as adult moths.

Healthy trees can usually withstand one or two consecutive seasons of defoliation greater than 50%. Trees that have been weakened by other stresses such as drought are frequently killed after a single defoliation of this type. A number of natural predators and parasites of gypsy moth can control dense moth populations. There is even a viral disease that kills larvae and pupae. Most of the time, however, we must use several tactics to control this moth. Physically destroying egg masses with soapy solutions, using burlap on trunks to lure the larvae underneath, and barrier bands to prevent larvae from crawling up the tree are all effective in residential landscapes. Mulching, avoiding drought stress, and adequately fertilizing enhances the tree's growth.

Management of large numbers of trees usually involves some chemicals. Commonly used are biologicals such as *Bacillus thuringiensis* (BT), which when taken internally kills the larvae, and the virus NPV registered under the name Gypchek. Acephate and carbaryl, two synthetic chemicals, are also used, as is diflubenzuron, an insect growth regulator. **Use all of these chemicals cautiously, however, as they can also destroy non-target organisms.**

This group of moths includes many other serious insect pests. Both the **bagworm** and the **eastern tent caterpillar** affect trees in our region. They are easily recognized by larval construction of bags or tents from silk and debris. The bagworm *(Thyridopteryx ephemeraeformis)* commonly attacks the foliage of black locust, maple, sycamore, firs, and eastern red cedar. After eggs hatch in late May, the larvae immediately begin feeding and constructing their protective cases (Figure 6). As each larva grows, it enlarges its bag until ready to pupate inside for about seven to 10 days. The female never leaves her bag, while the black male moth emerges and flies to the female to mate. Five

hundred to 1,000 eggs are produced in a single bag where they overwinter until the following spring. This moth can be controlled by picking the very visible bags.

The eastern tent caterpillar *(Malacosoma americanum)* is similar to bagworms in its silken case constructions. When these larvae hatch in early spring from shiny brown bands of egg masses, they all gather at a branch fork of a tree and build a communal web from which they go forth to feed on foliage. As the caterpillars grow, so does their web until the whole tree becomes covered with webbing and all the leaves devoured. The caterpillars are black with a white stripe down the back, blue spots and yellow lines. When mature, the larvae leave the web and build cocoons on fences or other natural or man-made objects. After pupation, they emerge in late June as reddish brown moths with two white stripes. Like bagworms, this pest can be controlled by destroying the tents with a stick or pruning those branches with tents. Its favorite hosts are apple, cherry, hawthorn, beech, and willow trees. Both bagworm and eastern tent caterpillar can also be treated by spraying larvae with *Bacillus thuringiensis*, acephate, carbaryl, or insecticidal soap.

The **lilac borer** *(Podosesia syringae)*, the **ash borer** *(Podosesia syringae fraxini)*, and the **dogwood borer** *(Synanthedon scitula)* are all clearwing moths in their adult stages, which look like wasps. In May, the adults lay their eggs on bark, and after hatching, the larvae begin boring into the trunk. The lilac and ash borers are aggressive and can bore into healthy wood, while the dogwood borer usually needs wounds or scars to enter cambium. Evidence of borer injury includes swelling of the bark at feeding sites, "sawdust" or frass accumulating at exit holes, wilting foliage or dieback of affected branches. After feeding and maturing, the larvae pupate inside the tunnels and emerge as adults in the spring. You can most effectively control these insects before the adults bore into the trunks. Monitoring the adults moths in May using pheromone traps, which are sex hormones that lure the males, will indicate the level of this insect population. By comparing the number of adult moths trapped with established critical levels, you can determine the best time to begin chemical treatments. Apply chlorpyrifos or lindane to the bark just before the adults are ready to bore in May and early June, two or three times at seven- to 10-day intervals. Keep dogwoods in vigorous health and avoid unnecessary wounding.

Sawflies

Sawflies are insect pests to a number of common trees. Sawflies are actually not flies, but non-stinging wasps that belong to the order Hymenoptera. The larvae of some of these insects can seriously damage evergreens such as pines by defoliating trees, while sawfly larvae of the birch leaf miner injure trees by feeding within the leaf blades. Both the **European pine sawfly** *(Neodiprion sertifer)* and the **birch leaf miner** *(Fenusa pusilla)* overwinter as pupa in or near the soil. Adults emerge in the spring and the female deposits eggs in slits made by her saw-like ovipositor into leaf tissue. The gray larvae of the European pine sawfly feed voraciously on pine needles, while the larvae of the birch leaf miner feed inside the leaf blades in mines causing leaf blotches and stripes. This injury usually leads to susceptibility to other insect and environmental problems for the birch trees. Within a few weeks the larvae mature, drop to the ground and pupation occurs. Treat sawflies with an acephate spray in May, when you first see the larvae. For birch leaf miner apply a systemic chemical such as dimethoate (toxic) as a band on the trunk.

Spider mites

The spider mites belong not to the insect class, but to the class *Arachnida* or spiders. These are especially prevalent on herbaceous plants, but cause some serious problems for trees. Common hosts include oak, elm, linden, honeylocust, hickory, mountain ash, and sycamore. Most are active during midsummer and like hot, dry conditions, especially in urban areas.

Each spider mite has a pair of needle-like stylets called chelicerae, which probe deep into host tissue and draw cell sap. This feeding action causes fine flecking or stippling of the foliage, which can become chlorotic and yellowed. Mites are tiny and difficult to see unless thousands inhabit one leaf. The visible mats of webbing over the leaf's surface make diagnosis easier. Trees constantly infested with mites become weak and susceptible to other insect pests and environmental problems. Since this is a dry weather pest, abundant watering of trees can help reduce mite populations. Spraying the foliage with water not only cools the surface, but also keeps it clean, which keeps mite populations from growing. Many chemicals are labelled for mite control, although using them persistently may create new resistant generations of mites. Apply horticultural oil spray as a dormant treatment in the spring when immature mites hatch from their eggs. Predatory mites can also effectively keep spider mites under control.

ADDITIONAL READING
About Tree Insect Pests

**Common Sense Pest Control: Least Toxic Solutions for Your Home, Garden, Pets, and Community*, Sheila W. Daar, W. Olkowski, and H. Olkowski, Taunton Press, CT, 1991.

Control Recommendations for Woody Ornamentals, G.W. Moorman, The Pennsylvania State University Cooperative Extension Service, 1991.

**Diseases and Pests of Ornamental Plants*, P.P. Pirone, John Wiley and Sons, NY, 1979.

Insect Pests: A Golden Nature Guide, G.S. Frichter and H.S. Zim, Golden, Press, NY, 1966.

**Insects that Feed on Trees and Shrubs*, W.T. Johnson and H.H. Lyon, Cornell University Press, Ithaca, NY, 1976.

IPM Update and Weather Summary Newsletter, Morris Arboretum, University of Pennsylvania, Philadelphia, PA.

**The Ortho Problem Solver*, M.D. Smith, Editor, Ortho Information Services, San Francisco, CA, ed. 1984.

Rodale's Color Handbook of Garden Insects, Anne Carr, Rodale Press, Emmaus, PA, 1979.

*Available through The Pennsylvania Horticultural Society Library

BUYING GUIDES

Beneficial Bugs, Natural Food Institute, Box 185 WMB, Dudley, MA 01570

IPM Newsletter/Bug Bulletin, Chuck Cornell, Box 1619, Westminster, MD 21157

IPM Practitioner and the Common Sense Quarterly, Bio-Integral Resource Center (BIRC), P.O. Box 7414, Berkeley, CA 94707 (415) 524-2567

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Lisa Blum teaches applied plant pathology and tree pathology at Temple University, Ambler, Pa., and consults on plant and tree problems in the Delaware Valley. She received her B.S. in Botany from Duke University and her M.S. in Plant Pathology from Cook College, Rutgers University.

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Napa, Chinese cabbage, is one of a number of Oriental crops grown at Chuck Mothersbaugh's farm in Central Pennsylvania. Chuck planted this 60- to 70-day crop on May 2. He harvested it a few days after these photos were taken on July 13.

photo by Steve Tressler

GREEN SCENE

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Longwood Gardens' Dried Flowers for the Christmas Tree. See page 8.

10.

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Front Cover: photo by Larry Albee
Back Cover: photo by Harriet Cramer

in this issue

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Life Imitates Andy Warhol, A Stinking Christmas Tree, And The Garden Cat Gets A Second Home In *Green Scene*

by Jean Byrne

I thought of Andy Warhol as Libby Goldstein and I roamed her neighborhood last January picking up Christmas trees that her neighbors were getting rid of. Somewhere around 1970 Warhol produced a hilarious and sometimes tragic movie called "Trash." Holly Woodlawn, the movie's protaganist, cruised her neighborhood for trash with which to decorate herself (e.g. with a pair of silver Joan Crawford shoes) and her campy house. Libby's interest in the trash trees was less materialistic and more environmental than Holly's. We were gathering the trees for Libby's exclusive branch bank that would provide year-round dividends in her garden. You, too, can claim garden dividends from discarded Christmas trees; just read Libby's story on page 16.

I'm always looking for something new for the holiday issue, ragging my colleagues for 21st century ideas and suggestions. Jane Pepper gave me such an item from the July issue of *Avant Gardener.** Thomas Powell, editor of that superb horticultural news service, and I have an exchange program with permission to reprint from each other's publication, so I'm going to share with you a quirky little holiday item directed against Christmas tree poachers that he printed. It should cheer anyone who has lost a tree to thieves.

"A formulation of bone marrow extract is being used by the New Jersey Turnpike Authority to deter Christmas tree poachers: the spray is odorless in the cold, but when brought indoors the trees emit a long-lasting, incredibly putrid smell," Heh, heh.

I'm still collecting unusual, *unique* horticultural ideas for the holidays for next year, so please call me or drop a line if you have any.

illustration by Lauren Baxendell

We rarely reprint articles from other publications in *Green Scene,* but after I laughed so hard when I read Duane Campbell's article about Bill the Garden Cat in *Green Prints** earlier this year, and then hit the Xerox machine to send at least five reprints of the piece to cat-loving friends, I decided *Green Scene* readers might enjoy the piece as well. Permission was immediately forthcoming from Pat Stone, who started the maverick publication *Green Prints* when *Mother Earth* vacated their headquarters in the South and moved to Madison Avenue, leaving the staff there free (ahem) to turn their hands to new horticultural ventures.

Green Prints is more a "why" than a "how-to" publication and fun for the gardening philosopher. Naturally, we hope author Duane Campbell will visit us again with more animal and gardening lore.

Three other new authors join us for this issue of *Green Scene.* Harriet Cramer, who cast her vote for gardening over her career in international banking, joins us here for the first time with some enthusiastic and encouraging words about why the home gardener shouldn't be afraid to grow ornamental grasses. And Gayle Samuels, a former newspaper and radio reporter, took time out from her other writing to garden and wonder why she didn't have any earthworms on her property. That's what I call a garden meditation for the fast tracker.

Phyllis Finkelstein of Scarsdale, N.Y., joins us in this issue with a piece about orchids for the curious but timid growers who haven't yet attempted them. Phyllis has been growing orchids for more than 20 years, and I know we haven't had the last word from her. We're already working on another story together.

*Available in the periodical section of The Pennsylvania Horticultural Society Library. To subscribe write: *Avant Gardener*, Horticultural News Service, Box 489, New York, N.Y. 10028 (Monthly, $18); *Green Prints*, P.O. Box 1355, Fairview, N.C. 28730, (704) 628-1902 (Quarterly, $14).

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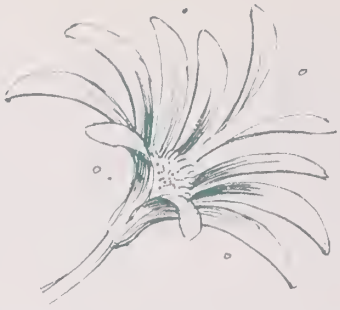

The Exuberant Garden Design Philosophy of William H. Frederick, Jr.

by W. Gary Smith

I asked landscape architect William H. Frederick, Jr., how he came to develop the concept of "exuberance" in his garden design philosophy. "I guess it's because I originally came into garden design from a 'plant' direction," he said, "as opposed to a 'design' direction. Plants were my first interest. A lot of gardens seemed stiff and sterile, because they lacked the wonderful feeling you get by having a broad palette of plants — with lots of bloom, lots of textural contrast, and lots of structure." Frederick refers to the period between 1930 to 1960 as the "Dark Ages" of American garden design, when landscape architects were "thinking a lot about form, and a lot about architecture, but

Amidst the mullein and sunflowers William H. Frederick, Jr., who never appears in the garden without a pencil in his pocket and a tape measure clipped to his b[illegible] another part of the Swimming Pool Garden.

plants just weren't very important to them." The typical plant palette included a handful of trees, a few flowering shrubs, and a very few ground covers.

Frederick, internationally known as a fine garden designer, expert horticulturist, and prolific writer, has elegantly described his philosophy of garden design in a new book, *The Exuberant Garden and the Controlling Hand*, 1992. His first book, *100 Great Garden Plants*, a classic work written more than 15 years ago, is still in print (2nd edition, 1986, Timber Press, Portland, OR). Frederick's new book expands the list to his "basic palette" of approximately 600 plants.

I was fascinated by the title: *The Exuberant Garden and the Controlling Hand.* "Exuberant Garden" seemed appropriate for our time, conjuring up images of casual but lush gardens, brimming with dramatic color and texture. But "the Controlling Hand?" *That* sent a shiver down my spine. I imagined a garden of highly disciplined evergreen hedges, clipped to within an inch of their lives, dividing prim beds of annuals from panels of perfectly manicured lawn. The romantic idea of "exuberance" seemed in conflict with tyranny of "control."

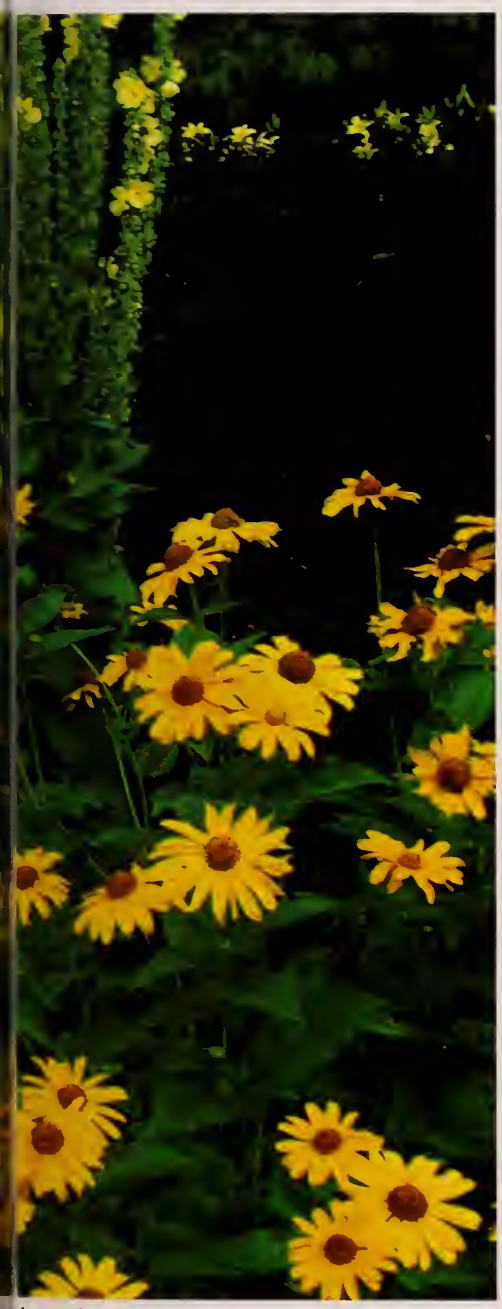

photo by W. Gary Smith

ins to the author the maroon and red theme in

So I travelled to Ashland Hollow, Frederick's garden in Hockessin, Delaware, to meet with him and to try to understand the relationship between exuberance and control. Of course the answer is in his book: "Exuberance in the garden is only successful within a framework of strong discipline." And within this framework, Frederick's controlling hands create highly animated gardens — exuberant gardens — where the plants dance and speak and touch your deepest feelings.

Frederick believes that "Americans are ready for a close relationship with highly personalized gardens," and garden design is all about creating opportunities for people to make deep personal connections with plants and nature. In fact, the garden should be a "controlled exaggeration of that which touches us most deeply in nature." Why is there such a strong emphasis on "exuberance"? Because, primarily, the function of exuberance is simply to get people to *take notice* — which is difficult today when your senses are constantly bombarded by so many external stimuli.

"The point of the whole thing," he says, "is to turn people on." First, the exuberant garden attracts your attention with a strong design statement, and then the personal connection is made by grabbing your emotions. The emotional content is very important. Two of Frederick's most effective tools for engaging the emotions are fragrance and color.

Fragrance often releases strong memories from your past, one of the most intensely evocative experiences the garden can offer. Frederick recalls an incident a few summers back, when he was dining *al fresco* at a farm house in Chester County. "We were sitting on the screen porch having dinner, and a fragrance came wafting through the night, and I said 'Damn, that's an old-fashioned *Phlox paniculata.*' It's a summer phlox that I hadn't thought about for years. But it reminded me of a house where my family and I spent one night in Concord, Massachusetts when I was eight years old and that fragrance came in through my bedroom window. So we got up from the table on the porch and went out into the blackness with flashlights. And there it was growing on the bank where it had seeded itself. I now have a piece of it growing in my garden."

The garden should be a "controlled exaggeration of that which touches us most deeply in nature."

Memories triggered by fragrance tend to be unique and intensely personal: the phlox in Frederick's garden might not trigger your own childhood memories. Color, however, releases emotions that are more universal. Cool colors such as blue and green tend to be relaxing, while hot colors such as red and orange can be stimulating. (A recent study showed that public rest rooms with bright red interiors tend to process more patrons daily than those painted soft blue.) Frederick is "enchanted by color." He says, "I think more than with scent, in my case, it's color. Color just fixes moods for me, of all sorts. I mean it can be very peaceful, it can be very passionate, it can be very arousing."

At Ashland Hollow, a walk along the "Dark Green, Gray, and White Shrub Path" is a calming experience. Best viewed at mid-summer when the plants are at their peak of interest, the mood of the garden is deepest in moonlight. Harmonious combinations of white and silvery plants are played against contrasting dark greens to create a sense of tranquility — in Frederick's words, a "very peaceful, reassuring kind of a place."

At the other extreme is what Frederick calls the "Gauguin" colors. "The 'Gauguin' colors are very arousing," he says, "some of those wild combinations of deep dark greens, chartreuse, and a splash of red. Or a dark mahogany color with peach, and a sort of a Dutch boy blue." From the Studio Garden at Ashland Hollow, one eye-catching view combines pink, red, and salmon azaleas with chartreuse hostas, played against bright blue fabric chair covers. Frederick admits that strong contrasts may turn some people off, and that color preferences can be very personal. He advises you to experiment, to "do your own thing about color, not to listen to what anyone else says. Keep trying until you get something that satisfies you."

Texture, like color, can be used in bold strokes. And maximizing the contrast between different textures is a sure way to achieve garden exuberance. For example, the fine texture of ornamental grasses plays

continued

Rich color combinations are a Frederick trademark: deep red, mauve, pale pink and salmon azaleas form a backdrop to chartreuse plantain-lily *(Hosta* 'Kabitan') and deep maroon tulips *(Tulipa* 'Queen of the Night') in a view from the Studio Garden at Ashland Hollow.

well against the bold leaf forms of bergenia or hostas. Attempting such bold effects can be fairly risky. Frederick observes that people tend to be most willing to try these bold combinations by the swimming pool. For some reason, people seem willing to "let their hair down" around the family pool.

A strong trend is developing for "letting your hair down" elsewhere in the garden, as well. "There aren't a lot of rules inhibiting us anymore," he states, "except among the people I call 'high style,' the people who read the fashionable magazines. They're still stuck in the old rut, more than anybody else." But the typical suburbanite has long ago given up the formal garden around the house, is reading new magazines filled with new ideas, and is experimenting with a much looser and more changeable look. Also, the last decade has brought an explosion of new plants, available to the homeowner through catalogs and local nurseries.

While fragrance, color, and texture are key sources of exuberance, they can't stand on their own as a *garden* without the element of structure. According to Frederick, "the overall objective of structuring is to add stability to a design and produce a picture in which all elements resolve into repose and harmony." Each plant has a particular structural quality, such as vertical, horizontal, mounded, or pendulous. "Weeping" plants are rarely used, because the pendulous form is relatively artificial. Yet Frederick admits that sometimes "a pendulous plant is useful for moving your eye around, and what you're really doing with structure is controlling what your eye does."

"I said 'Damn, that's an old-fashioned* Phlox paniculata.*' It's a summer phlox that I hadn't thought about for years. So we got up from the table on the porch and went out into the blackness with flashlights. And there it was growing on the bank where it had seeded itself. I now have a piece of it growing in my garden."

"The two things that I rely on most heavily are plants with horizontal and vertical forms," he says, "and much more heavily on those with horizontal form." Horizontally branching shrubs provide strong structure in the design composition. Woody and herbaceous ground covers, used in broad horizontal sweeps, accomplish the same structural purpose. Frederick describes ground covers as "the flow of paint on a canvas that ties together other elements in a painting."

Structure doesn't always have to come from the form of the plant. Studying the tropical gardens of Roberto Burle Marx, Frederick learned that color can be also used as a structural element. At Ashland Hollow, the wine-red foliage of 'Crimson Pgymy' barberry creates a strong horizontal line that sweeps through the garden. "It unifies a whole bunch of things," he says, "starting with a winter garden and tying it in with a stream valley garden, and providing a horizontal stabilizing background for the very vertical elements of Japanese umbrella pines at the upper pond." Because both the dark red color and the fine texture of the barberry are very uniform, the structural statement is doubly strong.

Maroon used with yellow and orange is a trademark Frederick color combination. In the swimming pool garden at Ashland Hollow, the maroon sweep of 'Crimson Pgymy' barberry highlights the light yellow of olympic mullein, black-eyed susan, and orange-yellow of *Heliopsis* 'Karat,' Ornamental grasses *(Calamagrostis* x *acutiflora* 'Karl Foerster' and *Pennisetum alopecuroides)* provide exuberance through textural contrast with the coarse leaves of the mullein, and animate the garden by catching every breeze. The composition is especially effective from mid-June to Sep-

photos by W. Gary Smith

In the Frederick Swimming Pool Garden, a structural band of *Berberis thunbergii* 'Crimson Pygmy' sweeps through yellow masses of 'Hyperion' daylily (background), *Heliopsis helianthoides scabra* 'Karat' and *Verbascum olympicum.*

Along the Dark Green, Gray, and White Path. The variegated leaves of Cornus alba 'Elegantissima' (left), *Miscanthus sinensis* 'Morning Light' (right), and *Stachys byzantina* (foreground) are most effective in moonlight. A low hedge of dark green dwarf Japanese yew *(Taxus cuspidata* 'Nana') provides structure and color contrast.

tember, coinciding with the season of most frequent swimming pool use.

Frederick is a master of garden choreography. He weaves together color and texture in a series of seasonally changing stage sets, complementing the lifestyle of the garden's human inhabitants. Between seasons, "resting spots" are programmed into the progression, where parts of the garden turn to a simple, restful green.

Certain parts of Ashland Hollow, especially in the spring, can be almost overwhelming. "I'm exhausted by the time the azaleas stop blooming," says Frederick. Exhausted from gardening? "No, not from physical labor, but from the aesthetic experience. We start off with wonderful subtle things happening in the garden all during the winter, and pretty soon the *Cornus officinalis* tunes up, and then the forsythias and narcissus join in. And then the quince, and you become more and more turned on by all of this. And then the tulips come out with these big blocks of solid paint that are punching at you from all directions. You're going 'wow, wow, wow, this is super!,' and 'I want more, more, more!' And then the azaleas come out and it all hits you right in the head. It's usually just after that time that my wife Nancy and I go off to celebrate our wedding anniversary, which is the first weekend in June, and we usually go to some wilderness place that is just green. Then I come back — and I'm refreshed —and the shrub roses are going strong, and I'm all ready to be receptive again. But, that blast from the azaleas sort of culminates the whole spring experience."

Fragrance, color, and texture for exuberance. Structure and choreography for control. *The Exuberant Garden and the Controlling Hand* sums up a philosophy of garden design developed by William H. Frederick, Jr., during 50 years of gardening in the Delaware Valley. He believes that, as a gardener, you should do whatever it takes to get "turned on" by plants and make your personal connection to the natural world. Ultimately Frederick's design philosophy, as reflected in his book, is a key to finding your way to what is right for you, in your own garden.

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W. Gary Smith is a registered landscape architect and assistant professor of Landscape Design at the University of Delaware, Department of Plant & Soil Sciences. His work involves revealing the patterns and processes of nature through landscape design.

LONGWOOD GARDENS

Waltz of the Flowers at Longwood Gardens — A Christmas tree featuring 27 different kinds of specially dried flowers is a horticultural and artistic challenge. Here's how the staff and volunteers at Longwood Gardens met those challenges.

photo by Larry Albee, Longwood Gardens

Christmas at Longwood Gardens, 1991, Music Room Tree.

by Colvin Randall

When Delaware Valley residents think of flowers at Christmas, Longwood Gardens is one of the places that comes to mind. Longwood's holiday display attracts nearly 200,000 visitors, and the Gardens' staff spends hours dreaming up ways to make each year's display better than the last.

It may be hard to top 1991's Christmas tree, an extravaganza of dried flowers that interpreted the "Waltz of the Flowers" as part of the overall theme, "Christmas Melodies." Many visitors felt that it was the most beautiful tree Longwood had ever done. For Sharon Loving, Longwood's display foreman/specialist who coordinated the project, and for Ed Broadbent, section gardener who co-supervised the decorating, it was a supreme horticultural challenge.

It took months to prepare several thousand blooms for the 18-foot Douglas fir that graced the elegant Music Room adjoining the Conservatory. Many of the flowers were grown in five different gardens at Longwood and included 100 stems of astilbes, 60 camellias, 200 caryopteris, 100 hybrid lilies, 1,000 each of dahlias, roses and zinnias. Each bloom was handled at least five times. After being cut and collected, they were hardened off in water, just as for fresh bouquets. The stems were then wired and the flowers buried in silica gel for 5-10 days, depending on the flower. When dry, the stems were removed from the gel, stuck into styrofoam sheets, and placed in a double-sealed box with more gel. The boxes were opened monthly, and the gel checked to make sure it was still absorbing moisture. Finally, the flowers were removed as needed and wired onto the tree. Twice the estimated flowers needed to cover the tree were dried, in case humidity or fading made it necessary to redecorate mid-way through the display. As it turned out, however, only some roses and peonies needed to be replaced.

Blue salvias, gomphrenas, and grapevines were also grown on the property but were air dried. This simplest of techniques involves bunching the flowers upside down in a hot, dry area like a barn. The quicker they dry, the better.

Additional blooms were purchased as cut flowers from Lancaster County (Pennsylvania) and from Texas, California, South Africa, Holland, and Australia. These included yarrows, anise hyssops, blue salvias, lemon mints, white and pink larkspurs, echinops, feverfews, tansies, ambrosias, flaxes, silver king artemesias, mountain-mints, amaranths, purple oreganos, pink pepperberries, and 'Pink Ice' proteas. Flowers were purchased either fresh or dried, but everything was ultimately dried.

In all, 300 pounds of silica gel were required, reactivated four times by heating. Cutting and drying flowers began in May, and at least seven employees and volunteers worked more than 300 hours on the drying alone. Sharon Loving notes the silica gel process is a "pain," but it preserves delicate colors the best. Freeze drying, she thinks, would be easier if available.

It took four staffers about seven days to decorate the tree. Two days were spent evenly distributing tiny white lights throughout the Douglas fir then draping it with garlands of gilded grapevine. Another five days were devoted to wiring the flowers onto the branches. The decorators took great pains to hide the wires and stems so the mechanics wouldn't show. Decorators would place one type of flower throughout then fill in with other varieties. The most delicate flowers — camellias, roses, peonies, zinnias — were added last to the tips of the branches.

The 1991 floral tree was an overwhelming success, well worth the hundreds of hours of effort. Visitors were amazed at the delicate, lifelike quality of the dried flowers in both pastel and vibrant hues.

1992 at Longwood Gardens

This Christmas, "Around the World with St. Nicholas" will focus on Santa legends in a variety of indoor garden settings. The Music Room tree will be red, gold, and green (but *not* in dried flowers), the Federated Garden Clubs will participate in tree and wreath competitions. Topiary reindeer will "fly" indoors over cyclamens, tulips, and, of course, poinsettias. In the Ballroom, 168 musical programs will add to the festivities.

Outdoors, 200,000 lights will bloom each evening from 5-9 pm, while musical fountains play in the Open Air Theatre, weather permitting.

Longwood's holiday display runs: **December 4 through January 4, 10 am-9 pm daily. Cost**: $10 for adults, $2 for children 6-14, free for children under six. Group rates: $8 for 30 or more adults. Phone: (215) 388-6741.

Will it top last year's breathtaking success? "Of course," says Sharon Loving confidently. "This year, Santa's helping!"

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Colvin Randall is a graduate of the Longwood Program at the University of Delaware. He has worked at Longwood Gardens since 1977, where he is Public Relations manager. He also designs Longwood's fountain programs.

continued

Some Other Places to Visit For a

by Joseph Robinson

photo courtesy of Winterthur Museum & Gardens

photo courtesy of Philadelphia Museum of Art

photo courtesy of Historic Germantown Preserved

photo courtesy of Brandywine River Museum

Top left: The Kershner Parlor of Winterthur. A Pennsylvania-German Christmas awaits visitors to the parlor during Yuletide at Winterthur, complete with tree decorated with fruit and cookies. **Top right**: Cedar Grove (1989). One of the seven Park Houses on the Christmas Tour. Each one is decorated by a Philadelphia area garden club; this one was decorated by Garden Workers. **Bottom left**: A warm fire in Cliveden's parlor welcomes visitors to the Historic Germantown Holiday House Tour. **Bottom right**: A Mummer, part of Philadelphia's traditional New Year's Day parade, comes to Brandywine River Museum in the guise of one of their witty, imaginative critters. All the Museum's holiday ornaments are created from natural materials by Museum volunteers.

Horticulturally Happy Holiday

PLACE	EXHIBIT DATE	FEATURE	CHARGE
The Association of Historic Germantown Houses 6401 Germantown Ave. Philadelphia, PA 19144 (215) 884-4268	December 5-6 December 12-13	Holiday House Tours. Stops include Wyck, Cliveden, Upsala, and nine other historic homes. Harp recitals and recorder concerts at some sites.	$15.00 Shuttle bus: (optional) $3.00 — no bus Sundays
	December 8-11	Festive Group Tours. Catered lunch, private tour.	$25/person 15 person minimum
Bowman's Hill Wildflower Preserve Washington Crossing Historic Park Rte. 32, 2.5 miles south of New Hope. (215) 862-2924	December 5-31	Indoor Christmas Tree Forest Exhibit featuring wreaths decorated with handcrafted ornaments made from natural materials.	No admission charge
	December 4, 7-9 pm	Exhibit Preview & Reception. Silent auction of exhibited wreaths.	No admission charge
Brandywine River Museum US Rte. 1 Chadds Ford, PA 19317 (215) 388-7601	November 27-January 10, 9:30-4:30 Extended hours to 8 pm Dec. 26-30 for this exhibit	A Brandywine Christmas. Special features include a collection of 40+ watercolors by illustrator Charles Santore; *Dolls in Winter,* antique doll collection of Ann Wyeth McCoy; and intricate 'Christmas critters,' detailed natural ornaments fashioned by volunteers. The Museum's fabulous gallery filled with working O-Gauge trains, including passenger service and Brandywine's famous 60-car freight train (stretching over 70 feet!), is a Must-See.	Adults: $5.00; Students & senior citizens: $2.50; Children under 6 years: Free; Groups: 15 person minimum (reservations required)
Eleutherian Mills Hagley Museum & Library Rte. 100 at Rte. 141 (entrance off Rte. 141) Wilmington, DE 19807 (302) 658-2400	December 4-January 3 December 21, 22, & 23 5:30-8:00 pm	Holiday visits to the festively decorated du Pont family home offered daily except Dec. 25 & 31. Special candlelight tours including caroling and instrumental music.	Adults: $9.75; Students & senior citizens: $7.50; 6-14 Years: $3.50; Family: $26.50 Adults: $9.00; 14 and under: $5.00; Advance reservations required.
Fairmount Park House Tours Park House Guides Philadelphia Museum of Art Box 7646 Philadelphia, PA 19101 (215) 787-5431	December 4-9 10 am-5 pm	Park House Christmas Tours. "A Christmas Party" appears in each of seven 18th century houses: A 'Christmas Wedding' at Mt. Pleasant, a 'Caroling Party' at Sweetbriar, and five more. Houses decorated by Philadelphia area garden clubs.	Adults: $12.00; Children: $5.00 Shuttle trolley (optional) Adults: $5.00; Children: $3.00
(215) 787-5449	December 3, 4, 7, 8, 9 evening only	Special holiday candlelight tours.	Advance reservations required.
The Festival of Trees Brush Gallery Fine Building Washington Road Princeton, NJ (609) 258-3340	Dec. 3-6 (Dec. 3-4) 12 - 6 pm (Dec. 5) 10 am - 3 pm "Gala reception" 7-10 pm (Dec. 6) 10 am - 4 pm	Display of theme trees and wreaths underwritten by area businesses and executed with great imagination by talented local designers. Boutique of unusual ornaments and gift wrappings. Continuous silent auction.	Admission free daily. Dec. 5 Gala Cocktail Reception patrons $75. Proceeds from silent auction and Gala benefit Princeton-Blairstown Summer Camp for Children (from New Jersey inner cities).
Four Lanes End Garden Club (Langhorne area) Contact: Ms. Carmela Verderame (215) 757-7492	November 19 11:00 - 9:00 pm	"Four Lanes End Garden Club 33rd Annual Holiday House Tour & Tea" features a self-guided tour of holiday-decorated homes and churches, and a formal tea at Friends Meeting House. Art sale.	$7.00; $6.00 advance sale.
Horticulture Center Horticultural Drive W. Fairmount Park Philadelphia, PA 19131 (215) 685-0096	After Thanksgiving to mid-January. 10:00 - 4:00 pm December 4-9	Poinsettias, Christmas cactus and other holiday plants. The Center is on the Fairmount Park House Christmas Tour. "Winter Wonderland" includes cafe, holiday boutique.	Donation $1 Fairmount Park House Tour charges apply.

continued

Some Other Places to Visit For a Horticulturally Happy Holiday

PLACE	EXHIBIT DATE	FEATURE	CHARGE
Newtown Historic Association P.O. Box 303 Newtown, PA 18940 (215) 968-4004	December 5 10:00 - 5:00 pm	"Christmas in Historic Newtown" features self-guided tours of six period homes & five public buildings decorated for the holidays. Features include Bird-in-Hand, the oldest frame house in Bucks County (c. 1686), antique toys & fire equipment on display at firehouse.	$10.00 $9.00 groups of ten or more. Shuttle trolley included.
Pennsbury Manor 400 Pennsbury Memorial Rd. Morrisville, PA 19067 (215) 946-0400	December 10 5:30 - 9:00 pm	"Holly Night." Candlelight festivities, Yule log bonfires, seasonal music & carols, hot cider. Self-guided tours. Open-hearth cooking in Bake & Brew House.	Adults: $5.00 Children: $3.00
The Pennsylvania Horticultural Society 325 Walnut Street Philadelphia, PA 19106 (215) 625-8250	December 2-30 9:00 - 5:00 pm (Closed December 24-25) Opening & Reception December 4 5:00 - 7:00 pm	"Rocking Horse Holiday" exhibit features wooden carvings of rocking horses fashioned after carousel horses. Carvings are suitable for small riders, and were created by Philadelphia woodworker Carl Dahlgren.	No admission charge; please RSVP for reception.
Tyler Arboretum 515 Painter Road Media, PA 19063 (215) 566-5431 (215) 566-9134 weekends	December 12 10:00 - 11:30 am December 12-25 10:00 - 4:00 pm December 20 1:30 - 3:30 pm	"Holly Ramble." Guided tour of the Arboretum's Holly Collection. Annual Holly Display. Over 40 varieties from Arboretum Collection. "Christmas Tree Ramble." Guided tour of Arboretum's 85-acre Pinetum. Daily self-guided Pinetum tours.	Included in Arboretum admission: Adults: $3.00; 3-15 years: $1.00; Under 3 years: Free. Members admitted Free.
Winterthur Museum, Gardens & Library Route 52 (6 miles NW of Wilmington, Delaware) (302) 888-4600 (800) 448-3883 (302) 888-4907 TDD	November 11 — January 3 10:00 - 5:00 pm Sat/Sun to 7:00 pm Extended evening hours December 1, 2, 3, 8, 9, 10 6:00 - 9:00 pm	Winterthur's Yuletide Tour. Guided tours of rooms that recreate winter holiday celebrations of early America. Settings include "New Year's Calling" at Thomas Jefferson's White House; A NY Historical Society "St. Nicholas Day Dinner" (c. 1810); A "Creole Reveillon after Christmas Eve Mass" in New Orleans; and "Hanukkah in early 19th century New York City."	**Day** Seniors/Group: $7.50; Adults: $9.00; 12-18 years: $7.50; 5-11 years: $4.50; Under 5 years: Free **Evening** Seniors/Group: $11.00; Adults: $12.50; 12-18 years: $11.00; 5-11 years: $8.00; Under 5 years: Free Member admissions lower. Reservations suggested but not required.

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Joe Robinson, editorial assistant in the Publications Department at the Pennsylvania Horticultural Society, says he can't wait for the holidays so he can check the exhibits he has written about here.

photo courtesy of Historic Germantown Preserved

Pineapples, a symbol of hospitality, add a festive touch to Maxwell Mansion's holiday decor.

ADONIS IN THE GARDEN

A Plant with Secrets and a Lengthy Past. The authors explain why.

by John and Janet Gyer

photo by J. Gyer

***Adonis amurensis* 'Fukujukai' bloom cluster, Fern Hill Farm, 1992.**

Norman Deno, professor emeritus of Chemistry at Pennsylvania State University, has spent his retirement years developing experimental data that define the special temperature and time cycles needed to germinate more than 2,000 native plant and exotic rock garden species.* In one of his talks about techniques for germinating recalcitrant seeds we heard him mention that no seed of *Adonis amurensis* had ever germinated for him. He had tested seeds from several plant society seed exchanges. Since his seeds were received dry and had been stored for some time, he concluded that adonis seed died if it dried out. Deno was looking for a source of fresh, moist seed for experiments. We thought we could help.

Adonis at Winterthur

We had seen *Adonis amurensis* in several gardens. The largest patch is near Wilmington, Delaware, on the March Bank at Winterthur Museum Garden and Library, the home of the late Henry Francis du Pont. The Garden Department at Winterthur permitted us to study its plants and collect any seed that might form for Deno's experiments.

Adonis amurensis has large yellow flowers, much like the buttercup, whose family it shares (Ranunculaceae). It has no common name that we have ever heard. Most gardeners just call it adonis, even though this may cause confusion with other species such as *Adonis vernalis* that are also grown in gardens. Adonis leaps into bloom at Winterthur in February or early March. It beats even the earliest crocus and stays in bloom until after the last winter aconite has faded.

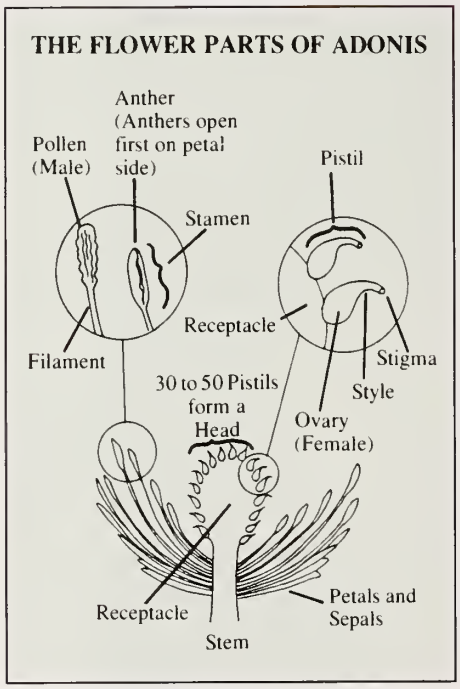
Adonis is native to Eastern Siberia, Northeastern China, Korea, and Japan, but it naturalizes well in North American deciduous woodland landscapes. When at home in Japan it grows in loose, well-drained, high-humus, acidic soils in cool situations, often on the north or east slopes of a deciduous forest. It does not like heavy clay or drought.

continued

*(Dr. Deno has published his results in *Seed Germination Theory and Practice,* $15.50, available from Norman C. Deno, 139 Lenor Drive, State College, PA 16801.)

photo by John Gyer

Section of *Adonis* 'Fukujukai.'



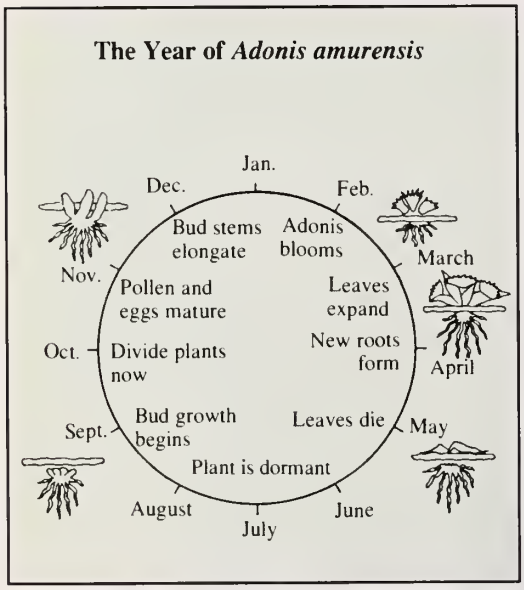


photo by J. Gyer

Adonis 'Beni Nadeshiko' bloom cluster at Longwood Gardens, 1992.

The adonis in Japan

Wild adonis has been tamed by the Japanese into elegant garden cultivars. The first record of horticultural use dates from the 17th century. The Japanese lunar calendar put the New Year celebration near the first day of February, a time when wild adonis sprinkled the awakening hillsides with flowers of sunlight gold. It became popular to bring the plants indoors for a New Year decoration, a tradition still followed nearly 400 years later. Over the years hybridization and selection of attractive seedlings and natural mutants have produced today's cultivars.

The incentive to propagate adonis commercially increased as the Japanese population grew and the adonis habitats were destroyed. Most adonis is propagated asexually, by careful division of dormant crowns. Cultivation of adonis as a crop began roughly 100 years ago. Then as now, both Japanese and export markets were served by adonis raised beneath the mulberry trees that provide forage for silkworms. One cultivar, 'Fukujukai,' dominates their home and export markets, even though there are at least 38 other known varieties. The March Bank planting of 'Fukujukai' at Winterthur was put in before 1909, about the time Japanese exports began. It is probably the oldest planting in the United States.

Adonis's cycle

We watched 'Fukujukai' grow through a full season. It began to flower, as usual, about mid-February. The first blossoms are supported by a short stem ensheathed by the still folded leaves. As the plant matures, parsley-like leaves expand and two or three branches flower to prolong the bloom season.

Numerous new roots begin to grow from the crown just after the leaves begin to expand. As they grow, their cells rapidly fill with starch and become the primary food storage organ of the plant. An individual root funcitons for only two seasons. The roots are 1/16 to 1/8 inch diameter, 6 to 12 inches long, straight, generally unbranched, and brittle. The relatively small root surface area suggests that adonis depends on mycorrhizal fungi for growth. This is consistent with its preference for moist, but well-drained, light, humus-rich acidic soil.

Small buds that contain next year's flowers have formed on adonis crowns by the time the foliage dies down in June and the plant enters its summer dormancy. Dormancy seems to be triggered by long days. Consequently, plants should be set well away from security lights or street lighting that could artificially produce long days in early spring and trigger premature dormancy. During their summer dormancy the bare spot left in the garden can be covered by a shallow rooted perennial such as *Begonia grandis.* The perennial begonia starts its summer-to-fall growth cycle just as adonis foliage dies down. Adonis flower buds are well formed by the end of October. At this stage, pollen and egg cells are maturing in preparation for a quick start when soil temperature reaches about 45°F in February.

Through the summer adonis needs only enough moisture to prevent root desiccation. The rains and lower soil temperatures of autumn begin bud growth. This is the best time to divide the plant. If divided earlier, the wounds may not heal quickly and, if divided later, the flower buds are so large that damage is inevitable. Gently lift two- or three-year-old plants, wash the roots free of dirt, and cut the crown into two- to four-bud sections. Replant with the buds one inch or less below ground level. Water well to reestablish soil/root contact.

Autumn is also the time to pot adonis plants for the house. Leave the potted plants outside until late November. Bring them indoors two to three weeks before you want bloom and stand back. If forced plants are kept cool and given light and water, but not subjected to long days, they can regain strength when set into the spring garden. Although a forced plant may bloom in the garden the next year, an individual plant should be forced only every other year.

Adonis flowers are perfect

Adonis flowers have numerous male stamens and a cluster of 30 to 50 female pistils in a head at the center of the flower. Even so, an individual flower is unlikely to fertilize itself. The pistils are receptive as soon as the flower opens, but the stamens do not ripen and shed pollen until the pistils

have matured past the receptive stage. At Winterthur we dusted pollen from older flowers onto newly opened buds and waited for the heavy seed crop that was sure to come. It did not. The petals dropped, but the seeds did not enlarge. In June when the foliage dried into compost and the plants went into their summer dormancy, the heads held no seed.

Why, we asked horticulturists who had watched adonis for years, should such obviously healthy plants be so reluctant to reproduce sexually? They said it needs a mate. They thought that years of propagation by division had produced widespread clones that are self-sterile. Plants are self-sterile when their stigmas are, in effect, allergic to the flower's own fertile pollen. Pollen from a flower of a different clone grows normally and produces seed. We set out to find other adonis clones.

The search for other clones

The U.S. National Arboretum in Washington, D.C. gave us permission to study their collection of adonis cultivars. We found one plant producing seed and surrounded by several seedlings. This self-fertile plant demonstrates that adonis is not self-sterile and that crossing between clones is not an absolute requirement for seed production. We took some pollen from this fertile plant and dabbed it on Winterthur's 'Fukujukai.' No seed. 'Fukujukai' is sterile.

Why should the most common cultivar be sterile when the species produces good seed and seedlings in its native home? We needed detailed observations of adonis's behavior over a long period of time. We found records of such observations at the National Agricultural Library, USDA, at Beltsville, Maryland. People had published on seed germination in Hungary, described details of pollen structure in Bulgaria, counted chromosome numbers and illustrated physiological details in Russia, described adonis culture and genetics in Japan, and listed cultivars in England. Two authors agreed that 'Fukujukai' is sterile, but despite nearly a century of close observation, no one had said why.

We needed to make our own observations. But what should be observe and how? At this point we were introduced by Dr. Nicholi Vorsa, associate research professor at the Blueberry and Cranberry Research Institute of Rutgers University. He suggested staining pollen to assess how extensively adonis was bothered by infertility. If a pollen grain takes up stain and looks red under the microscope, it may be fertile. If it does not, it is dead. Only 5% of 'Fukujukai' pollen stained, while 92% of the fertile plant at the National Arboretum stained. We found several other cultivars with very low pollen fertility, two isolated plants at Winterthur with 30% to 50% fertile pollen and, at a private garden, a plant with red flowers and minute pollen grains that took up no stain at all. Adonis cultivars have serious fertility problems.

We needed to look at adonis chromosomes. To do this we had to wait until late October when meiosis began in the anthers of developing flower buds. This gave time to review the reports of others who studied adonis. Botanists agree that adonis has a basic set of eight chromosomes. Most adonis populations in nature are diploid: i.e. they carry two basic sets or 16 chromosomes. One population on the island Hokkaido in Japan has 32 chromosomes or four times the base set number. It is tetraploid.

The fertile National Arboretum plant has 32 chromosomes, the tetraploid number. 'Fukujukai' has 24 chromosomes, three times the base set number of eight. It is triploid. Although triploids can grow successfully, the uneven number of chromosome sets produces genetic irregularity during the complex cell divisions of meiosis that create eggs and pollen. This irregularity usually leads to sterility.

Triploid adonis comes from crosses of diploid and tetraploid plants, such as those reported growing in Hokkaido. Since they are sterile, the triploid flowers will last longer than either parent because there is no hormone signal from developing seeds to make them drop their petals. Japanese gardeners undoubtedly noticed this trait and began to propagate 'Fukujukai' extensively.

This study of adonis genetics with all its tricky quirks came from a simple question, "Why didn't 'Fukujukai' form seed for Deno's experiments?" The pursuit of an answer led us to helpful, interesting people and wonderful gardens. It gave us a much greater understanding and respect for the complexity of nature. And it demonstrated to us the pleasure not of just growing plants, but of becoming familiar with them as individuals. We found that the cultivars of adonis are a great group of plants to grow and enjoy as they herald the end of winter.

Nurseries That Offer Adonis

Kurt Bluemel, Inc. Nurseries: 2740 Greene Lane, Baldwin, MD 21013; 301-557-7229 (No named varieties)

Busse Gardens: Rt. 2, Box 238, 635 E. 7th Street, Cokato, MN 55321; 612-286-2654 (No named varieties)

Andre Viette Farm and Nursery: Rt. 1, Box 16, Fishersville, VA 22939; 703-943-2315 (No named varieties)

White Flower Farm: Litchfield, CT 06759; 203-496-1661 (No named varieties)

Places To See Adonis

The Arnold Arboretum of Harvard University: 125 Arborway, Jamaica Plain, MA 02130-3519; 617-524-1718

Morris Arboretum of the University of Pennsylvania: 9414 Meadowbrook Ave., Philadelphia, PA 19118; 215-247-5777

Scott Arboretum of Swarthmore College: 500 College Ave., Swarthmore, PA 19081; 215-328-8025

United States National Arboretum: 3501 New York Ave. N.E., Washington, DC 20002; 202-475-4815

Winterthur Museum & Gardens: Winterthur, DE 19735; 302-888-4600

Definitions Used

A plant is:

Self-Fertile when seed is set by pollen from the same plant.

Self-Sterile when pollen does not germinate on a stigma of the same plant, or pollen tubes do not grow through a style on the same plant.

Sterile when pollen, egg, or embryo abort. Several genetic malfunctions, including triploidy, can cause this.

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John and Janet Gyer garden with native plants at Fern Hill Farm where they also raise Dr. Martin pole lima bean seeds. John and Janet are frequent contributors to *Green Scene.*

WHERE DO OLD CHRISTMAS

To An Exclusive Branch Bank

by Libby J. Goldstein

Of all Libby Goldstein's recycling projects, the Christmas tree branch bank is the most profitable, functional and versatile. The capital arrives in late December and early January, but it's actually deposited in February and March. She uses the proceeds all year.

The Philadelphia Department of Streets schedules a Christmas tree pick-up after the holidays. They take the trees to Fairmount Park's Recycling Center to be chipped and composted. As soon as my neighbors begin putting out their trees, however, I roam the neighborhood and take the freshest and fullest from the street. Sometimes I collect whole trees. I cut the branches of each tree leaving 1- to 2-inch stubs. I then stack the trunks upright in a corner of the yard to await trellis building time in March.

When the soil at Southwark/Queen Village Community Garden was still very compact, I'd turn the trees upside down and plant them, pointed ends down, every four feet. (Now that our soil is lovely and loose, it's just as easy to plant them butt down.) Once the trunks are well set, you can run string between the trees, supporting it on the branch stumps. If you've lots of time and artistry, you can arrange your string to look like spider webs or modern weavings. This year I built a four-foot-wide trellis by hot-gluing, weaving and tying grapevines to two five-foot tree trunks. My indeterminate tomatoes are growing up and around it. It didn't make a lot of sense to buy one of those swell mail order stick-and-vine trellises when I could make my own.

Sometimes, I just drag the discarded trees home, "prune" them on the sidewalk, carry the branches into the back yard and leave the trunks at the curb for other recyclers or for the City pick-up. Cut evergreen branches make excellent winter mulch over perennial beds, artichoke plots, strawberries, tender perennials and herbs that aren't reliably hardy like some of the oreganos. And they're in season exactly when you need them, when the ground has frozen. If you choose your trees well, their winter quilt turns dull wintery beds all green and cheery. Right outside the glass doors in my kitchen is a plot under the bird feeders where I usually grow caladium 'White Christmas' and elephant ears *(Colocasia esculenta)* in summer. After they die back, it becomes a sunflower seed desert. There's no reason to mulch it, but I lay green branches over it anyway. All the evergreens I ever tried to grow there died of sunflower hull suffocation. It looks much less desolate with its cover of evergreen boughs. Since they're mulched with sunflower hulls **and** Christmas tree branches, some of the caladiums actually come back for another season or two.

Evergreen branches act like a down quilt. The small spaces between the needles and between the branches themselves hold lots of air. The air pockets insulate the soil; they keep the temperature fairly even and prevent the alternating freezes and thaws that can heave plants right out of the ground. Unlike leaves and even compost, fir branches don't pack down when they're wet. The soil and your plants' roots can breathe, and it's lots harder for fungi, molds and diseases to rot your rarest and most loved specimens. The mulch slows down evaporation, too. That's been really helpful these last winters when we've had virtually no snow and hardly any rain. Perennials, and shrubs, especially evergreens, need soil moisture in winter as well as during the growing season. If you can't rely on a snow pack to cover your garden, you can rely on Christmas tree branches.

Bank deposits

I start removing my branches in February and March to let the soil warm up and the bulbs grow straight green leaves. Most bulbs will come up right through the mulch, but a few of them get squished by growing right into a branch and don't get enough light to green up when they come up. That's when I make my branch bank deposits. Luckily, there's plenty of room for brush under my blueberries and in my two raspberry beds. The berries just love a permanent, acid mulch. You can tell from the size of the fruit that the plants don't suffer at all from low soil moisture even though we've had 25% less than normal precipitation in the last two years, and I rarely water them.

And withdrawals

I never have to buy supports for sprawling herbs and perennials. I use the brush in the berry beds. There's always enough for mulch, props and for other stuff. It doesn't really matter whether the branches have lost their needles or not. Needles add support, and the stems I weave through the brush hide them. Theoretically, one ought to put brush around the plants as they emerge from the soil so they can grow upon it from the beginning. I never get around to doing that. I'm too busy starting early vegetables in the cellar and in my community garden plot. I start propping when plants start flopping. It works perfectly well.

I did plant my brush first when I was growing short varieties of peas and snow peas. I'd carry a load of used Christmas tree brush (preferably with lots of needles on it) to the community garden and plant it in rows a foot apart in the pea patch. Then I'd plant a row of peas on each side of the brush. (You can imagine the questions I had to answer about what I was growing 'til the peas came up.) The peas wound through the brush up into the air where they could get plenty of sun and avoid any nasty soil-borne disease organisms. The rough brush *usually* deterred pea baby eating sparrows. (Now that I grow my peas up the trellis, I have to cover the seedlings with bird net until they get older and less toothsome.) After pea season, I'd use the brush to prop up prostrate pepper plants.

The branch bank also feeds the berry beds. Over the years, the evergreens do decompose. Since the brush is mostly hid-

TREES GO?

den during the growing season, I frequently throw other plant wastes on it. In a small yard, it's hard to keep a proper composting operation going. And when a person is growing a supposedly dwarfed Esopus Spitzenburg apple tree and two 'Golden Muscat' grape vines, she has a lot of brush and vine to get rid of all season . . . into the branch bank. They're young and green and, given enough rain, they rot fairly fast. After first bloom, I usually cut back my white crepe myrtle *(Lagerstroemia indica)* to encourage another flush of fantastic fluttery flowers for the fall. I always think I should put the branches back under the crepe myrtle to put the nutrients back into its bed, but it looks too messy. I give the crepe myrtle's nutrients to the branch bank instead.

By season's end, the evergreen brush that has been propping perennials, peppers and other prostrated plants is dry and needle-free. We use some as kindling for our annual Southwark/Queen Village barbecue fires, and I arrange some in a basket with dry, woody grape vines for fireplace kindling. (When it's too warm for a fire, the kindling basket may turn into an arrangement of dried herbs and flowers camouflaging hearth and brush.)

I once bought one of those little electric chippers so I could get rid of my brush piles. It ran on electricity, made awful noise and didn't really do the job. I stashed it under the cellar stairs at the end of the season and haven't looked at it since. The branch bank is a much better solution. I don't send yard waste to the landfill. I have lots of plant supports and kindling right at hand. And the berries just love their year round quilts.

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Libby J. Goldstein, recycling coordinator for her block in Queen Village and chair of Southwark/Queen Village Community Garden, is a food and garden writer.

photos by Jackson Photography

Top: Crocuses push through their winter quilt. Trees for a branch bank withdrawal to be deposited in the raspberry patch. **Middle**: Cut evergreen branches make excellent winter mulch over perennial beds. **Bottom**: Branch banking turns to gold as it provides a permanent mulch for 'Royalty' purple raspberries.

ORNAMENTAL GRASSES FOR THE

by Harriet L. Cramer

The author speculates about why ornamental grasses haven't, up until now, been more popular with nonprofessional gardeners.

photos by Harriet L. Cramer

One of my neighbors, a well-known and highly accomplished gardener, stopped by my house last October to look at my perennial border. She admired in particular the buff-colored feather reed grass and deep red switch grass. I asked if she would like a section of the grasses, which I intended to divide the next spring.

"No," she replied quickly. "Thank you. Definitely not, no. I don't want them, no!" She refused my offer quite firmly; she was not just being polite. She reacted as many of my gardening friends do and revealed the irony of ornamental grasses' new found popularity: the average gardener, even the average experienced gardener, while intrigued by these plants, is reluctant to use them to any significant extent.

I asked if she would like a section of the grasses, which I intended to divide the next spring. "No," she replied quickly. "Thank you. Definitely not, no. I don't want them, no!"

There is no question but that ornamental grasses are horticulturally *au courant.* Thanks largely to the creative design work of the Washington, D.C. firm of Oehme, van Sweden and Associates, along with the introduction of more and more new grasses by Kurt Bluemel and other nursery professionals, ornamental grasses have earned respect among horticulturists and landscape architects. Great sweeps of fountain grass *(Pennisetum alopecuroides)* and feather reed grass, planted along with *Sedum telephium* 'Autumn Joy' and *Rudbeckia fulgida* 'Goldsturm,' have become so familiar in public and quasi-public gardens that they now seem almost a cliche, albeit an attractive one. Lectures and articles about ornamental grasses are ubiquitous and well-attended. Why, then, have so few nonprofessional gardeners been willing to experiment boldly with these grasses?

There are several reasons why some gardeners are reluctant to use ornamental grasses. There's a popular assumption that these plants are all highly invasive, that once allowed into a perennial or shrub border they will soon overwhelm it and the sole remedy will be a move to another neighborhood. While some grasses can be a problem because of their invasive or self-sowing tendencies, most are decidedly not (see invasive and noninvasive lists with this article). Some gardeners shy away from ornamental grasses, moreover, because they envision a large stand of giant reed grass *(Arundo donax),* aptly described by garden writer Allen Lacy as looking like "... corn on steroids,"* or a field of eulalia grass ..*(Miscanthus sinensis)* blowing in the wind. Few of us could or would commit our residential gardens to such a vision.

Nor does a visit to the local nursery motivate one to plant ornamental grasses. While the better nurseries do carry an increasing quantity and variety of grasses, it's not their fault that a grass sitting in a plastic pot often looks uninspiring. When some of us are at our most impulsive at the local garden center, in the hopeful days of early spring, many ornamental grasses have yet to show any signs of new growth.

The recent surge in articles, books and lectures about ornamental grasses has been both enlightening and frustrating in this

**The Garden in Autumn,* Allen Lacy, The Atlantic Monthly Press, New York, N.Y., 1990

PERENNIAL AND SHRUB BORDER

Far left: Bent awn plume grass in foreground *(Erianthus contortus);* in the midst of a mixed border, its uplifting effect is obvious for months. **Above**: *Pennisetum alopecuroides* 'Moudry' will self-sow. **Left**: Hakone grass *(Hakonechloa macra)* good for the semi-shade garden. Striking when planted with large-leaved hostas, ferns and hardy fuchsias.

regard. Perhaps because of the sensual and primordial nature of grasses, writers and lecturers tend to soar into the lyrical stratosphere and leave much practical knowledge behind. While one is left with the impression that these plants are worthy indeed, how to successfully integrate them into the garden remains a mystery.

That's unfortunate, because ornamental grasses certainly deserve to be used more widely by residential gardeners in a greater variety of landscape situations. Grasses have vast and underutilized potential as rock garden plants, in a woodland setting, as a screen or hedge, as ground covers, as container plants, and in meadow and seashore plantings, to name just a few possible uses.

One of the most effective ways to use ornamental grasses is in the perennial or shrub border. Grasses in a mixed border serve many practical and aesthetic purposes. They help integrate a garden by pulling different color foliage and flowers together, they intensify brightly colored flowers, they serve as a foil for other strong foliage plants, they draw the eye upward, they hide unsightly bulb foliage, and they extend the garden's season by their vivid fall colors and winter stature.

Grasses for the front of the border

Unless otherwise noted, these grasses grow in full sun. Like other herbaceous plants, ornamental grasses come in a variety of different shapes, textures, sizes and foliage colors. The combinations possible are thus virtually limitless. In the front of the border, low-growing grasses like striped tuber-oat grass, mosquito grass, the ornamental fescues, Japanese blood grass, and miniature fountain grass all work well. The fescues are especially attractive when combined with red, pink and/or yellow flowering annuals and perennials. The combination of *Festuca ovina glauca* 'Elijah Blue,' *Coreopsis verticillata* 'Moonbeam' and *Salvia* 'Raspberry Royale' was outstanding in my garden from mid-June until frost; this particular fescue holds up very well in our hot, dry summers. Japanese blood grass looks best when planted in groups of at least three to five plants (the more the better); it should be backlit by the sun for the most dramatic effect, and good drainage is essential. Japanese blood grass is highly effective when planted next to blue-flowering, gray foliage plants like *Buddleia* 'Lochinch' and *Caryopteris* 'Dark Knight.' The recently introduced miniature fountain grass grows only 10-11 inches tall, is reliably hardy through Zone 6, does not self-sow, and in all other respects looks like *Pennisetum alopecuroides.*

Why, then, have so few nonprofessional gardeners been willing to experiment boldly with these grasses?

For a semi-shaded garden, hakone grass and golden-variegated hakone grass would be noteworthy additions. The maximum height of hakone grass is 12 in., and though it is very slow growing it will over time form a gracefully arching mound. The foliage in the straight species is bright green, while that of the cultivar is striped cream-white to greenish-yellow. Hakone grass is one of the few true grasses able to flourish in shade, and it is especially striking when planted with large-leaved hostas, ferns and hardy fuchsias.

Grasses for the middle of the border

It is in the middle of a perennial or shrub border that the versatility of ornamental grasses is most apparent. As North Carolina garden designer Edith Eddelman said, "Gardens need grasses to lift them up and out and above themselves."** The mid-sized (3-5 ft. tall) grasses, especially the more erect ones, force our vision upwards and thereby enhance the aesthetic breadth of the garden. The same effect can be achieved with foxglove, purple loosestrife

** *The Amber Wave,* Carole Ottensen, McGraw-Hill Publishing Co., New York, 1989

continued

and gayfeather, but only as long as they keep flowering, a few weeks at best. When upright ornamental grasses like switch grass, spodiopogon, themeda, little bluestem, and bent-awn plume grass are used in the midst of a mixed border, their uplifting effect is obvious for months.

Ornamental grasses are also useful for increasing the intensity of strong colors in the garden. When planted in front of the straw-hued feather reed grass, for example, the hot colors of Mexican sunflowers, zinnias or gaillardias will be far more prominent. The color and vertical habit of feather reed grass also works well with

Grasses have vast and underutilized potential as rock garden plants, in a woodland setting, as a screen or hedge, as ground covers, as container plants, and in meadow and seashore plantings, to name just a few possible uses.

Cleome 'Rose Queen,' 'Verbena bonariensis (a strange but wonderful plant), *Spiraea* 'Anthony Waterer,' *Monarda* x 'Marshall's Delite,' *Aster novae-angliae* 'Purple Dome,' *Eupatorium maculatum* 'Gateway,' and with *Salvia elegans,* though this by no means exhausts the possible combinations.

Certain grasses will also ease the transition in the middle of a border from one color or texture flower or foliage to another. These grasses thereby help integrate the garden, making it appear more natural and harmonious. A planting of one or more of the smaller eulalia grasses is useful in this respect. Formosan miscanthus, dwarf miscanthus, *M. sinensis* 'Purpurascens,' *M. sinensis* 'Arabesque,' and *M. sinensis* 'Nippon' all stay within 3-4 ft. tall. The above mentioned feather reed grass is also valuable for transition in the garden, as are blue switch grass and some of the fountain grasses. Blue switch grass has steel blue foliage, remains erect event in a strong rain, and attains a maximum height of 3 ft. (4 ft. with influorescence). While those fountain grasses that self-sow should be avoided in a mixed border, *Pennisetum alopecuroides* 'Hamelin,' *P. alopecuroides* 'Weserbergland,' *P. caudatum,* and *P. orientale* would all be fine to use.

The middle of a mixed border will also be enhanced by using grasses with attractive fall foliage, especially since so many of our gardens tend to look tired and uninteresting after a dry, hot summer. A planting of red switch grass *(Panicum virgatum* 'Hänse Hermes' or 'Rotstrahlbusch') will dramatically rejuvenate the garden, as will the wine-colored annual fountain grasses. These grasses are extremely tender and will succumb to the first frost. Big bluestem, split beard bluestem, broomsedge, little bluestem, bent-awn plume grass, and themeda are other mid-sized grasses with lovely orange-to-red fall foliage. If the summer has not been too dry, *Miscanthus sinensis* 'Purpurascens' and *Spodiopogon sibiricus* will also have outstanding fall color.

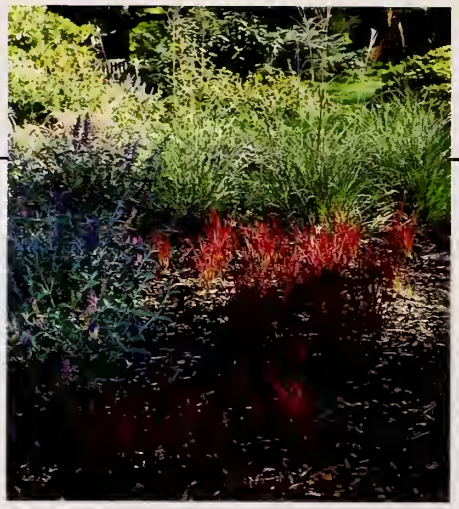

photo by Harriet L. Cramer

Japanese blood grass *(Imperata cylindrica* 'Red Baron'), a low-growing grass for the front of the border.

Grasses for the back of a mixed border

Ornamental grasses in the rear of a perennial or shrub border serve as a verdant backdrop for the rest of the garden. They have a lush presence, most apparent and welcome in the searing days of late summer. Indeed, the sight and sound of the larger grasses swaying in a hot August breeze is almost mystical. Some of the larger grasses have excellent fall color, furthermore, and remain attractive and structurally interesting through the winter.

Several cultivars of *Miscanthus sinensis* are especially engaging in the back of the border. These grow relatively large (5-6 ft.), but are not so big as to overwhelm the surrounding plants in the garden. They thus work well with medium-sized shrubs like yews, butterfly bush and roses, or with tall perennials like sunflowers and Joe Pye weed. Among the best cultivars are *Miscanthus sinensis* 'Graziella' (this looks like the elegant and popular *M. s.* 'Gracillimus,' but 'Graziella' is more upright and has better fall color); *M. s.* 'Strictus' (with yellow horizontal variegation); *M. s.* 'Cabaret' (with beautiful green and white variegated foliage); *M. s.* 'Malepartus' (this flowers early and has good fall color); *M. s.* 'Morning Light' (very graceful habit); and *M. s.* 'Sarabande' (lovely silvery foliage).

Sources of Ornamental Grasses

Kurt Bluemel, Inc.
2740 Green Lane
Baldwin, MD 21013-9525
($2 for catalog)

Carroll Gardens
444 East Main Street
P.O. Box 310
Westminster, MD 21157

Holbrook Farm and Nursery
Route 2
Box 223B
Fletcher, NC 28732

Limerock Ornamental Grasses, Inc.
RD 1
Box 111-C
Port Matilda, PA 16870

Prairie Nursery
P.O. Box 365
Westfield, WI 53964

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All books except those * are available through the Pennsylvania Horticultural Society Library.

Non-invasive Grasses Mentioned in This Article (in order of appearance)

Calamagrostis x *acutiflora* 'Karl Foerster'	Feather reed grass (buff or straw colored)
Panicum virgatum 'Hänse Herms'	Red switch grass
Pennisetum alopecuroides	Fountain grass
Arrhenatherum elatius var. *bulbosum* 'Variegatum'	Striped tuber-oat grass
Bouteloua gracilis	Mosquito grass
Imperata cylindrica 'Red Baron'	Japanese blood grass
Pennisetum alopecuroides 'Little Bunny'	Miniature fountain grass
Festuca ovina glauca 'Elijah Blue'	Fescue
Hackonechloa macra	Hakone grass
Hackonechloa macra 'Aureola'	Golden-variegated hakone grass
Spodiopogon sibiricus	Spodiopogon
Themeda japonica	Themeda
Schizachyrium scoparium	Little bluestem
Erianthus contortus	Bent-awn plume grass
Miscanthus transmorrisonensis	Formosan miscanthus
Miscanthus sinensis 'Yaku Jima'	Dwarf miscanthus
Miscanthus sinensis 'Purpurascens'	
Miscanthus sinensis 'Arabesque'	
Miscanthus sinensis 'Nippon'	
Panicum virgatum 'Heavy Metal'	Blue switch grass
Pennisetum alopecuroides 'Hameln'	Dwarf fountain grass
Pennisetum alopecuroides 'Weserbergland'	
Pennisetum caudatum	White flowering fountain grass
Pennisetum orientale	Hardy oriental fountain grass
Panicum virgatum 'Rotstrahlbusch'	Red switch grass
Pennisetum setaceum	Annual fountain grass
Pennisetum setaceum 'Rubrum'	Annual fountain grass
Andropogon gerardii	Big bluestem
Andropogon ternarius	Split-beard bluestem
Andropogon virginicus	Broomsedge
Miscanthus sinensis 'Graziella'	
Miscanthus sinensis 'Gracillimus'	
Miscanthus sinensis 'Strictus'	
Miscanthus sinensis 'Cabaret'	
Miscanthus sinensis 'Malepartus'	
Miscanthus sinensis 'Morning Light'	
Miscanthus sinensis 'Sarabande'	
Pennisetum 'Burgundy Giant'	

Invasive/Self-sowing Grasses

Arundo donax	Giant reed grass
Briza media	Quaking grass
Calamagrostis arundinacea var. *brachytricha* *	Korean feather reed grass
Calamagrostis epigeios	Feather reed grass
Chasmanthium latifolium	Northern sea oats
Deschampsia caespitosa	Tufted hair grass
Elymus racemosus	Giant blue wild rye grass
Glyceria maxima	Reed manna grass
Hystrix patula	Bottlebrush grass
Miscanthus sinensis **	Eulalia grass
Panicum virgatum ***	Switch grass
Pennisetum alopecuroides	Fountain grass
P. alopecuroides 'Moudry'	Late-blooming fountain grass
Phalaris arundinacea var. *picta*	Ribbon grass
Sorghastrum nutans	Indian grass
Spartina pectinata 'Aureo-marginata'	Variegated cord grass
Sporobolus heterolepis	Prairie dropseed

* *Calamagrostis* x *acutiflora* 'Karl Foerster' does not self-sow
** Most *Miscanthus sinensis* cultivars do not self-sow
*** *Panicum virgatum* cultivars do not self-sow

None of these cultivars require staking.

Another interesting plant for the back of the border is tender giant burgundy fountain grass. As its name indicates, this has wide burgundy-colored leaves, it grows to about 6 ft. tall, and it is extremely tender (it will not tolerate temperatures below 40°F) and should be considered an annual here. It does not set viable seed, but it can be propagated by division or stem cuttings rooted in sand. 'Burgundy Giant' looks sensational with willowleafed sunflower *(Helianthus salicifolius),* great blue lobelia *(Lobelia siphilitica),* Russian sage *(Perovskia atriplicifolia),* and greenheaded coneflower *(Rudbeckia nitida* 'Autumn Sun').

Where to see grasses

The best way to familiarize yourself with ornamental grasses and to determine which ones will work best in your garden is to look at other gardens where grasses are used effectively. The Ornamental Grasses Idea Garden at Longwood Gardens (Kennett Square, Pa.) is an excellent place to visit from May through early winter to see a great variety of different kinds of grasses displayed in a highly pleasing and educational manner. The Scott Arboretum (Swarthmore, Pa.), the National Arboretum (Washington, D.C.), and Wave Hill (Bronx, N.Y.) also successfully integrate ornamental grasses into their garden designs. At the Baxter Memorial Garden at the Morris Arboretum of the University of Pennsylvania (Philadelphia), a group of six volunteers (the author included) have designed and planted a garden using large sweeps of atypical grasses, annuals and perennials. The Baxter Memorial Garden is an especially good place to identify interesting grasses, to follow how they change through the year, and to see with which other plants they work well.

Finally, experimentation is critical. If you try a particular grass in your garden and it does not work, move it or give it away. None of the ornamental grasses cited above are difficult to transplant or invasive, so you can easily rectify mistakes. As more nonprofessionals try these grasses, surely they will move beyond fashionable curiosities to integral elements of our residential gardens.

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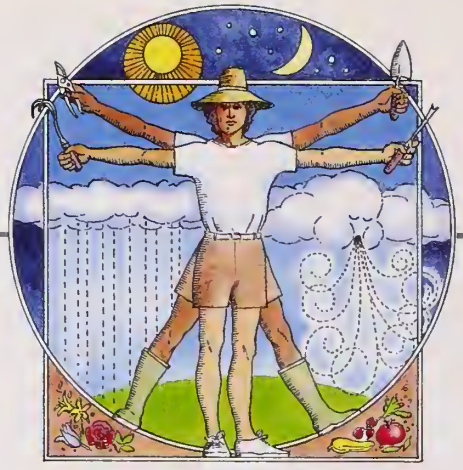
Harriet Cramer decided several years back that she was more interested in horticulture than her career in international banking. She now designs gardens and writes and lectures about ornamental grasses and perennials.



IN THE GARDEN

HOLIDAY SHOPPING FOR THE GARDENER

by Kathleen A. Mills

One hundred feet of soaker hose. A compost bin. Topiary forms. Plant tags. A garden bench. These are gifts that any gardener would love to receive this holiday.

Mary Lou Wolfe, frequent *Green Scene* contributor and avid gardener, recalls a Christmas her father gave her a daylily collection. She was new to gardening then and this gift started a life-long love of daylilies.

Paperwhites *(Narcissus)* and amaryllis *(Hippeastrum)* are ideal gifts for the novice and skilled gardener alike. Excellent for indoor forcing, these bulbs will brighten their winter months.

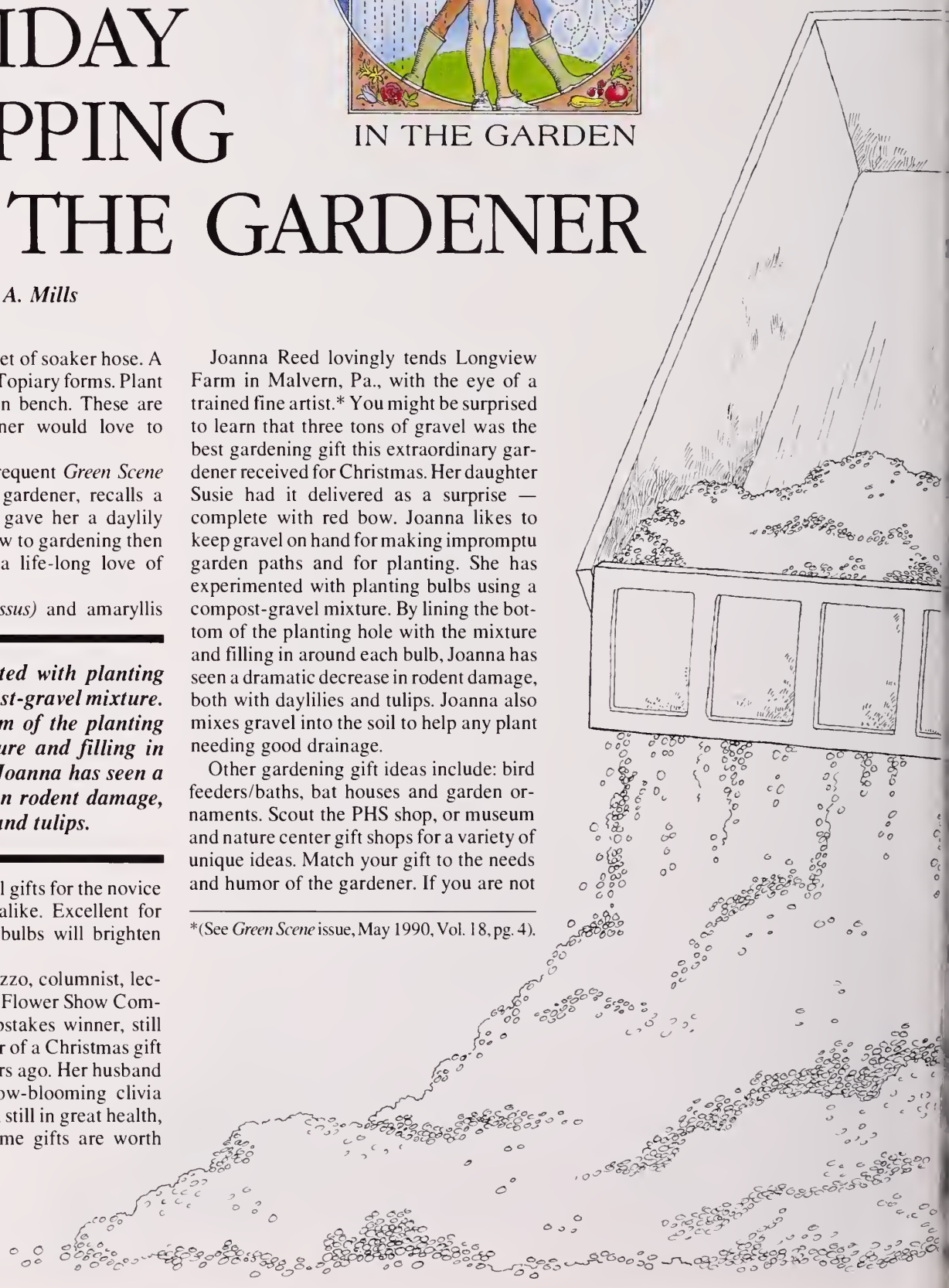
She has experimented with planting bulbs using a compost-gravel mixture. By lining the bottom of the planting hole with the mixture and filling in around each bulb, Joanna has seen a dramatic decrease in rodent damage, both with daylilies and tulips.

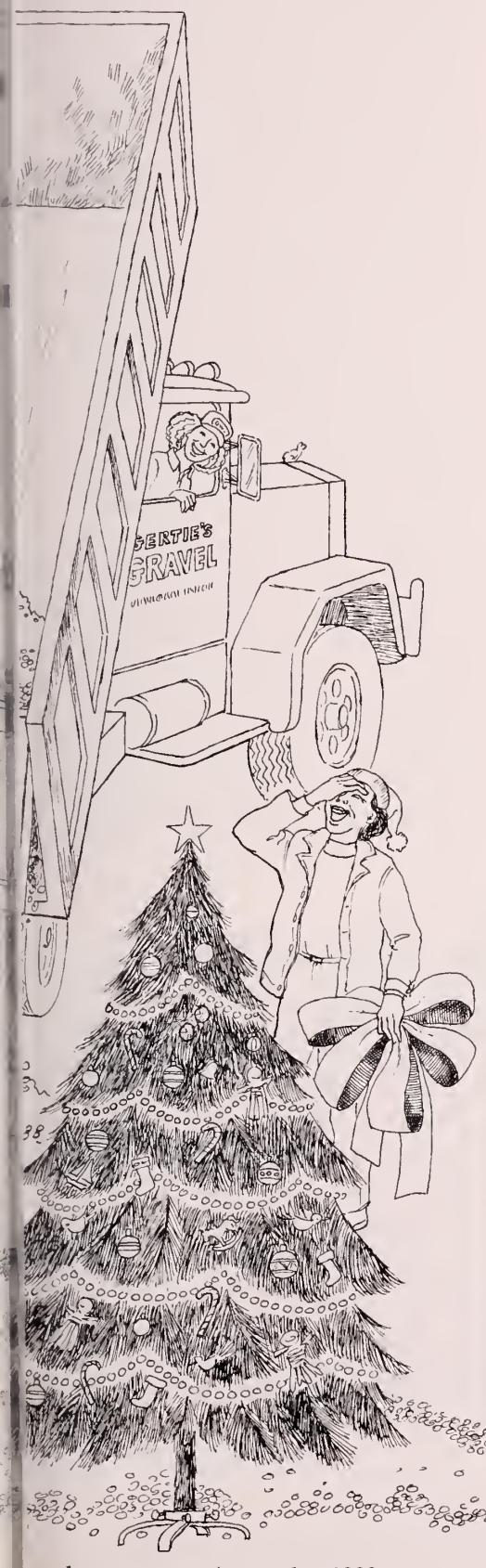
Rosemarie Vassalluzzo, columnist, lecturer and Philadelphia Flower Show Competitive Classes sweepstakes winner, still awaits the full splendor of a Christmas gift she received three years ago. Her husband treated her to a yellow-blooming clivia *(Clivia miniata)* which, still in great health, has yet to bloom. Some gifts are worth waiting for!

Joanna Reed lovingly tends Longview Farm in Malvern, Pa., with the eye of a trained fine artist.* You might be surprised to learn that three tons of gravel was the best gardening gift this extraordinary gardener received for Christmas. Her daughter Susie had it delivered as a surprise — complete with red bow. Joanna likes to keep gravel on hand for making impromptu garden paths and for planting. She has experimented with planting bulbs using a compost-gravel mixture. By lining the bottom of the planting hole with the mixture and filling in around each bulb, Joanna has seen a dramatic decrease in rodent damage, both with daylilies and tulips. Joanna also mixes gravel into the soil to help any plant needing good drainage.

Other gardening gift ideas include: bird feeders/baths, bat houses and garden ornaments. Scout the PHS shop, or museum and nature center gift shops for a variety of unique ideas. Match your gift to the needs and humor of the gardener. If you are not

*(See *Green Scene* issue, May 1990, Vol. 18, pg. 4).





sure of their style, many shops offer gift certificates. Mail order catalogs, including *Smith & Hawken, Gardener's Eden,* and *Ringer Products* also offer gift certificates.

Tools are a welcome gift to any gardener. They range from the pricey tillers, chipper/shredders, and personalized hand tools to the affordable hand pruners, heating cables for seed flats and rain gauges. From kneeling pads to bug magnifying glasses, a tool that makes gardening easier will be appreciated.

W. Gary Smith, assistant professor of Landscape Design for the Department of Plant and Soil Sciences at the University of Delaware, has never received a gardening gift for the holidays. Last year an energetic student organized his garden slides, "... which was wonderful," but not really a gardening gift. "I'd love to get a garden cart or a *Weed Wrench* this year — from someone (anyone)," Gary exclaimed.

Spring, summer and fall Jane and Wing Pepper bless the long-deceased relative who gave them a Garden Way cart one Christmas. They've also received less durable presents such as Zoo Doo and Kricket Krap.

Books always delight gardeners. Whether filled with inspiring photographs or crammed full of "how-to's," gardening books are available on every topic.

F M Mooberry, director of Native Plants in the Landscape Conference at Millersville University, uses her *Hortus III*** with a vengeance. "It's just not the kind of book you can justify buying for yourself," she sighs about this gift from her husband.

John and Ann Swan of West Chester, featured gardeners in the *Masters of the Victory Garden* by Jim Wilson (Little & Brown, Boston, 1990), use the holidays as their excuse to indulge each other with books. Some of their past favorites include: Jean Andrew's *Peppers — the Domesticated Capsicums* (University of Texas Press, Austin, 1984), and Graham Stuart Thomas' *Perennial Garden Plants* (Sagapress/Timber Press, Portland, 1990, 3rd edition). They go to Winterthur Museum & Gardens' gift shop together to make sure they get the books they want. Ann said, "There is no room for surprises here."

A wide range of horticulture books are available through the *Capability's Books* catalog (1-800-247-8154). Local library and horticultural organizations are ideal places to research gardening books. Local bookstores offer a limited selection, but with author and publisher in hand, many will special order a book of your choosing.

The perfect gift can be hard to find, but take heart because gardeners are easy people to please, and there are lots of items to choose from.

●

**Hortus Third: a concise dictionary of plants cultivated in the United States and Canada,* Liberty Hyde Bailey, Macmillan Publishing, 1976. $150.00.

Mark your calendar for the **Native Plants in the Landscape** conference in **Millersville** on **June 24-26, 1993.** Phone 215-444-5495.

Where have all my earthworms

We all make assumptions and generally they work, but generally is as far from always as assumptions are from certainties. Remember, for example, when you were stopped at a red light and you assumed the driver behind you would stop too? Sometimes the consequences of incorrect assumptions can be painful and sometimes they're just odd. The painful ones make us angry and the odd ones makes us wonder.

I'm still wondering. You see, I assumed we'd have earthworms. When we bought our house and almost-an-acre property, I thought worms were included. So imagine my surprise as I've gardened here for the past two years and have never found a worm. It took us awhile to add new beds and borders; that's when I noticed their absence. It's always easier to see what's there than what's missing, but now I'm sure. There are no worms here.

People respond differently to this information. A friend in New Jersey loves to garden, but hates worms. For her, our property is paradise. Others respond with disbelief: "Are you *sure* there are no worms?"; boredom. "Worms? Oh yes, and how are the children doing?"; generosity: "Would you like some of ours?"; and curiosity: "Where are they? Why *don't* you have any worms?"

Why indeed? I went first where I always go with gardening questions, The Pennsylvania Horticultural Society Hotline. Staffed with a corps of helpful and knowledgeable individuals, the Hotline rarely disappoints me.

I learned that I probably have unattractive soil and that the Hotline phone hasn't been ringing off the hook with people asking about earthworms. Most people don't notice, I was told. It could be a case of out-of-sight, out-of-mind or maybe worms are a non-issue; more familiar than necessary.

But then I read this in *The Gardener's Bug Book**: "Earthworms have been considered by some people the most important of all animals. Charles Darwin estimated that . . . good garden soil normally has about 53,000 worms per acre." The book also states that their beneficial action may go much deeper than spade, plow, or rototiller. Darwin, who made earthworms the subject of considerable study, "doubted if there are any animals which have played such an important part in the history of the world as these lowly organized creatures." What was a curiosity five minutes ago is now a necessity. Earthworms are constantly at work conditioning and enriching the soil. They eat and excrete rich organic matter and tunnel as much as eight feet below the surface improving the earth's texture and composition. And unlike chemical fertilizers, which require continual replenishment, worms just keep working away on their own year in and year out.

Lawns that do not have earthworms build up thatch, the residue of decaying plants, according to John P. Vimmerstedt, associate professor of Forestry at Ohio State's School of Natural Resources. Plant roots, he explained, need oxygen and water and if there are no large pores in the soil, such as those created by earthworms, the soil is not supplied with oxygen. Earthworms also increase the diversity of the soil system, thereby increasing habitats for other soil organisms; they also provide essential food for birds such as robins and woodcocks.

As to that old saw about the early bird, though, "the earthworm caught by the early bird is no early worm but one that stayed out too late, for earthworms are nocturnal animals . . . ", according to *Animals Without Backbones.***

You can buy worms; it's not as funny as it sounds, according to the Hotline staffer. But there's a rub. *The New York Botanical Garden Illustrated Encyclopedia of Horticulture* explains that "little is gained by adding them to ground where there are naturally few. If the earth is favorable to

**The Gardener's Bug Book*, Cynthia Westcott, Doubleday, N.Y., 1973*

***Animals Without Backbones*, Ralph Buchsbaum, University of Chicago Press, Chicago, Ill., 1948*

illustration by Leslie Bowen

Earthworms clean up the litter on top of the soil.

Earthworms build tunnels to aerate and condition the soil.

gone?

by Gayle Samuels

Good garden soil normally has about 53,000 worms per acre . . . (and) their beneficial action may go much deeper than spade, plow, or rototiller.
From *The Gardener's Bug Book*

Worms are only in the plug on the left; these comparative plugs show how the worms reduce the surface building of leaves, sticks, etc.

photo supplied by John P. Vimmerstedt, School of Natural Resources, Ohio State University

earthworms, they will be there aplenty. If not, the introduced worms will neither prosper or multiply." Earthworms, it seems, need a soil rich in organic matter, the same kind of soil preferred by most garden plants, otherwise they don't thrive. It's rather like the goose and the gander with a twist. Earthworms and gardens succeed in the same conditions, but once those minimum conditions are met, earthworms work to constantly improve them.

Since the most likely reason for my lack of worms, according to Dr. Vimmerstedt, is that the lawn was previously treated with a chemical that was toxic to earthworms, he recommended that I steer clear of both insecticides and herbicides and try adding horse or cow manure or mushroom soil (not chicken manure) where the worms are introduced. In New Zealand, earthworms are commonly added to the soil to improve pastures, he explained.

So I ordered a batch of 1,500 or 2,500 earthworm cocoons from Gardener's Supply Company.*** They came with a guarantee and when the first shipment did not hatch, another was promptly provided. I put them in the flower beds I had already enriched with peat moss, humus and dehydrated cow manure and in the pile of decaying leaves I'd saved from last fall. Recently, when I was working in my flower beds, I found lots of the "small . . . whitish-purple" baby worms Gardener's Supply told me to expect so I'm on my way. I'm still at least 50,500 short of the number Darwin estimated in an acre of "good garden soil," but the literature accompanying my worms indicates that "in a short three months, they will reach maturity and begin to produce a second generation of cocoons."

Assuming that 2,000 of my worms hatch and reproduce I could have 64,000 earthworms aerating, fertilizing and diversifying my soil in only 15 months. Aren't assumptions grand?

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Gayle Samuels, a former newspaper and radio reporter, was most recently managing editor of an award-winning volume on the history of women in New Jersey: *Past and Promise: Lives of New Jersey Women,* Scarecrow Press, Metuchen, N.J., 1990.

***Gardener's Supply Co., 128 Intervale Rd., Burlington, Vt. 05401, Phone: (802) 863-1700.

Earthworms fertilize the soil by breaking down organic matter and by adding their castings to the soil.

"Darwin estimated that earthworms bring up 7 tons of new soil for every acre of land." *Gardener's Bug Book*

Dendrobium Dawn Maree 'GJW.' These can be grown on a windowsill, light garden or in a greenhouse and will produce individual flowers that last as long as three months.

Nigrohirsute Dendrobium Hybrids

by Phyllis L. Finkelstein

If you have always wanted to grow orchids but didn't know where to start, read this.

The orchid family, the largest in the plant kingdom, contains at least 30,000 species. The genus *Dendrobium,* comprised of some 1,000 to 1,400 species and one of the largest members of that family, is known for the beauty of its flowers.

During the 20 years that I've grown orchids, thousands of plants have passed through my hands, yet I cannot think of another group with as many positive traits to recommend it as the hybrids of the Section Formosae, usually called "nigrohirsute" because of their fine, peach-fuzz-like black hairs, which are dense on new growth and which later fall off.

Their flowers are showy, attractive, and sometimes pleasantly fragrant. They are borne in clusters on easy-to-grow compact or miniature plants. Individual flowers are long-lasting, and some of the hybrids bloom 10 to 12 months of the year. If you have never grown an orchid, and you've wanted to, these are good plants to start with. Above all, these orchids are enthusiastic bloomers and will reward you with flowers, not leaves, for the modest effort needed to care for them. What more could a flower lover want?

Dendrobiums are generally epiphytic, that is, they grow on tree or rocks, anchored by their roots, as opposed to plants that grow in the ground.

Nigrohirsute dendrobiums consist of upright cane-like evergreen growths, called pseudobulbs, which grow in clumps. Narrow leaves emerge alternately along the length of the pseudobulb. Flowers appear on the top half of the pseudobulb opposite the leaf juncture.

The early 1980s marked the appearance of the first successful hybrids in this group. Roy Tokunaga, the hybridizer responsible for much of the nigrohirsute's successful breeding today, wanted to produce plants that are "fast-growing, free-blooming and tolerant of temperature extremes."

Star-shaped white flowers, composed of five petals and a lip, dominate the hybrids, usually with yellow to red-orange lips or throats, but a few light green flowers and one clear yellow exist as well. The two lower petals, or lateral sepals, are joined near the base of the flower, visible from the back of the flower where a small "chin"

photo by Roy Tokunaga, H&R Nurseries

Dendrobium Lime Frost. Grown in a greenhouse, Lime Frost flowers abundantly; the individual flowers will last as long as three months.

(mentum) may be seen.

The hybrids over the last decade

Four species, all found in southeast Asia, play a dominant role in breeding these new hybrids. Generally, the flowers of the species are smaller, fewer in number, and have narrower segments than the hybrids' flowers. The species are also usually slower growing and more specific about the conditions, especially the temperature range they tolerate, in order to bloom.

Den. Dawn Maree *(formosum* x *cruentum)* was one of the earliest hybrids to attract attention. Its 2 in. - 2½ in. white flowers display a wide, almost beard-like, vivid orange marking on the lip. One of the taller hybrids, it grows to 24 in. - 30 in. tall. This beautiful plant will flower year round. A particularly desirable variety, *Den.* Dawn Maree 'GJW' received an Award of Merit from the American Orchid Society for the beauty of its flowers. It was subsequently mericloned, a method of propagation that produces exact duplicates and increases the availability of a superior plant.

Another early hybrid *Den.* Winter Dawn *(bellatulum* x *formosum),* a compact eight-inch-tall plant, flowers twice yearly. Its 2½ in. fragrant white flowers exhibit a lip combining red and orange.

More recent hybrids have produced floriferious plants with near year-round flowering seasons and individual flowers that may last as long as three months. *Den.* Iki, a small plant no taller than seven inches at maturity, produces 1½ in. light green or white flowers marked with a red-orange lip.

Den. Lime Frost, six to eight inches tall, displays one inch pale green, lightly fragrant flowers with a yellow lip; *Den.* Lemon Ice, a similar plant, bears clear yellow flowers.

Den. Precious Pearl, another popular hybrid, with 1¼ in. waxy white flowers and a red-orange throat, blooms year round, producing more flowers in the spring and fall than at other times. It stands nine inches tall.

Den. Fire Coral, one of the taller hybrids with 30 in. pseudobulbs, produces 4 in. white flowers with an orange-to-red throat. A well-grown plant will produce many flower spikes simultaneously.

Den. Lori Tokunaga displays some of the largest and loveliest flowers in the group, 3 in. clear, well-shaped whites with deep orange in the throat. It grows to 18 in. It is a particular favorite of its hybridizer, who named it after his daughter.

Select with the head and *the heart*

Flowering plants are usually selected with the heart, not the head. But if the flower is the reason to grow a plant, you must consider the plant's cultural needs when determining where to grow it. Love alone will not produce a beautiful flower.

Nigrohirsute hybrids are generally warm growers; they grow and flower best if night temperatures do not fall below 65°F, and day temperatures are about 10° higher, similar to the average home temperatures. *Den.* Lemon Ice is the exception, preferring its nights at least five degrees cooler. It's as important to know the night temperature of the area where plants will be grown as well as the source and duration of light during the day to allow for the requisite variations. These plants are tough, however, and they easily tolerate temperatures that occasionally stray from the ideal.

Although it is possible to create an indoor environment to pamper a plant, it is more practical to begin with a plant whose needs match the conditions available. You'll get a stronger, more floriferous plant if it's grown according to its requirements, not yours.

A well-grown plant will have plump, firm pseudobulbs, especially the new growth. Older pseudobulbs shrivel somewhat with age. Each new pseudobulb will be as thick and tall, or taller, than the last, on a well-grown plant. Leaves remain on the plant for several seasons, but will drop on older pseudobulbs.

If a plant fails to flower, give it a bit more light, or a slightly warmer spot.

How to grow nigrohirsute dendrobium hybrids

Light

Nigrohirsute dendrobium hybrids need at least four hours of direct sunlight, or the

continued

equivalent, to flower well. More light, without burning the foliage, will produce more robust, better flowering plants. Too little light will produce weak, elongated pseudobulbs that will flower poorly, or not at all. An unobstructed east or west window is suitable; an unobstructed south window is even better. Excellent flowering will also occur in a four bulb light garden with 14 hour "days"; keep foliage as close to the bulbs as possible without burning. A warm greenhouse, or the warm end of an intermediate temperature greenhouse, is ideal.

photos by Phyllis Finkelstein & Shirley Singer

Dendrobium Lori Tokunaga. Four hours of direct sun on an east window produced these lovely long-lasting flowers (three months).

Dendrobium Lemon Ice best grown with night temperatures 5° cooler.

Watering

After a thorough watering, preferably in the morning, allow the plant to dry out before watering again. Epiphytes in nature, dendrobiums do best when neither wet or dry for an extended period. If new growth or younger pseudobulbs shrivel, water more frequently. If the pseudobulbs plump up a bit the day after watering, you're on the right track. In warm, sunny weather you might need to water the plant daily when it's actively growing. If you have to water more than once a day, it may be time to repot. If a plant remains wet longer than four or five days in good weather, it may need a smaller pot. Sun, good air movement and high temperatures dry a plant faster than a week of cloudy, rainy weather with high humidity.

Shrivelled pseudobulbs may also indicate roots rotted by too much water. If in doubt about whether or not to water, you do more harm by overwatering than by keeping a plant a bit too dry. If all else fails, carefully unpot the plant to check the condition of the roots. Soft, mushy roots are rotten and can no longer deliver water to the plant. Crisp, dry roots need water. Healthy roots are green, covered by a white, spongy layer called velamen that holds water, leaving the green, growing, tips exposed.

Fertilizer

An actively growing plant needs fertilizer; a dormant or resting plant needs little or no fertilizer. Fertilize plants grown in bark or a bark mix with a 30-10-10 or high nitrogen mix. Give plants grown in sphagnum moss a balanced fertilizer, such as 20-20-20 or 18-18-18. Follow the manufacturer's directions, or use less, depending upon the weather. Sunny weather promotes growth, so the plant needs more fertilizer. Plants grow less when the weather is cloudy, so the plant requires little or no fertilizer. If in doubt, do not feed the plant. Too much fertilizer is more harmful than too little.

Potting

Dendrobiums demand tiny pots and prefer not to be disturbed once they settle in. A blooming-size miniature plant, potted in a one-inch pot, with three one-inch-tall pseudobulbs, may comfortably remain in that pot for a year or two. *Den.* Iki (Hawaiian for little or small), a six- to seven-inch-tall plant with six small, leafless, pseudobulbs and 13 mature growths, continues to thrive in its three-inch pot. *Den.* Lori Tokunaga, 17 to 18 in. tall, with one small pseudobulb and two mature growths, thrives in a two-inch pot. The key to repotting is the plant's condition. If it's growing well, leave it alone. If your plant is deteriorating, however, repotting may be overdue. As a rule, repot at least once every two years.

An inexperienced Dendrobium grower may look at a large plant in a tiny pot and think the pot is too small because it looks disproportionate. Even if the plant is thriving, it may be tempting to repot. Resist the urge. A plant in a pot too large for its roots will quickly drop leaves, a sign of root damage, usually rot. Dendrobiums have thin, wiry roots that stay short relative to the plant's size. In this case, a large top-growth does not indicate a large root mass.

If a plant needs repotting, for best results repot when new growth begins, i.e. when new roots and/or new shoots appear, which usually occurs shortly after a plant has completed a flowering cycle. The least desirable time to repot is when the plant is in flower. The trauma of repotting may cause the plant to drop its flowers or buds.

For these plants, clay pots are best. They dry out more quickly than plastic and are desirable under most conditions except a hot window or greenhouse. They also provide more weight to keep the usually top-heavy plant from falling over. You may place a potted plant inside a larger clay pot to add bottom weight and stability. The plant may then remain in its tiny clay or plastic pot without falling over frequently, damaging itself, or trying the owner's patience.

Dendrobium Iki, grown in a light garden.

Achieving the proper wet-dry cycle for the plant, under your conditions, best determines which potting media to use. There's no one perfect material or mix.

Successful growers usually use long-fibered New Zealand sphagnum moss, straight fine orchid bark or a mix containing bark, tree fern, charcoal, perlite or styrofoam in combination. Dendrobiums are rarely grown in the soil mixes used for other plants because the roots need aeration at all times.

It's important to wet the potting material and the clay pots before use. A dry clay pot, especially a new one, will act like a wick and quickly pull moisture out of the potting material, away from the plants' roots. Cover bark with water and soak 24 hours before use or it will not absorb water after the plant is potted and thereby deprive the root system of adequate moisture. After 24 hours pour off the water and use the bark. Moss will retain water if moistened just before use.

Wear rubber gloves to pot with moss, especially if you have any cuts on your hands. Sporotrichosis, a chronic fungus disease, has been associated with the use of moss. It is caused by *Sporothrix schenkii*, a fungus present worldwide on plants, hay, decaying wood and sphagnum moss, which can enter the body through a cut on the hand. The first sign may be nodules under the skin, which eventually ulcerate. If an infection develops, consult a physician immediately. If a skin trauma occurs, wash and disinfect it at once. Few orchid growers have become infected through the use of sphagnum moss, however, and it currently enjoys great popularity as a potting material for many genera because it produces such successful results.

To repot, gently remove the plant from its pot; discard the old potting material, being careful to damage the roots as little as possible. If old potting material clings to the roots, let it remain rather than damage roots trying to remove it. Rinse the roots in warm water to make them more flexible and easier to handle when potting. Remove any dead or rotting roots.

Choose the smallest pot the root ball will fit into, not the pot that looks right relative to the size of the plant's foliage. Add a small amount of drainage material to the bottom of the pot, followed by a small amount of potting material, and place the plant in the pot. Add media gently around the roots, taking care not to damage them. Fill the pot with fresh media firmly, but do not force it into the pot. The plant's top growth should rest above the new potting material with roots barely visible at soil level as they enter the media. About ½ inch of pot should be visible above the new media.

Treat your newly potted plant gently. Place it in a shadier spot and keep it slightly drier until new growth is visible, a sign that the plant has overcome the trauma of repotting. Then, return the plant to its former location and water as usual.

If it is impossible to visit a nursery to choose a plant in bloom, check mail order sources for color photographs of these flowers. Otherwise, rely on the growers to help you select. Beautiful new hybrids appear often and the growers are the first to see them. Flowering-size plants, recommended as a first purchase, start at about $12, excluding shipping, if you buy them by mail. You can visit all nurseries, but call ahead to make sure they are open. Orchid growers travel frequently to attend shows, where you may also see and buy plants.

Sources for Nigrohirsute Dendrobium Hybrids

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(609) 927-4126

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Home Orchid Growing, Rebecca Northern, Prentice Hall Press, New York, 1990.

The Nigrohirsutae Dendrobiums of Thailand and Their Hybrids, Roy S. Tokunaga, *Amer. Orchid Soc. Bull.* 59: 566-568, 1990.

Sporotrichosis — An Occupational Hazard For Nursery Workers, Tree Planters and Orchid Growers, Arvind A. Padhye and Libero Ajello, *Amer. Orchid Soc. Bull.* 59: 613-616, 1990.

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Phyllis Finkelstein, an orchid grower for more than 20 years, has written about them in *American Horticulturist,* the *American Orchid Society Bulletin* and in orchid society newsletters around the country. She teaches classes about orchid culture at Scarsdale Adult School.

Bill, the Garden Cat

by Duane Campbell

Definitely uninvited. Most definitely disgusting. Most completely definitely irreplaceable.

Bill walked in about eight years ago. He marched over to the food dishes, ate his fill, threw up, and fell asleep.

The last thing we needed was another pet. We already had a dog, two cats, a parrot, and miscellaneous smaller birds and beasts. But it's not as if we were asked.

The cat that moved into our house that day would have been thrown out of any respectable barn. Or alley, for that matter. Well past his prime (if he ever had a prime), he was nothing but skin and bones and appetite. His coat was appalling; mange comes to mind, but that is somehow inadequate. Chronic tooth problems gave him breath that could strip paint, and on those rare occasions when he washed himself, the stench permeated his whole body — indeed, the whole room, and the white patches of fur turned brown. He drooled unremittingly, and his hobby was, well, barfing.

Why *keep* such a cat? We really weren't consulted. The other animals, normally fiercely territorial, welcomed him instantly as part of the family. Besides, we quickly discovered a purr that could rattle the dishes in the cupboard along with a sense of . . . I'd guess you call it humanity. Strong as a lion, he was nonetheless gentle as a lamb. When he decided to leave your lap, he left — no power could hold him — but there was never a scratch left behind.

Bill became my garden cat. As I stooped over a bed, I would prepare myself for the thump as he landed gracelessly on my back, where he would stretch out and languorously rest a damp chin on my shoulder, watching to make sure I did everything to this satisfaction. After I threw him off five or six times, he might grudgingly retreat to a ladder that hung horizontally on the side of the garage, where he would continue his observation, lanky legs stretched out fore and aft and belly spilling over the ladder rail. Unrestricted by my shoulder, the ever-present string of drool would elongate to several inches, swinging in the breeze, sometimes catching the sun in tiny rainbows. What a cat.

Supervision was his forte, but he was not above lending a paw where he saw the need. I never got seeds planted to suit him, for example, so he had to rearrange any newly planted bed. And he took a special interest in fertilization. All cats love the loose, freshly spaded soil of a seed bed, and commercial repellants won't even slow down a cat with a mission.

So for many years, my first assignment every morning was a walk through the garden, a cup of coffee in one hand, a small shovel with a very long handle in the other. Eventually I found a partial solution. Over the years I had accumulated small scraps of hardware cloth, chicken wire, and miscellaneous fencing — the sort of thing normal people would throw out. Tossing pieces on the soil surface where seeds were planted prevented the cats from scratching, and they lost interest. As soon as the seedlings showed, the bed seemed less enticing, and the cover came off.

Bill didn't resent these measures, just as I never resented his peculiar ministrations. Those of us who love living things, plant and animal alike, have learned what compromise really means.

Years after discovering this trick, I still make my morning walk. It's become a habit. And the truth is that I'm not a very methodical person, so the protective cover is sometimes forgotten, and the news quickly goes out to every cat in the neighborhood.

Chronic tooth problems gave him breath that could strip paint. When he washed himself, the stench permeated the whole room.

But the real lesson is that, except for brief moments that are less than inspiring, it is a pleasant outing. I get to greet each plant on a daily basis, inquire of its health, and enjoy the garden for a while with a cup of coffee in my hand instead of a hoe.

For many years, Bill joined me every morning, strolling at my feet — drooling and belching, purring and coughing — but no longer.

Bill died a year ago this summer. He went softly, with the dignity that was so surprisingly a part of him. Oh, we've lost pets before, and we will again, and it always hurts. But this elderly stray was indefinably special. He slept with my daughter, watched TV with my wife, but he was my

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buddy, my garden cat, and I'll miss him.

That night we talked about the empty spot in our lives and decided there would be no rush to fill it. We had our Princess, an elegant dowager of sixteen-plus years, who no longer adapted well to changes in the family composition, and she deserved our concentrated attention in her remaining time. I would learn to work alone. Besides, how could a cat like Bill be replaced?

Five days after I had buried Bill under the lilac where he liked to sleep on hot afternoons, I was sitting crosslegged in the middle of the lawn contemplating thatch. From nowhere a tiny, orange-striped ball of fur and energy came racing. He jumped on my lap and started purring. Our inquiries provided not a hint of his provenance, but I think his orders came from under a lilac, issued by a spirit who knew I needed help in the garden. We named him Rufus, but after a couple of days his vitality earned him a soubriquet: The Kitten from Hell. Nothing that moved was safe. We loved him instantly.

Rufus doesn't drool or belch or choke, and he isn't much of a garden cat, not yet.

Those of us who love living things, plant and animal alike, have learned what compromise really means.

He's too young to take his responsibility seriously. But he's learning. I have no doubt that as his youthful exuberance abates, my garden will benefit greatly from his stewardship. He sleeps with my daughter and watches TV with my wife. And the beat goes on.

There are those who resent cats in their garden. As a newspaper columnist, the most frequent question I get is how to keep them out. But these people love their garden too much, and they miss a larger vision of love. If a genie appeared and offered me three wishes for the gardeners of the world, those wishes would be for a prosperous garden, a fine cat to share it with, and a good shovel with a very long handle.

•

Duane Campbell gardens in Pennsylvania and writes *Green Space*, a weekly newspaper column syndicated in the Northeast.

illustration by Lauren Baxendell

Hydrangea quercifolia

by L. Wilbur Zimmerman

photo by L. Wilbur Zimmerman

Fall color, *Hydrangea quercifolia.*

Sometime ago, when planning and planting a 175 ft. long mixed border, my wife and I allowed a mature apple tree to remain. We had placed it where the bed, which had an undulating front edge, was at its greatest depth. We decided *Hydrangea quercifolia* would do in the partial shade on the northeast side of the tree under the pruned high overhanging branches. Three oak leaf hydrangeas, 30 in. high, were planted there.

The robust individualism of the oak leaf hydrangea can enhance certain locations in a way that few other plants can. Its history as a John Bartram introduction gives it a certain cachet, symbolic of the Bartram character: unassuming but with a forthright mien. Close acquaintance with the plant makes its distinction apparent, and the longer the acquaintance the more it is appreciated.

It is very unlike the common pink or blue globular flower heads of some of its siblings in the genus. *Hydrangea quercifolia* is on most lists as a shade plant. The Bush-Brown *America's Garden Book** and others list it so. Like a number of other plants categorized as shade lovers, it often means shade tolerant. Thus it will do in the shade but will thrive in partial shade or even full sun. Its ability to sustain shade to a degree, makes it an excellent shrub to plant in a partially shaded location, for example, at the east side of a woods' edge where in the afternoon the woods behind the planting provide a dark background. A tall hedge similarly orientated is another advantageous site. In such conditions these plants will give a splendid all-year show with little maintenance.

The height of growth is about six feet and the spread is nearly the same. Flower heads are almost the size of a small pineapple, a little slimmer, slightly longer and more conical in form. The inflorescence is composed of white externally placed flowers that have four segments like a full-shaped four-leaf clover and individually about the size of a quarter. These outer flowers are fewer in number than the crowded mass of the internal flowers, which are only an eighth to a quarter of an inch in diameter. The inner flowers are the fertile elements and the larger outer ones are sterile. This sterility is what makes the outer florets hold their shape so long, because they do not become limp from having been pollinated. The plant's name, oak leaf, explains exactly how the five-lobed leaves are shaped, except that they are quite large, being eight to ten inches in diameter. The leaves carry themselves so that they are a good foil to display the blossom heads at the end of the stems.

The bloom occurs about mid-June and the showy outer florets start out a glistening white and soon acquire a slight green overcast. A month later the color gradually evolves to a green chartreuse. Still later the outer flowers become a tan-white and the inner flowers change from a light dull green to a deep rust color. This stage prevails through early fall until the outer flowers become a definite autumnal brown while holding their shape perfectly. During this time the foliage, medium green on top and whitish on the underside, changes to a subdued pink and then a deeper red. Meanwhile the veination holds its green to provide an attractive contrast.

Winter brings its own variation, the leaf loss exposing the branching framework, somewhat leggy but showing a pleasing asymmetry. The flowers hang on like a permanent dried arrangement.

Moderately friable soil, can promote easily the absorption of nutrients and reliable moisture will assure healthy strong plants.

Since the plant was an introduction from the wild, specimens will show considerable variation as in all species. There is enough greater aesthetic quality in selected clones and their asexual propagations to warrant varietal names. These are worth seeking out.

We not only planted the *Hydrangea quercifolia* in the shade of the apple tree but found two other locations where it gave us lasting pleasure until we moved. I now enjoy seeing the fine stand of them at the John Bartram's Garden at 54th St. & Lindbergh Blvd.

For information about *Hydrangea quercifolia* 'Snow Queen,' a cultivar that received the Pennsylvania Horticultural Society Gold Medal Plant Award, see *Green Scene,* Jan. '89, p. 12.

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L. Wilbur Zimmerman is on the board of The John Bartram Association and served as president from 1985 to 1991. He has been chair of the Philadelphia Flower Show 1974 and 1975 and was chair of the Pennsylvania Horticultural Society Council 1976 to 1980.

* *America's Garden Book,* James & Louise Bush-Brown, (Revised edition, New York Botanical Garden, Scribner, New York, 1980.)

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LETTERS TO THE EDITOR

A Native Persimmon

I enjoyed Janet and John Gyer's article on Kaki persimmons (March, 1992) and would like to add praise for the native persimmon, *Diospyros virginiana.*

In Northern Lancaster County opposite a picturesque mill grow two magnificent American persimmons. The fruits are larger than those from wild trees. From the graft scars around the trees three feet up, it is obvious that someone, probably a former mill owner, wanted terrific persimmons. The fruits are a delicate, almost luminous orange with a soft pink-grey bloom; a delight to the eye as well as the palate and each year the trees provide more than enough of these luscious fruit for every persimmon-lover in the area.

When I inadvertently bite a "puckerish" fruit, I have found that if I immediately eat another that is obviously ripe, it ameliorates that nasty taste in my mouth. One of my favorite fall tasks is to collect persimmons and then spend a very messy evening preparing the fruit. It is skinned and passed through a sieve to remove the seeds. The resulting pulp is used for cakes, breads and above all Haw Creek Charlie's Persimmon Pudding. The following recipe is an adaptation from October 1978 issue of *Gourmet Magazine.** It tastes sinfully rich but is really quite nutritious.

Haw Creek Charlie's Persimmon Pudding

Combine 2 cups of Persimmon Puree, 2 cups of whole wheat flour, preferably stone ground, with 2 cups of milk. Stir in 3/4 cup honey, a lightly beaten egg, and 2 tablespoons of canola or other cooking oil. Preferences for spices vary; the original recipe calls for 1 teaspoon of cinnamon, but I prefer a 1/4 teaspoon each of cinnamon, cloves, ginger and nutmeg. Lastly add 1/2 teaspoon of baking soda dissolved in 2 tablespoons of hot water. Pour the batter into a three-quart baking dish and bake at 325°F for about one and one-half hours.

The pudding is quite moist and can be served with ice cream or frozen yogurt.

Jane Grushow
Ephrata, Pa.

Edible Flowers — Tulips

I was surprised in the article "Edible Flowers" by Ruth Flounders (March, 1992) that tulip bulbs were listed as poisonous. I had always understood that the Dutch ate them in World War II and Alice Coates in *Flowers and Their Histories* also say this. In addition Parkinson in *Paradisi in Sole: Paradisus Terrestris* says: [sic]

"That the roots of Tulipas are nourishing, there is no doubt, the pleasant or at least the not unpleasant taste may hereunto perswade; for divers have had them sent by their friends, from beyond the Sea, and mistaking them to bee Onions, have used them as Onions in their pottage or broth, and never found any cause of mislike, or any sense of evill quality produced by them, but accounted them sweete Onions.

"Further I have made tryall of them my selfe in this manner. I have preserved the rootes of these Tulipas in Sugar . . . and have found them to be almost as pleasant as the Eringus rootes, being firme and sound, fit to be presented to the curious; but for the force of Venereous quality, I cannot say, either from my selfe, not having eaten many, or from any other, on whom I have bestowed them. . . . "

This is not, please, a recommendation to eat them, but surely if they were *poisonous* we would not have quite such an account!

Diana Wells
Washington Crossing, Pa.

Ruth Flounders replies:

Thanks to Diana Wells for her informative letter.

While tulip bulbs have appeared as poisonous in edible flower literature, I have found on rechecking that the Poison Control Center considers them non-toxic. The bulbs can cause contact dermatitis in susceptible individuals so I'd be concerned about mouth and throat reactions.

In my opinion it's better to err on the side of caution. Certainly the Dutch people who ate tulip bulbs during World War II, and who survived, offer impressive proof of the bulbs' safety. Still at today's Tulipa prices, I "my owne selfe shalle" stick to onions.

Ruth Flounders
Auburn, Pa.

Controlling Pachysandra Beds

I have loved pachysandra all my life, but it grows and grows under almost any condition.

The problem that I have been having over the many years is to try to control its growth. Each bed keeps spreading until it takes up more space than I can allow.

I've observed over the years that the roots of this plant grow and spread horizontally; this gave me the idea of digging a ditch around each bed about 4 in. deep. To my pleasant surprise I've prevented the spread of my favorite plant.

I call this innovation Baranzano's Dry Moat.

John Baranzano
Rosemont, Pa.

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* The original recipe now appears in *The Wild Flavor* by Marilyn Kluger (Henry Holt and Co., N.Y., 1990). Reprinted with permission from Marilyn Kluger.

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Consider Oriental grasses for the perennial and shrub border. *Miscanthus transmorrisonensis* (front, foreground) and *Imperata cylindrica* 'Red Baron,' left. See page 18.

photo by Harriet Cramer

GREEN SCENE

E MAGAZINE OF THE PENNSYLVANIA HORTICULTURAL SOCIETY • JAN./FEB. 1993 • $2.00

1993 PHS Gold Medal Plant Award Winners

3.

23.

Front Cover:
Acer griseum, Winter. Photographed at Longwood Gardens by Larry Albee.

in this issue

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SIX WINNERS OF
THE 1993 PENNSYLVANIA HORTICULTURAL SOCIETY

GOLD MEDAL PLANT AWARD

by Paul W. Meyer

photo by Larry Albee

Viburnum dilatatum 'Erie' in bloom in late May at Scott Arboretum.

The maple's cinnamon-colored paperbark peels away and glistens in winter snow. A pair of white-blooming dogwoods defy disease and the vagaries of spring to blossom in May. Evergreen cryptomeria lends its beautiful texture and uncommon ease of maintenance to today's gardens, and two distinguished viburnums grace every season with fragrance and color in measures large and small.

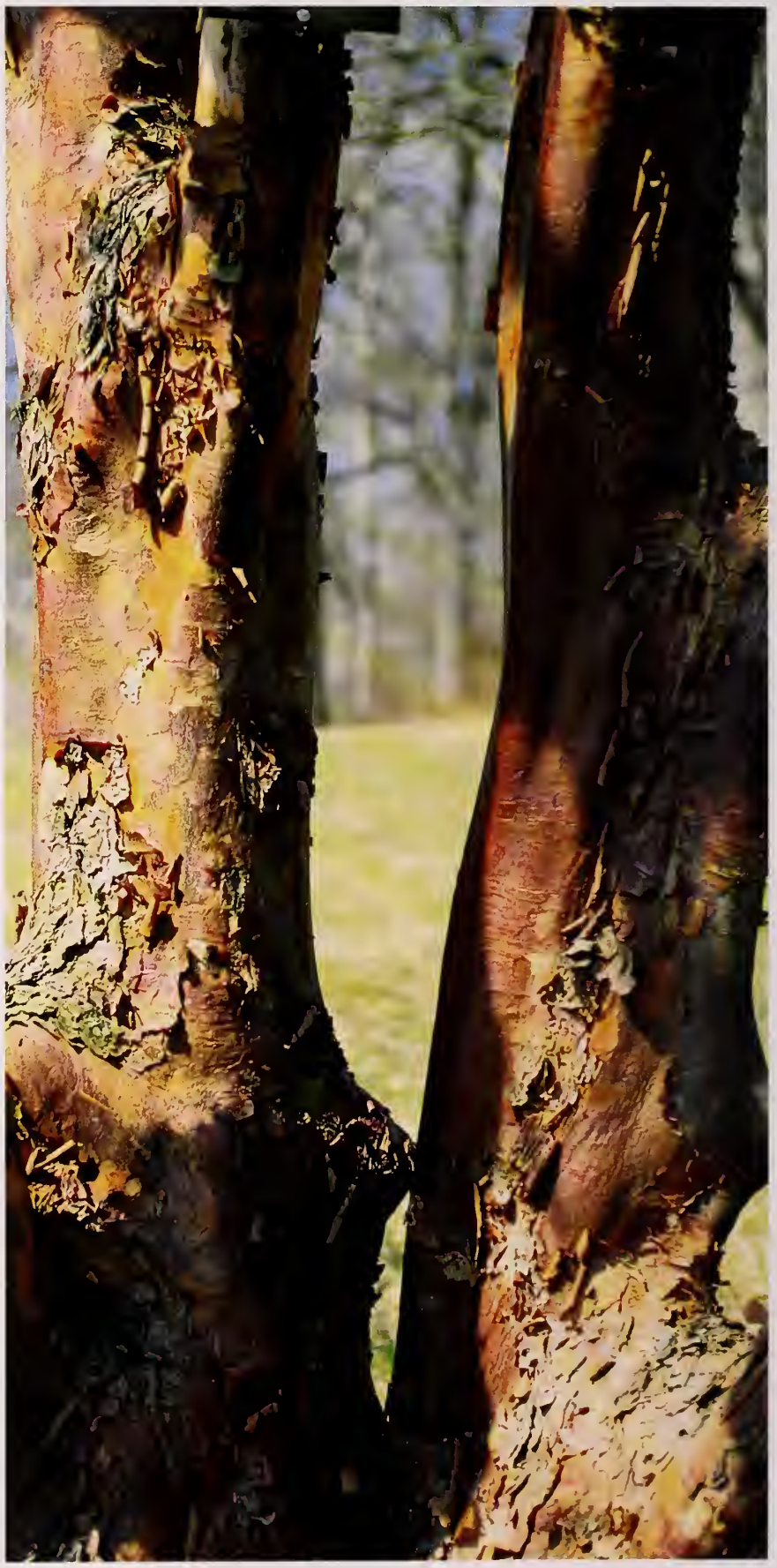
Beauty and strength are celebrated in the winners of the 1993 Pennsylvania Horticultural Society's Gold Medal Plant Award.

These woody ornamentals are exceptional in looks, habit and disease resistance. The PHS Gold Medal Plant Award, now in its sixth year, champions these plants, encouraging producers to grow and sell them and helping gardeners make excellent selections among the vast choices available to them. This annual Award, originally conceived by J. Franklin Styer, a leader in the nursery industry, has produced to date 36 plants that are proving to be garden classics.

Award winners are evaluated, usually over a period of years, by a panel of professional horticulturists, nursery representatives, landscape designers and highly skilled home gardeners. Each plant, hardy within 150 miles of Philadelphia — an area roughly extending from New York City to Washington, DC, grows in conditions comparable to much of the rest of the United States.

continued

Acer griseum



Closeup of the peeling bark of *Acer griseum.*

Acer griseum

Paperbark maple, a small shade tree, never fails to attract attention. Horticulturist Dick Lighty calls it a "show stopper" because of its shiny, smooth, peeling cinnamon-brown bark. Although especially attractive in the winter as bark glistens when backlit by sun and highlighted by snow, it's appealing throughout the year. In the autumn, its small compound leaves take on shades of orange, red, and yellow.

Paperbark maple is especially adaptable to small gardens because of its stature (20 to 30 feet) and its outstanding year-round landscape effect. Relatively slow growing, it performs best in moist, well-drained soil, rich in organic matter.

The famed plant explorer Ernest Wilson introduced paperbark maple in this country around the turn of the century from central China. Though quickly distributed to many botanic gardens throughout the world, it remained relatively rare in retail nurseries until recently. Low seed viability and difficulty in rooting cuttings explain its limited availability. Recent research has provided new techniques to increase the feasibility of propagation by cuttings. Though it is now more widely available, it's still relatively unknown among home gardeners. Mature specimens of paperbark maple can be seen in many botanic gardens including Scott Arboretum and the Morris Arboretum of the University of Pennsylvania.

It is well adapted to zones 5 to 8.

photo courtesy of Longwood Gardens

Acer griseum in leaf in late spring at Longwood Gardens.

Cryptomeria japonica 'Yoshino'

A summer photo of *Cryptomeria japonica* 'Yoshino' at Longwood Gardens.

photo by Larry Albee

Cryptomeria japonica 'Yoshino'

Japanese cryptomeria stands among the most elegant conifers. This narrow, conical evergreen tree can reach a height of 50 to 60 feet in the Delaware Valley, though it can exceed 150 feet in its Asian homeland. Horticulturists value it for its fine-textured evergreen foliage and gracefully drooping branchlets.

Individual plants vary widely within the species. Some are plagued with needle browning during dry summers or cold winters, and intermittent dieback, particularly on the lower branches. The cultivar 'Yoshino,' however, resists these problems and maintains its rich green color. Proven to be the best cultivar for growing conditions in the Delaware Valley, its tall conical form clothes itself to the ground with foliage. Among the fastest growing conifers, nurseryman Tom Dilatush says he knows of no match for this plant. The 'Yoshino' Japanese cryptomeria grows best in full sun or light shade and deep, moist, acidic soils. It is *not* drought tolerant. It's especially attractive when grown in clusters. As the tree matures, the reddish-brown bark becomes more prominent, gracefully peeling off in long strips.

Japanese cryptomeria grows best in zones 6 through 8.

continued

Two Excellent Offspring of *Cornus kou*

Cornus 'Rutban' Aurora™*

Cornus kousa x *C. florida*

The most beautiful of all temperate flowering trees of the northeastern United States, the common flowering dogwood *(Cornus florida),* has been plagued in recent years by several serious insect and disease problems greatly limiting its use. Many landscape designers have begun substituting plantings of the more stress tolerant and pest resistant Chinese dogwood *(Cornus kousa).* The Chinese dogwood blooms in late May and early June in the Delaware Valley, about three weeks after the common flowering dogwood.

Hoping to capitalize on the best assets of each of these closely related species, Dr. Elwin Orton of Rutgers University began a dogwood hybridization program in 1964. After many years of work, he selected six exceptionally floriferous hybrid cultivated varieties, which bloom during a period intermediate between the two species. In spring 1992, they were in full bloom at Rutgers during the week following May 19th. All the selections are very vigorous and, most important, are highly resistant to common dogwood borer. They also exhibit moderate to high resistance to *Discula,* the fungus that causes dogwood anthracnose. These hybrids seem more broadly adaptable to heavy or compacted soils than *C. florida.* All six cultivars are beautiful and useful selections, but the PHS Gold Medal Award Committee was particularly taken with two: *Cornus* x 'Rutban' (Aurora™) and *Cornus* x 'Rutlan' (Ruth Ellen™). Both are sterile and do not produce fruits but they have good orange-red fall color.

Cornus 'Rutban' Aurora™*

The 'Rutban' hybrid dogwood is vigorous and upright with large rounded, velvety, overlapping white floral bracts. It blooms as the foliage is emerging, and the highly prolific flower bracts completely clothe the tree in white. The bracts are pure white — whiter than the cream-colored *C. kousa* — and have rounded tips with a slight notch. The original tree growing at Rutgers University measured 20 feet tall by 19 feet wide. This cultivar can be limbed-up and is best used as an upright small tree.

photo by Larry Albee

photo by Larry Albee

Cornus 'Rutban' Aurora™ photographed in late May at Rutgers University, Cook College in New Brunswick, New Jersey.

Cornus 'Rutlan' Ruth Ellen™*

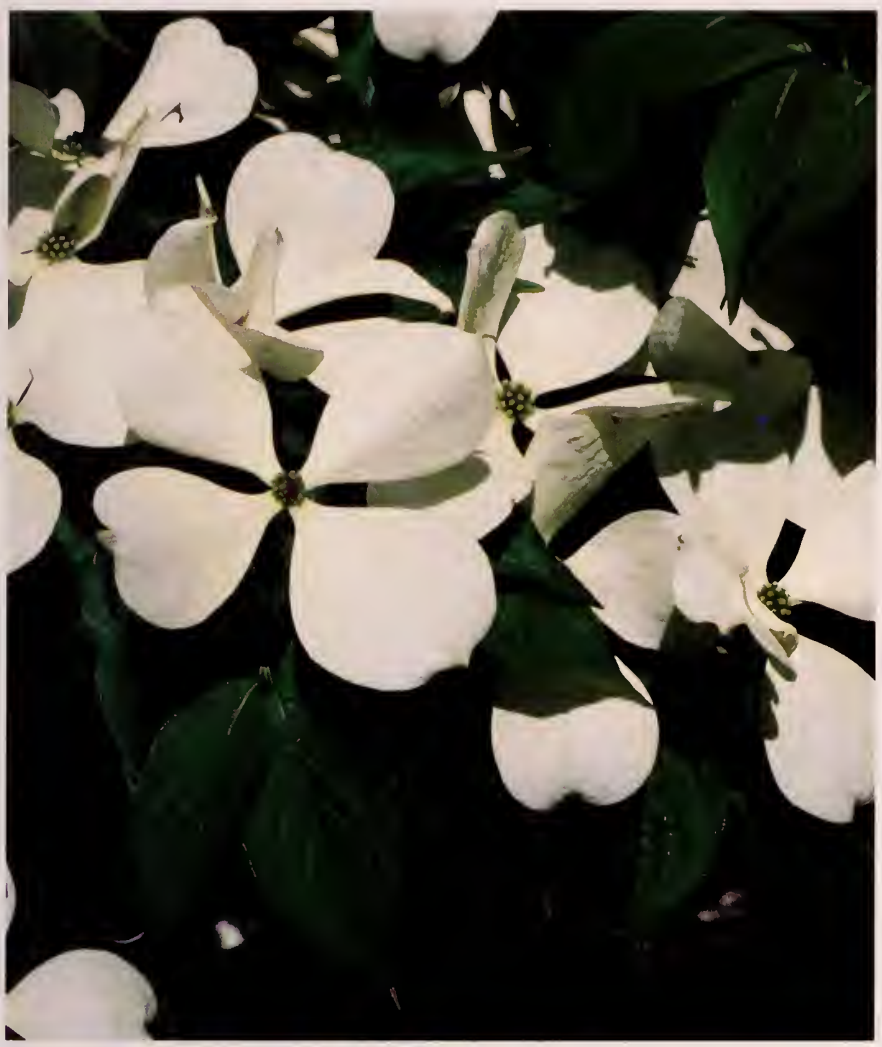


photo by Ellyn Meyers

photo by Ellyn Meyers

Cornus 'Rutlan' Ruth Ellen™ photographed in mid-May at Rutgers University, Cook College in New Brunswick, New Jersey.

Cornus 'Rutlan' Ruth Ellen™*

Though equally vigorous, 'Rutlan' grows lower and spreads more than 'Rutban,' with a horizontal form much like *Cornus florida.* It's most beautiful when the horizontal lower branches reach to the ground. The original tree measures 18 feet tall by 25 feet wide. This cultivar begins flowering just as the floral display of common dogwood ends, five to seven days ahead of 'Rutban.' Its pure white pointed bracts, narrowing to the base, differ a lot from *Cornus florida.* Landscape contractor Bill Heyser notes, " 'Rutlan' is breathtaking when in bloom . . . and along with 'Rutban' should soon become very popular."

Though these two cultivars have not been widely tested, it's likely they will grow best in zones 6 through 8.

Cultivar and Trademark Names

*To provide financial support for Dr. Orton's research program, which produced these *Cornus* selections, Rutgers University has applied patents and trademark names. These plants will be sold under the trademark names Aurora™ and Ruth Ellen™. Their official registered cultivar names, however, remain 'Rutban' and 'Rutlan.'

continued

photo by Larry Albee

Compare blossoms: Aurora™ (left), Ruth Ellen™ (right).

Viburnum dilatatum 'Erie'

photo by Larry Aldee

photo by Larry Aldee

Viburnum dilatatum 'Erie' flowers in late May; fruits ripen in September and persist through the winter. Photographed at Scott Arboretum.

***Viburnum dilatatum* 'Erie'**

We find many useful and widely adaptable garden shrubs within the genus *Viburnum.* The linden virburnum *(Viburnum dilatatum)* is a long-time garden favorite, grown for its large clusters of creamy-white flowers in late May and especially for its fruits, which ripen in September and often persist long into the winter. The late Dr. Donald R. Egolf of the U.S. National Arboretum selected the cultivar 'Erie' from a population of plants raised from seed wild-collected in Japan. He chose it for its consistently heavy fruit set and its bright coral-red fruit color. After 14 years, the original plant was just over six feet tall by 10 feet wide. In autumn, its leaves' shades of yellow, orange, and red, dramatically highlight the fruits. As autumn progresses, the maturing fruits change from orange to purple-red, and ultimately to coral. The coral color, most intense just after the first heavy frost of the season, becomes less brilliant as the winter advances. The black older branches provide a strong contrast to the bright fruits.

Like other viburnums, 'Erie' is easy to cultivate and adapts widely to diverse climate and soil conditions. Although it flowers and fruits best in full sun, it also tolerates light shade. It's easily propagated by softwood or hardwood cuttings.

Claire Sawyers, director of the Scott Arboretum, is justifiably proud of a fine mass of 'Erie' used in their Winter Garden. The fruits persist long into the winter and combine handsomely with fruits of the nearby 'Winter King' hawthorn (another PHS Gold Medal Award winner). Philip Normandy, curator of Brookside Botanic Garden, notes that the 'Erie' is self-incompatible, or at least partially so, and requires a plant of another clone of linden viburnum such as 'Iroquis' to provide good pollination and ultimately, good fruits. For gardeners who are overwhelmed by the diversity of viburnum choices, 'Erie' is hard to beat for landscape fruit display.

This cultivar grows best in zones 5 through 8.

Viburnum x 'Mohawk'

photo by Larry Albee

Viburnum x 'Mohawk'

Dr. Egolf is also responsible for the Mohawk viburnum, the result of a controlled breeding program. A back cross of *Viburnum* x *burkwoodii* to *Viburnum carlesii,* it bears red buds that open to fragrant white flowers in late April. V. x 'Mohawk' was selected for these special characteristics: brilliant red bud coloration that appears several weeks before the flowers begin to open; reliable heavy flowering; and glossy dark-green foliage, resistant to bacterial leaf spot. In autumn, the leaves turn a brilliant orange-red.

The 'Mohawk' viburnum, a spreading shrub, reaches a height of six feet. Its cultural requirements are similar to that of *Viburnum dilatatum* 'Erie.' Judy Zuk, president of the Brooklyn Botanic Garden, says, "For fragrance it cannot be beat; it's a well-behaved shrub, well suited to the rear of a perennial border."

It grows best in zones 4 through 8.

continued

photo by Larry Albee

Viburnum 'Mohawk'. The fragrant flowers burst from red buds in April in the Delaware Valley. Photographed at the U.S. National Arboretum in Washington, D.C.

Paul W. Meyer is director of Morris Arboretum of the University of Pennsylvania. He is particularly active in the field of plant exploration, evaluation and introduction.

AWARD WINNERS

Gold Medal Plant Award 1988 through 1992

Betula nigra 'Heritage'
Callicarpa dichotoma
Clematis viticella 'Betty Corning'
Cornus sericea 'Silver and Gold'
Crataegus viridis 'Winter King'
Daphne caucasica
Deutzia gracilis 'Nikko'
Fothergilla gardenii 'Blue Mist'
Hamamelis mollis 'Pallida'
Hamamelis x *intermedia* 'Diane'
Hedera helix 'Buttercup'
Hibiscus syriacus 'Diana'
Hydrangea quercifolia 'Snow Queen'
Hydrangea macrophylla 'Blue Billow'
Ilex serrata x *I. verticillata* 'Sparkleberry'
Ilex x 'Harvest Red'
Itea virginica 'Henry's Garnet'
Magnolia x 'Galaxy'
Magnolia acuminata x *M. heptapeta* 'Elizabeth'
Magnolia grandiflora 'Edith Bogue'
Malus 'Donald Wyman'
Malus 'Jewelberry'
Picea orientalis
Prunus incisa x *P. campanulata* 'Okame'
Sciadopitys verticillata
Stewartia pseudocamellia var. *koreana*
Viburnum x 'Eskimo'
Viburnum nudum 'Winterthur'
Viburnum plicatum f. *tomentosum* 'Shasta'
Zelkova serrata 'Green Vase'

How to Enter a Plant for The Pennsylvania Horticultural Society Gold Medal Plant Award

We invite you and your gardening friends to let us know about exceptional plants that might merit the PHS Gold Medal Plant Award. To obtain entry forms call PHS at (215) 625-8299.

Submissions must be made to the Society with entry forms and three to five slides by December 1st.

When making entries please remember:

- for each entry, a minimum of three landscape-size plants must be accessible to evaluators in a botanical garden, arboretum or nursery located within 150 miles of Philadelphia (in the area extending from Washington, D.C. to New York City).
- a program of propagation and distribution should be underway for all entries to enable growers, retailers and mail order sources to obtain stock for distribution.

Where To Buy Pennsylvania Horticultural Society Gold Medal Plant Award Winners

As with all production operations, both wholesale and retail nurseries walk the delicate tightrope between supply and demand. Their situation is further complicated by the long lead-time needed to produce plants large enough to attract demand in the retail nursery.

As part of the Gold Medal Plant Award program, the Society informs people who produce and sell plants in the areas where ***Green Scene*** readers live about the winners.

We hope you will be able to find these plants in your garden centers. If you cannot, we'll be happy to send you or your local garden center a source list. Send a stamped, self-addressed business-size envelope to The Pennsylvania Horticultural Society Gold Medal Plant Award, Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106-2777. Both retail mail order and wholesale sources are included in the list.

EVALUATORS

Paul W. Meyer, **Chair**
Darrel Apps
Tom Dilatush
William H. Frederick, Jr.
Richard Hesselein
William Heyser
Steve Hutton
Richard W. Lighty
Philip W. Normandy
Sally Reath
Claire Sawyers
J. Franklin Styer
Charles Zafonte
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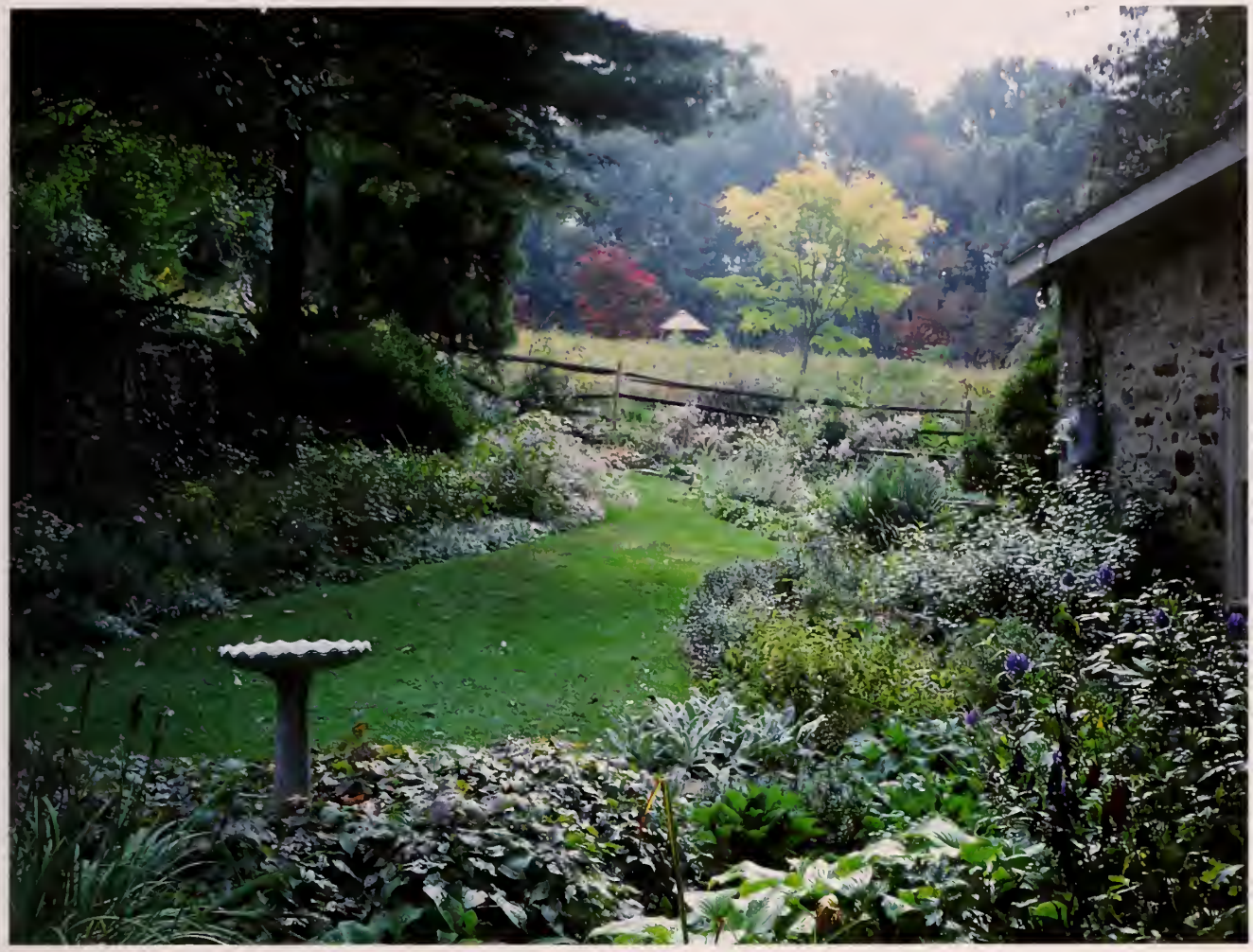
We are grateful to Alan and Charlotte Slack for their assistance with this program.

photo by Joanna McQ. Reed



The view through to Reed's meadow was opened up by the removal of a hawthorn. An *Evodin* further out in the meadow replaced the hawthorn as a focal point and will not shade the border.

WHY RENOVATE A GARDEN

by Joanna McQ. Reed

Joanna Reed and her late husband George bought their house and 49 acres 53 years ago at a sheriff's sale. To date, Joanna Reed has worked her way through nine five-year plans, and she thinks she might get it the way she wants it in "10 more years."

Joanna manages the garden solo now, and can still mow the equivalent of 13 miles in one day. For those who have been hesitant to renovate their garden, Joanna Reed offers suggestions to get you started and some short- and long-range projects to keep yourself renovating.

continued

photos by Joanna McQ. Reed

The author cut out mixed plantings of lilac, mock orange, forsythia and weigela that shrank the defined spaces and whose roots competed with flowering perennials. She believes the new views, plus the increased air flow, justified the hard work.

Not many persons allow their garden to become so overgrown that it requires complete renovation before having reached completion. I had, and it was a valid reason to renovate.

The purchase of a new home whose gardens have been developed by one or more previous owners is a more usual reason. The need to enhance a historic structure, domestic or public, with plantings appropriate and authentic to the period is another.

Or the reason could be a wish for a change, triggered by a desire to focus on alpines or rhododendrons. Or a yearning to replace those early attempts with a sophisticated setting for well-grown, meticulously groomed potted specimens.

The garden itself produces reasons. Trees and shrubs grow, shade replaces sun. Conversely a storm blows through leaving extra light. In either case plantings require adjustment and/or change.

I can only speak from personal experiences, and hope some of my experiences and thoughts will help others. For the past eight years I have been renovating Longview Farm, a task I expected to have well in hand in four or five years. I came to the project with fixed ideas, projected time and work schedules. I've learned much in the process, most importantly that all gardens need constant renovation. The resident animals and the weather control the schedules.

The sage advice of a friend to look only at what was finished and to back into what needed to be done has sustained my sometimes withering resolve. That, along with the "will-of-the-wisp" charm of all gardens, with their insatiable need for new plants and suitable companions, all of which need more space. Thus the garden grows, keeping the gardener flexible in mind and body.

Removing the trees

In the first and overall assessment it was clearly important to cut back several acres of young volunteer trees to ground level. They were rapidly turning the upper meadow, the sole remnant of our once open land, into more woods. I hope an annual mowing will keep woody growth in check.

Next was the need to create drainage ditches and a retention pond to control an ever-increasing volume of runoff water from the hill above. Additional homes with deep wells and household appliances have so saturated their land that heavy rains and melting snows wash over and erode our meadows and woods if not thus channelled. These considerations are unusual but needed to be addressed for the sake of the garden.

My late husband George's insistence that walls and terraces be constructed with sound foundations paid off. Only one dry wall needed rebuilding, this time with cement and a foundation, mainly to prevent the regeneration of gout weed or Bishop's weed *(Aegopodium podograria)* between the loose stones. The old barnyard wall had developed an ominous bulge. Contrary to my fervent hopes it did collapse and required extensive repair. Thankfully all other walls, which divided areas into rooms, terraces and edgings were intact. The general design they created still suited the contours and enhanced the site.

Trees and shrubs had matured. With maturity had come shade. Could I be happy with predominantly shade-loving plants? No, I love color and color needs sun. Which plants have to go? A difficult but crucial choice. In choosing which trees to keep I considered health, location, shape and the

The sage advice of a friend to look only at what was finished and to back into what needed to be done has sustained my sometimes withering resolve.

dropped by birds that nested or sheltered in the recently removed tree branches. As I remember reading about the viability of seeds found in Egyptian tombs, I shudder. Will I forever be removing such seedlings? Who knows how many seeds those busy birds dropped?

On the subject of seedlings, be on the lookout for any and all tree seedlings in their first season. Nut trees, oaks, and others make 18- to 24-inch roots the first year and are almost impossible to remove by the following summer. That's also true of overly vigorous vines especially wisteria and trumpet vine.

Removing the shrubs

Next to be assessed were the shrubs throughout the garden. In the first flush of enthusiasm we planted too many due both to a desire for variety and a nagging doubt that they wouldn't prosper and ever reach their acclaimed size.

A mixed planting of lilac, mock orange, forsythia, and weigela, originally a background for herbaceous plants, had become a barrier between garden and open land beyond. Visually they stifled and shrank the defined spaces while their root systems were devastating competition for flowering perennials. I saved a clump of double white lilac for its beauty, fragrance and location. One large mock orange could be pulled out by tractor. The others, due to location, required hand digging; cutting back and thinning had not been enough. The resulting views plus the increased air flow and space justified the hard work.

Still a problem in the same area is a three-foot-tall polygonum, proudly advertised by a reputable firm 35 or more years ago as dwarf and noninvasive. It has spread, amid the other shrubs, to cover a space roughly 30 x 40 feet. Because of a favorite cotoneaster, a large cryptomeria and the white lilac, I hesitated to use a spray. After years of digging I will selectively paint Roundup on the remaining pieces during these next few years. It might have been smarter to have taken the more aggressive action sooner.

Other shrubs that needed removal were *Cornus stolonifera,* originally planted in mass to screen out a highway. Good for use in wet areas, their need for excessive pruning to produce their attractive red

continued

relationship with other trees and buildings. (A valuable tip: avoid discussing tree removal. Trees take on the hallowed status of a grandparent at the first hint of their impending demise. Unsolicited excuses for keeping even an ordinary tree in a sad state of decline will be offered.)

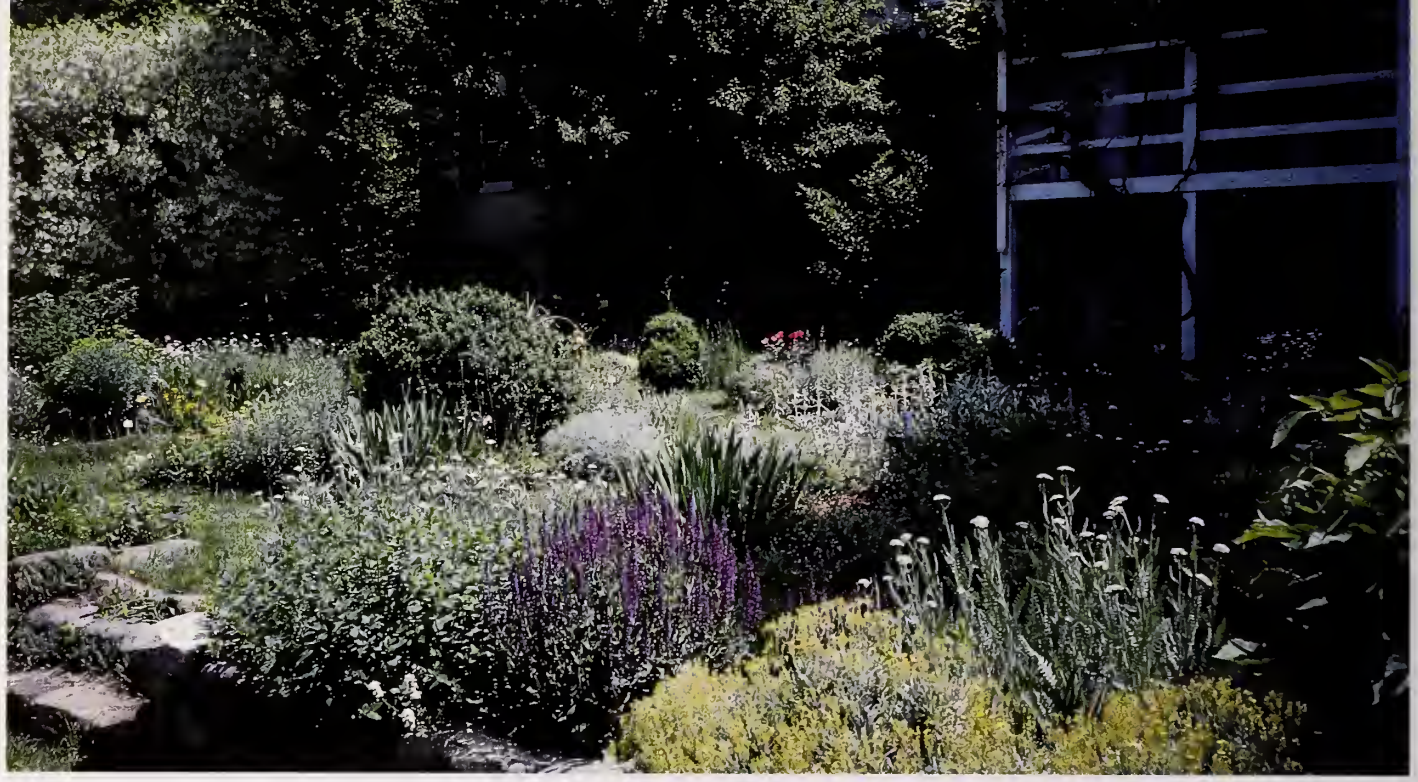
After I removed a towering silver maple, an aged half-dead walnut, two tall spruce, three crab apples, four dogwoods, a large hawthorn and a young prickly ash, (previously noncommital) friends now admire the beauty of a tree. Individual trees now visible from various vantage points have assumed greater importance in the landscape.

Unexpectedly I have also lost a multi-trunk paper mulberry, an *Idesia,* spectacular in fruit, and a favorite old crab apple, each of which had been raised to star status, all victims of wind. Could this be an arboreal protest? I wonder.

The additional light, planned and unexpected, has brought renewed vigor to the understory plants, woody and herbaceous. This same beneficial light has also brought forth an amazing concentration of weed seedlings: poke, dock, corn-cockle, bittersweet, etc. Their seeds, long dormant, were

The *Ilex verticillata* brings height to the daylily and iris beds as well as adding winter color with their bright berries.

photos by Joanna McQ. Reed



One of the rules for renovating a garden: Give individual garden spaces a distinct personality. Here the author shows her parterre planted with fragrant herbs.

stems was time consuming. I'm certain the newer cultivars behave better. The species has a propensity to form ever enlarging and advancing thickets and would eventually have overwhelmed the daylily and iris beds. Now *Ilex verticillata* brings the desired height to these beds maintaining the original design concept plus adding welcome winter color with their bright berries.

Assessing the borders and beds

With the excess trees and shrubs removed, the parameters of the garden were once again established, the original design still pleasing and once again apparent. Borders and beds could be addressed. This meant dealing with aggressive plants, which I myself had introduced intentionally and accidentally.

Anyone who has or will buy a house with an existing garden is apt to be confronted with the same problem. I am convinced many a change of domicile was dictated by the appearance of gout weed, mugwort *(Artemisia vulgaris),* or if living in the country, Canadian thistle *(Cirsium arvense).*

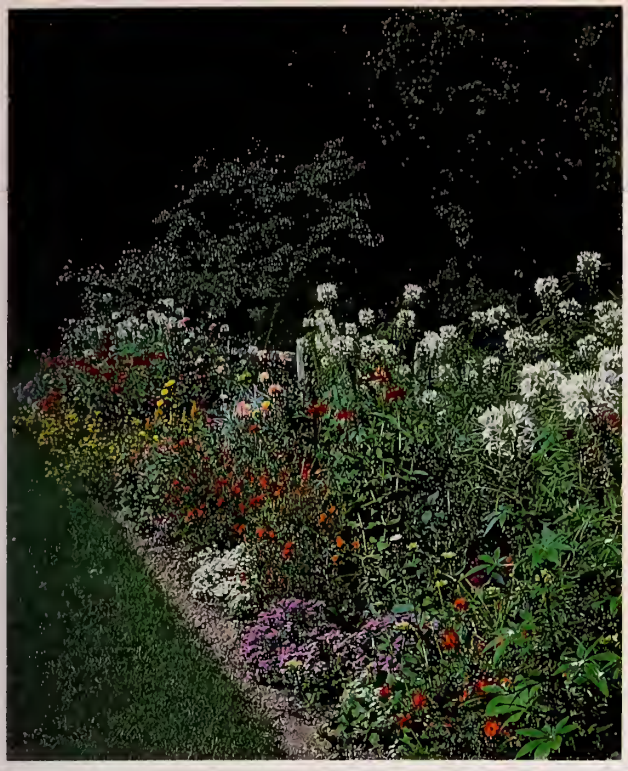
When I first discovered these lovelies, I should have removed each gift plant that harbored the offensive roots of these scourges. Being naive and optimistic I assumed I could control the menace. Now battles are won in spots; the outcome of the total war will be for the future to judge. At present I'm using a twofold program: wherever the roots of offending perennial plants have hopelessly intermingled with the roots of desired trees and shrubs I carefully paint the foliage of the offender with a systemic poison (e.g. Roundup). The second approach, that I more generally use, is an overall enrichment of affected areas by a generous use of fertilizer, lime and mulch. The improved tilth of the soil allows the offensive roots, strong and healthy now, thus less apt to break into small bits and pieces, to be pulled in their entirety from the ground. With either of these programs several seasons of continual watchfulness and action will be necessary for success — obviously I remain an optimist. Other and more pleasant and positive decisions were:

- To eliminate some beds and borders entirely if this would not weaken the design as a whole.
- To give up the vegetable and small fruit garden, unsightly if not meticulously cared for.
- To use that same area to propagate ornamental plants needed in the gardens: rescued ones, almost lost during years of neglect; new ones, while studying their habits and requirements; and also the reliable old standbys one can never have too many of.
- To re-establish a long border on the meadow side of a fence to accommodate large and aggressive, but still highly desirable plants, and to provide also a buffer between field and garden. Reshaping the meadow edge of this lengthy bed to conform to natural land contours rather than repeat the straight fence line has made a pleasing aesthetic difference. Why does it take so long to discover simple solutions?
- To work toward giving individual garden spaces each a distinct personality by the use of plants.
- To better visually lead visitors through the garden from space to space by the use of focal points, vistas, paths and plants.

Years ago I considered my garden an experiment. It still is just that. As I garden I seem to generate questions as often as answers. For example, will the rich blue of *Pulmonaria angustifolia* (lungwort) and *Euphorbia griffithii* 'Fireglow' (translucent orange) ever gloriously bloom in unison again? Having last fall made two prominent plantings of this combination I sincerely hope so. This spring they bloomed one month apart.

Is it wise to keep growing more and more species and cultivars of *Hemerocallis* (daylilies) since they unquestionably require daily deadheading? Yes, for me, visiting each clump, counting the buds still to bloom, removing yesterday's faded blossoms and seeing the plant instantly regain its vibrancy is one of summer's pure pleasures.

Is it wise to keep growing more and more species and cultivars of* Hemerocallis *(daylilies) since they unquestionably require daily deadheading? Yes, for me, visiting each clump, counting the buds still to bloom, removing yesterday's faded blossoms and seeing the plant instantly regain its vibrancy is one of summer's pure pleasures.



A second tip when renovating a garden: A neat edge is first aid.

The rabbits developed a passion for Joanna's poppies. Have they left enough to generate a crop for next year?

My interest in seeds and pods left on plants for their individual beauty, to create next year's wash of color or the extra interest and dimension they bring to the garden's design, would never be the choice of a fastidious gardener. Too unkempt, plus requiring additional weeding. The one answer, which grew ever more clear, was that choices and decisions must fit the gardener as well as the garden.

Other gleanings

May I share some gleanings from the past few years. If you have a plague of animals, above and below the ground, count them into your planning. They undoubtedly appreciate your cafeteria and plan to remain. Assume they will eat grass and clover only as a last resort. This year my rabbits developed a passion for poppies. Have they left enough seed to generate a crop for next year? Only time will tell.

After years of not stepping into beds for fear of compacting the soil, I find myself now constantly leaping into the selfsame beds, to tread down the upheaval left by voles. Enough said about animals, we all have them. We continue to share the same land incompatibly.

I find mowing a peaceful rewarding pursuit. A chance to appreciate the garden from many angles, to have an overview of areas that might profit from a change, and to access the flow from one area to the next. Gentle curves are easier to mow than sharp turns. The occasional straight path and rectilinear lawn, however, gains important by such contrast. Awkward corners or level differences can be eliminated by the use of hardy groundcovers, herbaceous or woody, reducing mowing time.

A neat edge is first aid to any garden, even an informal country one like mine. Unfortunately the often recommended paved mowing strips were designed with reel mowers in mind. The rotary mower leaves a shaggy eyebrow look. Hand clipping, as tedious as it might sound, can and does entice one (especially when nearsighted) into hand weeding, clipping and grooming the border plants simultaneously. (A rewarding but readily postponed chore.)

Choices and decisions must fit the gardener as well as the garden.

The repetitive use of specific plants, colors, and/or textures throughout a garden make it cohesive, exciting and alive. Areas can be made to appear spacious or intimate by the juxtaposition or dispersal of color.

Often casual effects are the most laborious. Dependence on great drifts of self-sown annuals and biennials means much hand weeding. Mixtures of wild flowers with garden varieties demand more than an annual cleanup. Goldenrods, asters, eupatoriums, etc. are wild flowers due to their aggressive ways, willing to use the crowns of treasured perennials as hummocks on which to establish their young seedlings.

A decision to overplant bulbs years ago, naturalized in lawns, with large beds of mixed plantings has proven a dual success. Twelve months of textural interest, added periods of color, and the elimination of weeks of unsightly bulb foliage.

By giving a few specific areas intensive care for one or two years and then letting them develop at will, while other spots receive preferential treatment in their turn, plants well suited to particular soils or locales have spread and prospered. The less suitable ones, provided they survived, can be tried elsewhere. By the same token plants repeatedly munched by deer are moved to a site that I hope will be undiscovered for a while. Substitutes less appealing to the deer's epicurean taste are constantly sought and tested.

During these past eight years it has become increasingly clear that garden renovation is a continuing process. How could I so brashly have thought I could confine such a partner as Nature to a set schedule?

First, foremost and for always gardening is for pleasure. The pleasure of working and tending a plot of ground, the pleasure of dreaming of its future and remembering its past, the pleasure of sharing its delights with friend or stranger, that is why one renovates a garden.

●

Joanna Reed, whose garden is open to the public starting in April (see ad in March 1993 issue), grows in enthusiasm and knowledge with each visitor. Joanna's garden has been featured in many magazine articles and several books, the latest of which is *Moments in the Garden* by Tovah Martin, Hearst Books (affiliate of Wm. Morrow), New York, 1991. Joanna Reed is past president of the Herb Society of America, and past chair of the Philadelphia Unit of the HSA.

Grow Columbine From Seed– *a long-range project*

by Adra A. Fairman

photo by Pamela Harper

Aquilegia caerulea.

The author grows columbine from seed to sell plants at local sales to benefit the communities near her.

"All's right with the world," wrote poet Robert Browning, and that's how I feel when I'm devoting myself to my latest project.

Growing columbine from seeds to blooming-stage plants, a long-range undertaking, requires two to three years for completion. The highly satisfactory results and the joys I derive from it make it worth the many hours I spend, because the time spent is fun rather than a chore. It's an absorbing and challenging endeavor and the times flies by quickly.

I grow the columbine *(Aquilegia)* to sell as blooming plants at my garden club's May Market, the Garden Tent of the local hospital fair, to give to gardening friends and, most important, to replenish my own flower borders.

Aquilegia frequently seem to act like biennials: bloom the second year from seed and then peter out. The yellow-flowered *A. chrysantha* goes on five or six years or more, but some of the dwarf hybrids like the Music hybrids or the Biedermeier series tend to disappear after a year or two. In my own gardens, I find a steady replacement program essential for continuous bloom.

Blooming plants are here before I know it especially now that I have been engaged in their production for several years. I start in March with seed purchased from such sources as Thompson and Morgan, Burpee, Park Seed, or Stokes. I try to buy unusual varieties like *A. flabellata* 'Mini Star,' a dwarf blue and white; Dwarf-Fairyland, a short-spurred, upward-facing dwarf that comes in shades of lilac, blue, pink and carmine. Music hybrids, only 18 inches tall, have long-spurred flowers in red, yellow, blue or white, while *A. caerulea* 'Alba' described as spurless, resembles a clematis. I have yet to flower this last variety, but I now have seedlings of it that I hope to see in bloom next spring. Biedermeier hybrids are marvelous colors: an almost double form of blue, white, red, yellow and purple, while the newly available 'Michael Stromminger' is advertised as three feet tall and a mulberry rose color. I started that this year.

I also collect seed from my own plants in June, gathering only from the most spectacular and outstanding ones. In the past year I have saved seed from a tall pink, short-spurred one; a dwarf double white; a lemon-colored, lavender combination; and my favorite, a tall royal blue and white.

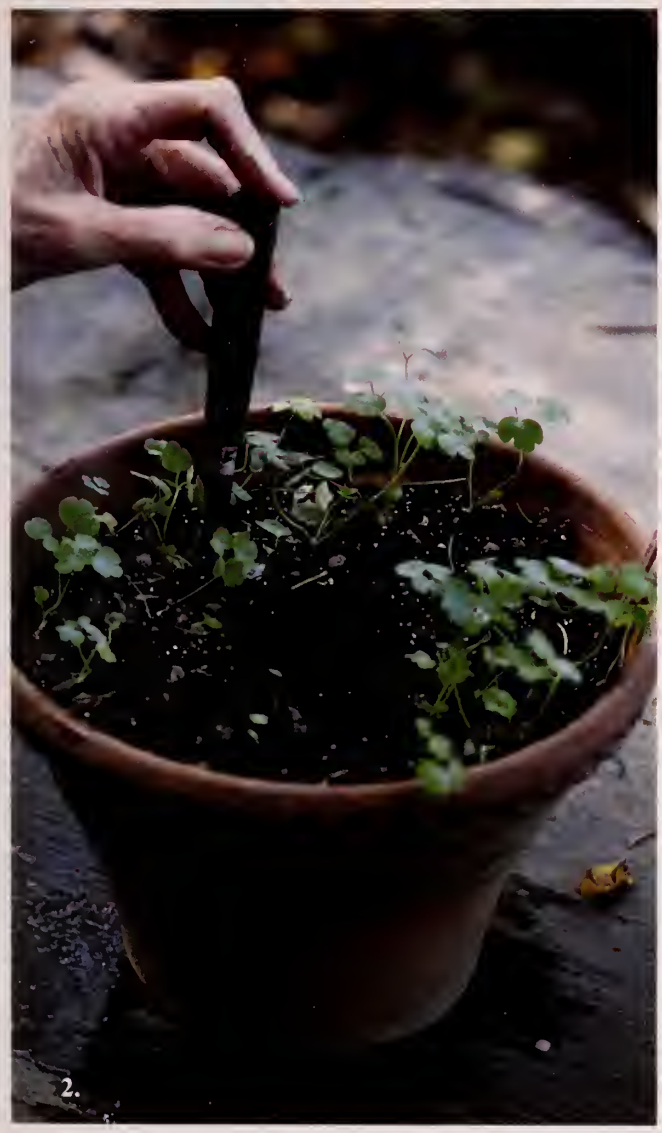
Indoor planting: March

The purchased seed is sown indoors in March in a starter kit. The kit (Accelerated Propagation System, see Source list) consists of a tray of growing cells filled with sterile potting soil and placed on a capillary mat that draws water up from another tray below. A plastic cover that comes with the set remains in place only until the seeds

continued

COLUMBINES - FROM SEEDS TO BLOOMING-STAGE PLANTS.

photos by Lucy Belding



After seedlings are removed from flats, they are placed in a 10-inch pot, 2 inches apart. **(1.)** Note smaller pot, with cork in the drainage hole and filled with water, to keep the plants moist. The seedlings in their pot are then sunk into the ground to hold over the winter. In spring, remove center pot and dig out each plant with a paring knife **(2.)** to replant in individual pots **(3.)** which are held and watered for a week or two before sinking into the ground again **(4.)**. A wire cage surrounds the pots and ground planting to protect from deer. Two-year-old plants **(5.)** have spent a year in the ground. Some will bloom this year; some will be held over.

photos by Pamela Harper

Aquilegia chrysantha hybrid, detail.

Aquilegia flabellata 'Mini Star'. (Known as *A. akitensis* at some nurseries and gardens and also distributed under other names.)

germinate and the first leaves appear. All plantings are marked with their names, colors, date of seeding, height, long spur, short spur, etc.

The seeds germinate slowly, 25 to 30 days according to the information on the seed packets, and indoor germination is not always very high. I save half the packet of seed to sow outdoors in June when I sow the ripe seed from my own plants. The saved seeds usually do well because they are sown at the same time that nature scatters them. The indoor sowing has a head start.

Everyday in June I watch the pods carefully for those I want, as they must be picked at an exact stage. The ingenious manner in which nature scatters the seeds is the clue: just as the pods turn brown and begin to form a characteristic twisted look. If left on the plant too long, that twist turns into a pinwheel that bursts and throws the seeds far and wide. I do not want the seeds in my garden; I want them in a flat where I can mark them for color and height and watch them to keep them from drying out.

Lately, I have experimented with stratifying the seeds: storing them in packets in glass jars in the refrigerator for five days to give them a period of cold. I believe the germination rate from seed so treated has increased, but I will continue the experiment for another several years before I am certain.

Outdoor planting: June

In June I plant again in the same type of flats that I used in March, set on capillary matting and covered with a plastic dome. Purchased sterile potting soil obviates any danger of damping off. Outside, I keep flats in a cool, shaded spot until the first set of leaves appears. As any experienced gardener knows, these first leaves bear no resemblance to the true leaves and when the second set of the latter appears, the plants are ready to transplant. Now I put them in a medium to carry them through their first year, usually in August or September.

I fill a large terra-cotta pot, about 10 inches wide, with the following mix: 2 inches of broken clay shards in the bottom; 2 inches of rough compost; then loose sterile potting soil filled to within 2 inches of the top. I make a depression in the center of the soil and insert into it a 2½-inch clay pot, sinking it to soil level. This pot has been previously stoppered with a cork that fits its drainage hole tightly; it will be filled with water later.

The seedlings in the cells germinate very close to each other as the very fine seed makes it impossible to sow it except closely.

To prick the tiny plants out of their flat, I use an old discarded paring knife; I then plant the seedlings in even circles around the small clay pot in the center. I use a pencil as a dibble to make a hole for each plant to insert them without harming their surprisingly long roots. When planting the seedlings about an inch apart, I firm the soil and fill the center pot with water. The water seeps through the walls of the stoppered pot and keeps the plants moist. I keep the big pot in the shade for a few days and then sink it to rim level in the ground to overwinter. Being in the ground helps to keep it from drying out and the center well, which I keep filled with water, continues to keep the plants moist.

Transfer to pots

By the following spring, the plants have grown to an amazing size. At this stage, a year from their initial seeding if indoors, and 10 months if outdoors, the plants are ready to be transplanted again, this time into individual pots.

Clay pots are best but they have become very expensive, since I give them away, so I compromise and settle for some clay and some plastic ones. I go to a retail plant market where they sell and sometimes even give away used pots. Their used clay pots are very dirty, so I scrub them with warm water and a steel wool pad. Sometimes, stubborn stains from fertilizer salts can be removed only when soaked over-

night in a solution of bleach and water. The plastic pots need only be rinsed, and they have as well the advantage of coming in many sizes and shapes. Square pots fits neatly in rows and take up much less room than round. The wide choice of sizes makes it easy to fit the size of the plant to the size of the pot. A tiny plant in a pot too big for it will not flourish.

I remove the small, center pot carefully and, again using my old rusty paring knife, I cut a section around each plant. I also try to cut underneath to sever the root ball cleanly. I have the pot ready, whatever its size or material, half filled with good soil that I mix myself. Here's how I do it.

We have a deer problem and they love columbine so we've rigged up a green plastic wire enclosure to protect the pots from marauders.

In a pit dug at the edge of my cutting garden, I mix this excellent potting soil: one-third garden soil or clay (if that's all that's available), one-third vermiculite and one-third sifted compost. I turn it with a spading fork to mix it thoroughly. I carry a pail of the mix to my potting table, a piece of 4'x8' plywood atop two wooden horses. Because it's situated in a lovely, woodsy spot, half sun and half shade, I do all my transplanting work on it. These hours are the fun time for me; an English friend called it "pottering and puttering" when she saw me at work there.

When the individual pots are ready (and this year I planted close to 100), I again sink them in the ground in the shadiest part of my garden. We have a deer problem and they love columbine so we've rigged up a green plastic wire enclosure to protect the pots from marauders. I find a heavy steel trowel adequate to dig the holes for the pots.

If droughty conditions prevail after placing the pots in the ground, I water the beds, using the water wand to give them a gentle soaking; I never allow them to go into the winter unless they are well moistened.

The following spring will bring bloom on some plants and not on others. I take only blooming plants to any of the markets I supply; people are much more apt to buy a plant in bloom. Only the very sophisticated gardener will chance a plant without a blossom. I simply hold those that do not bloom over in the enclosed beds until the next year when they do bloom.

I was able to supply 36 plants to our May Market, and they sold for an average of $4.00 a pot. Remember, these are varieties one cannot easily find at the plant centers. McKana hybrids are occasionally available commercially but my double dwarf white has it all over them, and knowledgeable gardeners eagerly seek them out. The Biedermeier hybrids are always in great demand as are 'Mini-Star' and 'Dwarf-Fairyland.' Funds that we raise at our May Market support our many civic projects.

It isn't really the money I help raise that I care about; the biggest satisfaction I derive from this two-year project is in the doing. My potting table, in its idyllic woodland setting, is a real joy to work at: the wrens nest nearby with their happy twitter and a garter snake suns itself on the adjacent compost heap. Cat birds, mocking birds, orioles and cardinals flit in and out of the woods. The tensions of daily life disappear miraculously.

"God's in his heaven, all's right with the world." And next year 100 more pots to give away?

Sources of Indoor Seed Starting Systems

Gardener's Supply Company
128 Intervale Road
Burlington, VT 05401
(802) 863-1700
APS (Accelerated Propagation System) Starter kits

W. Atlee Burpee Co.
300 Park Avenue
Warminster, PA 18974
(215) 674-9633
Seed 'n Start kits

Park Seed Co.
Cokesbury Road
Greenwood, SC 29647-0001
(803) 223-7333
Park-Starts Seed Starter kits

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Adra Fairman, a member of the Stony Brook Garden Club of Princeton, is an accredited Garden Club of America Horticultural judge. She is a Board Member of the Princeton Committee of the New Jersey Environmental Federation, and she has authored several environmental pamphlets for them. Fairman is past president of the New Jersey Daffodil Society.

Seed Sources

W. Atlee Burpee Co.
300 Park Avenue
Warminster, PA 18974
(215) 674-9633
- McKana Giant Mixed
- Songbird Hybrid Series
- Harlequin Mixed

J.W. Jung Seed Co.
335 S. High Street
Randolph, WI 53957-0001
(414) 326-4100
- McKana Giant Mixed
- Biedermeier Hybrid Series

Nichols Garden Nursery
1190 North Pacific Highway
Albany, OR 97321-4598
(503) 928-9280
- McKana Giant Mixed
- *A. hybrida* 'Nora Barlow' a double pink, green, white

Park Seed Co.
Cokesbury Road
Greenwood, SC 29647-0001
(803) 223-7333
- McKana Giant Mixed
- Music Harmony Blend
- *A. akitensis* 'Blue'
- *A. caerula* (Rocky Mountain columbine)

Stokes Seeds
Box 548
Buffalo, NY 14240
(416) 684-8411
- McKana Giant Mixed
- Biedermeier Hybrid Series
- Music Dwarf Hybrids, Music Harmony Mix
- Plena Mix
- *A. hybrida* 'Nora Barlow'

Thompson & Morgan
P.O. Box 1308
Jackson, NJ 08527
(908) 363-2225
- McKana Giant Mixed
- *A. caerula*
- *A. canadensis*
- *A. chrysantha* 'Yellow Star'
- *A. clematiflora alba*
- *A. flabellata*
- *A. flabellata pumila alba*
- *A. flabellata* 'Mini-Star'
- Dwarf-Fairyland Mixed Music Mix
- *A. hybrida* 'Red Star'
- *A. hybrida* 'Nora Barlow'
- *A. hybrida* 'Snow Queen'
- *A. vulgaris* 'Michael Stromminger'
- *A. vulgaris plena*

LABELS:

How to choose the best kinds for your garden

by Betty Barr Mackey

Crunch! A plastic label crackles underfoot. The sharp edge of a metal label scratches my ankle.

Although labels can be annoying, for some gardeners they are essential. Anyone learning new plants, breeding, trading or selling plants, displaying plants to the public or to gardening friends, or trying to keep accurate records of species, varieties, cultivars, and crosses must find an effective way to label their plant collection. In ornamental gardens, the solution must be aesthetically pleasing as well.

Personally, I like the look of wooden labels, but have given up on them because they darken and rot in my moist, partly shaded garden in less than a season. Since I grow so much from seed, I use lots of inexpensive plastic labels for marking the seed pans and pots. Written on with pencil, they last well yet can be erased and reused. They're fine until it's time to put the grown plant into the garden, where the plastic label is too conspicuous. Can't someone come up with a non-cracking, wood-colored plastic label instead of the stark white, lemon yellow, or hospital-green ones sold now? I use them in the garden anyway, burying them under so much soil that they must be uncovered to be read. I've used plastic knives (write on the top, stick the serrated edge into the soil) and plastic tags from bread bags. I get to know my plants pretty well after awhile, and then remove the labels when they start to self-destruct.

Florence French, horticultural consultant and past president of the Community Garden Club at Wayne, has problems with chipmunks and squirrels digging up her plastic labels and throwing them around. Frost heaves others out of place in winter. For perennials that require labels, she now uses zinc labels made by Garden Fonts, in New Hampshire. They feature an upfacing metal panel covered with white plastic on which the plant name has been imprinted by computer; the panel is perched on two metal sticks. These labels seem permanent and are legible yet inconspicuous. Drawbacks are: the cost, which while fairly reasonable adds up anyway; the time needed for the mail-order purchase to be made to order and sent; and the legs, which break or bend if you step on the label. The labels must be repositioned before they go too far astray.

Dr. Darrel Apps, the award-winning daylily breeder from Chadds Ford ('Happy Returns,' 'Pardon Me,' 'Queen Anne's Lace,' and many others), struggled with labels for years. His unique collection of rare daylily cultivars, crosses, and varieties must be enduringly labeled. Losses or inadvertent label swaps could mean big trouble in naming and marketing.

Actually, it was Apps's ankle, not mine, that was sliced by the large aluminum rectangles he once used. Satisfied now, after trying many types, he has solved his plant-marking problems with See-Fines™ aluminum alloy labels. One and a half by 3-inch faces with rounded corners are upturned at about a 20° angle. Each is perched on a sturdy metal stem about 13 inches long, with a kink in it to firmly anchor the label through alternate freezing and thawing in winter. He runs reels of plastic tape (he prefers Scotch brand) through a Dymo™ label gun and sticks the neatly embossed strips to the metal faces.

Apps uses number codes that match his catalog. For each of the hundreds of daylilies, he keeps the cultivar name, the breeder, and the date it was introduced. The season's new crosses are marked by tying a paper tag marked with the vital information to each pollinated flower. It remains there while seed ripens. After seeds are planted, containers are marked with plastic or metal labels.

Apps confesses to passing many winter hours clicking on the Dymo gizmo to make new labels. Every four or so years, the strips start to come loose and must be reattached with silicone glue. They last a little longer when he sands the metal surface. These labels are attractive, highly legible, long-lasting, inexpensive, and safe to humans. They are fine for his purposes and used by many other breeders, but they are a little too large for most home gardens.

Dr. Harold Sweetman, director of the Jenkins Arboretum in Devon, labels the perennial and woody plants in his home garden as well as those on the arboretum grounds.

In the arboretum, a large interpretive label of engraved plastic announces the common, genus, and species name of each featured plant to visitors. A second data label for the same plant also includes the genus, species, minimum hardiness, flower color, country of origin, and accession number. This one is a zinc rectangle. An ordinary lead pencil is used, because it causes a galvanic response in the zinc which permanently etches the writing into the label, in time.

"Avoid the black crayon sometimes sold with these labels, for it does not etch in and soon wears off. If you can't read the pencil writing on an old zinc label, just moisten it," says Sweetman.

Sweetman would like to make labels on a computer that embosses the writing on a metal plate and effortlessly stamps out multiples of the same label, but at about $8,000 for the system, it's too expensive.

In the arboretum and in his own garden, Sweetman mostly uses the zinc label, an upright rectangle mounted on a hairpin-shaped wire frame. The whole thing, about nine inches long, comes from the Paw Paw Everlasting Label Company (Model "A"). The legs stick into the soil and do not suffer from frost heave. He says the vertical labels blend in better with the garden, are less likely to be stepped on by the gardener (unlike the ankle-attacking, horizontally, shaped rose markers), and hold a large amount of information. He also uses a rectangular tie-on zinc label for shrubs.

Some makers, however, do carefully round off the corners or fold edges around the legs of zinc rose markers and perennial labels. (Available by mail from the Walt Nicke and other sources.)

Patricia Taylor, of Princeton, author of *Easy Care Perennials* (Simon & Schuster, N.Y., N.Y., 1989) and other titles, saves time by using the plastic labels that come with plants she buys. Because she orders

continued

photo by Betty Barr Mackey

photo by Harold E. Sweetman

(Top left) Aluminum labels in Darrel Apps's garden. **(Top right)** Engraved metal label at the Philadelphia Flower Show (1991). **(Center right)** Smooth river rock used for label and set near base of plant at Philadelphia Flower Show (1991). **(Bottom)** Engraved plastic label at Jenkins Arboretum in Devon.

plants mostly through the mail, she can cite sources. She uses plain plastic labels ("ugly as all get out, and eventually they break or wash away") when she grows from seed. She's not too concerned with label longevity, for she grows plants for research for her current writing projects.

Taylor says one of the most sensible solutions she has seen yet is to write the plant name on a smooth river rock and set it in the garden near the base of the plant, as Louise Morse of Princeton, has been doing for many years. Robertson's Florist used this method at the 1991 Philadelphia Flower Show. If you have no appropriate stones, you could make something similar out of craft clay or even cement. This is an excellent solution for labeling a private garden but not infallible enough for a professional breeder or public garden.

Sensible, attractive, permanent labeling choices are out there, and it pays to be selective. Harold Sweetman says that he would like to see more gardeners use labels, because it would help prevent nomenclature errors at plant exchanges. He recommends using both labels and a map of the garden, so that there is no need to mark every plant.

Mail Order Sources

Garden Fonts
Box 54, RFD 1
Barnstead, NH 03218

Mellinger's Inc.
2310 W. South Range Road
North Lima, OH 44452-9731

Ken Miller
Horticultural Consultants
111A N. Kirkwood Road
St. Louis, MO 63122

Walt Nicke Co.
36 McLeod Lane
P.O. Box 433
Topsfield, MA 01983

Paw Paw Everlasting Label Co.
P.O. Box 93-WR
Paw Paw, MI 49079-0093

See-Fine's Marker Company
1010 15th Ave.
Lewiston, ID 83501

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Betty Mackey is one of six co-authors of *The Gardener's Home Companion,* produced by the Philip Lief Group, Macmillan Publishing Co., New York, 1991 (651 pages).

SOME TYPES OF LABELS AVAILABLE

ACRYLIC LABEL HOLDERS: Hold seed packets to mark rows of seeds. Reusable. Made of transparent plastic about 9½" long including ground spike. Good for vegetable gardens and flowers for cutting.

ALUMINUM LABELS: Impressionable aluminum strips have wires to attach to shrubs. Others attach to pins in the ground for perennials. Permanent, rustproof, legible, and inconspicuous. Can be embossed with pencil or machine.

CERAMIC LABELS: Usually molded ovals, sometimes imprinted with herb or flower name. Usually just give one-word common name ("mint," "basil," etc.), which limits use. Nice looking in the garden. Could be made to order.

COMPUTER-PRINTED LABELS: Many types available. Labels often printed on Tyvek™ or other superstrong plastic; some are then attached to metal plates or other supports. This sytem is good for lengthy botanical information, especially where multiples of the same label are needed. Gardeners with laser or dot matrix printers can print their own stick-on labels on label papers sold for addresses, which then attach to stronger supports. Durability varies.

GALVANIZED STEEL LABEL HOLDERS: Sturdy rectangles, angled slightly backward for good visibility, mounted on one or two legs. Some are machine-embossed. Can be marked with embossed label tape or aluminum cards. Long-lasting, easy to read, attractive in garden.

NATURAL MATERIALS AS LABELS: Smooth pieces of bark or flat, smooth stones are suitable. Attractive in the garden. Use horticultural pen for marking. Replace writing and/or label every few years.

PLASTIC MOLDED LABELS: Come in many sizes and shapes. Usually white, but gardeners should pressure for tan ones, which would look better in the garden. Thicker and more durable than pot labels. Many have an oval or rectangular face on a long, pointed stake. Good for labeling full-grown perennials and shrubs in the garden. Pencil or horticultural pen used for marking.

PLASTIC POT LABELS: Come in thinner and thicker gauges, in many standard sizes including 4, 5, 6, and 8" long by 5/8" wide. Usually white, yellow, green, or red polystyrene. Would look better in garden if less conspicuously colored. Brittle, especially some brands, and easily broken. Usually used to mark pots of seedlings, plants in pots, or rows in seed flats. Tie-on styles available for shrubs. Pencil or horticultural pen used for marking.

WOODEN LABELS: Come in many sizes, similar to plastic pot labels. Attractive and inexpensive, but do not last long outdoors, normally just a few months. The taller they are, the longer they last, for soil moisture causes most of the weathering. The large size, 12" long x 1½" wide, lasts fairly well, and is good for perennials in garden. Small ones are good for marking seedlings indoors or in greenhouse. Pencil or horticultural pen used for marking.

ZINC LABELS: Come in many sizes and shapes. Easy to use, rustproof, attractive, and permanent. Watch out for sharp edges on some brands or styles. Rose marker is wide rectangle on two legs. Perennial marker is similar but not as wide. Hairpin style is upright. Type for shrubs is rectangular with wires to tie on plant. Mark with pencil, which etches itself into surface.

SQUIRRELS AT THE FEEDER

by Liz Ball

Squirrels appreciate dried corn and a cafeteria of their own, but that does not mean they will forever forswear the bird feeder.
photo by Liz Ball

In spite of our efforts to suspend the new bird feeder way out from the wall and to install a protective baffle over it, first one squirrel, then another, then another leaped from the deck railing and landed precariously on the feeder. Seed flew in every direction. The successful assault took only an hour.

More than any critter that comes with the territory of gardening and yard care, squirrels aggravate me. Maybe it's because I feel ambivalent about them. It would be easier if they were thorough-going villains with not one redeeming feature. Instead, they are cute, bold — even fun. I must acknowledge also that they are part of the "wildlife" I value and even welcome into my yard, at least in theory.

At this house, however, the tenuous tolerance achieved during the growing season with plenty of alternative food sources for squirrels, breaks down during the winter months. The bird feeder then becomes their main focus, their easiest food source. I fume at the mess and waste as poaching squirrels arrogantly help themselves to food I intend for the birds. When they invite their entire extended family to join them at the feeder, the battle is joined.

Since over the years my love-hate relationship with squirrels has degenerated into a contest of wills and ingenuity centered on the bird feeder, I have sought help from similarly afflicted folks. And they are legion! On the assumption that misery loves company, I share here what I've learned.

Culprits

The eastern gray squirrels *(Sciurus carolinensis)* are the Delaware Valley culprits. They thrive in suburban areas that boast oak, hickory, and other nut and fruit trees. Masters of adaptation, they accommodate to changing environments as countryside turns to exurbs, then suburbs and city. Their cosmopolitan palate is the key to their success.

Gray squirrels filch an enormous variety

continued

How Garden Experts Cope

Charles Cresson (author, speaker, gardener extraordinaire) — The distinctive feeder built by brother Richard sits atop a six-foot pole. Between it and its pole is a large flat piece of metal that extends beyond the feeder several inches. This barrier confronts any squirrels attempting to climb up from the ground. Because the feeder is set out in an open lawn area far from branches and buildings, squirrels have no way to approach by air and are effectively thwarted.

Claire Sawyers (director, Scott Arboretum) — "We find squirrels at the feeder entertaining." After moving the feeder location several times and installing a baffle on its pole, Claire has decided to give up and just enjoy the squirrels.

Kris Benarcik (education director, Scott Arboretum) — Kris has tried Vaseline laced with hot chili peppers on the feeder pole, thinking that when the squirrels licked their feet the dose of hot pepper would discourage them. It didn't work.

Jim Janczewski (curator of plants, Tyler Arboretum) — Jim is a tolerant type. Besides, his feeder hangs two flights up over a deck. If they were desperate, squirrels could climb a screen to reach the feeder, but Jim reports they rarely do this. His squirrels are less used to humans in his rural neighborhood. They are happy with the Tyler's Conservation seed mix he puts out for them along the deck railing.

Kathy Mills (horticulturist at The Pennsylvania Horticultural Society) — Kathy opts for the entertainment. Her feeder hangs by a thin line from a large tree branch. The tiny seed dispensing holes in the plastic column are covered with metal to prevent squirrels from chewing their way into it. She reports that her squirrels are "lazy by nature." They do not seem inclined to try, perhaps because she purposely scatters seed on the ground.

photos by Liz Ball

Victorian Feeder: The wide sheet of metal under this handbuilt feeder, combined with its 6-foot height, successfully thwarts squirrels.

of food to supplement or substitute for their natural diet of nuts. In yards and gardens they help themselves to corn, tomatoes, fruit, twigs, certain flower bulbs, grains, even insects and mushrooms all of which they locate primarily with their sense of smell. Some also develop a taste for maple and birch tree sap. In the fall and winter, when these food sources are scarce, they turn their attention to bird feeders.

Squirrels build winter dens of dried leaves in the snug hollows of large trees and summer ones in their branches. Here they raise their young. They breed twice a year, once in the middle of winter, again in May or June if food supplies are generous. When they are mating in February they're typically ravenous and may be particularly troublesome at the feeder.

A typical litter numbers three or four blind, toothless, hairless babies, which become independent in about 10 weeks. Gray squirrels, however, take two years to become full grown and to master all the gymnastic skills for which they are justifiably famous. During these years, they are accident prone, with a fair attrition rate among youngsters who are mastering the high-wire acts, the leaps and climbs that are the squirrel's behavioral hallmarks. Needless to say, only a small percentage live out a typical lifespan of 10 to 12 years.

Most active in the morning and evening, squirrels are the fastest rodents, capable of running flat out at 17 mph, which explains why my two cats have stopped even trying to chase them. In the country squirrels fall victim to natural predators: foxes, raccoons, weasels, hawks, owls and disease. Swimming squirrels are nabbed by pike, pickerel and bass. In metropolitan areas a significant number are run over or electrocuted when they chew electrical lines. Chewing wooden or plastic bird feeders doesn't seem to harm them at all.

Advice on dealing with squirrels at the feeder seems to fall into two categories: the "if you can't fight them, join them" school and the "barricade the feeder" school. Both of these approaches assume that squirrels, like death and taxes, are inevitable. Realistically, we may be able to figure out ways to control them, but we will not be able to eliminate them entirely. That's OK with me. Every backyard ecosystem needs diversity, and squirrels have a place in the balance that we want to maintain.

It does not help to trap squirrels in humane traps and release them in the country or some park. Invariably, wildlife experts report, they upset Mother Nature's careful balance of squirrel population and food supply in the new territory, stressing the population at the new site. All the squirrels there then become vulnerable to disease or starvation. Also, if trapped squirrels are not transported far enough, they will return, having been known to travel more than two miles to get "home" again.

If you can't fight them, join them

Some say that as long as squirrels have sufficient food available in the area, they will not target your bird feeder as their main food source. The typical territory for a gray squirrel is about 2.4 acres. From that area he needs to get about two pounds of food per week, so try to provide enough "allowed" food to satisfy the family that plays together in your yard. Then they will hang around the feeder only to snack on fallen seed, or visit intermittently.

To provide alternative food, add ornamental plantings that produce nuts, cones and berries that appeal to squirrels. Or provide them with their own "feeder" to divert their attention and interest from the bird feeder area.

Scatter treats like stale bread, pine cones, dried corn, bruised or overripe fruit on the ground for them, or build a sizeable feeding platform just for them. Locate it away from the house and bird feeders. Then hope that they are so satisfied by this attention that they forget all about the feeder near the house (hah!).

You can find squirrel feeders that accommodate ears of dried corn and other treats at garden centers and by mail order. The Squirrel Table, Squirrel Buffet and Table for Two are typical, wooden structures that you can mount on trees or fences. The Squirrel Go Round, Corn Grabber Chain and Side Show are similar, holding ears of corn on movable devices. They offer entertainment for squirrel and onlooker both.

Barricade the feeder

In reality most squirrels will be attracted to that bird feeder, at least sometimes, no matter what else is available to eat. So, a

Absolute Feeder: Its adjustable bird weight control system shuts off the seed tray if squirrels manage to get on this feeder. Look for this type of feature in a truly squirrel-proof feeder.

barrier controls best.

Most common barriers aim to prevent the squirrels from getting onto the feeder. Both my research and experiences suggest, however, that these devices — saucer-shaped baffles, sliding mechanisms on supporting poles, sheets of metal mounted on poles or wires on which feeders are set, sticky or oily coatings on poles — have limited effectiveness.

One "guaranteed" trick suggested to me years ago: fasten a slinky at the top of the feeder post, so that it hangs down and surrounds it. This was supposed to prevent squirrels from climbing up the post. After several days of wild rides on the bouncing slinky they figured out the timing and learned to ride it right up to the feeder. As well as being one of the most hilarious sights I've ever seen, it demonstrated the ingenuity and persistence of squirrels.

Chemical barriers such as spray repellents, sticky compounds and fox urine scent wafers have the same limitations. They may be temporarily effective, but eventually squirrels bypass them or they lose potency quickly from exposure to the weather.

I have concluded that, regardless of the barrier design, the key seems to be the location of the feeder. Squirrels will outflank any barrier within eight feet of a place from which they can launch an air attack, either vertically or horizontally. We've all witnessed how they repeatedly heedlessly hurl their bodies toward some distant feeder until they finally master a technique that works.

I have watched our squirrels climb up a brick wall, scrabble across a storm window frame and then leap vertically onto a "squirrel-proof" feeder mounted in the middle of the expanse of glass in a spacious picture window. Catch 22: a feeder high enough and remote enough from walls, fences, buildings or other launching pads to discourage airborne squirrels is usually difficult to fill and maintain.

So what is the answer? The most successful feeder designs concede that squirrels will probably find a way to get on them. They have a barrier right where the food is dispensed.

All-purpose feeders of this type typically are made of sturdy metal so that squirrels cannot chew on them. The secure latches on their lids deny squirrels access to the seed in the hopper. Most important, the counterbalanced perch responds to the weight of the customer. When a two-pound squirrel bellies up to the bar, it shuts down. Some feeder designs also have a baffle mechanism on the seed tray that limits the amount of seed dispensed at any one time to prevent spillage.

A type of built-in barrier can also be found on long, columnar feeders that cater to finches and other tiny birds. On these a barrier of plastic-coated wire mesh surrounds the tubular plastic seed container. It permits access by small birds to the seed within, but blocks squirrels from reaching the seed or chewing on the plastic container. They may be able to reach the feeder, but they can't reach the food.

Obviously these more sophisticated designs mean that truly squirrel-proof feeders are considerably more expensive than traditional ones. Most of the metal ones, however, will last many, many years longer than conventional feeders. Most of the people I consulted believed the cost was more than offset by the savings on wasted bird seed.

A lot depends on how much squirrel depredations at the feeder aggravate you. If you are like me, you may want to try a squirrel-proof feeder. Or you may want to put the money toward a pair of binoculars, the better to watch the show.

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Liz Ball is a horticultural photographer, writer and speaker who gardens in Springfield, Delaware County. She and husband, Jeff, having recently published *Yardening* (Macmillan, New York, N.Y., 1991), are currently working on a book on lawn care and their weekly newspaper column.

Where to Find Squirrel Feeders and Squirrel-Proof Bird Feeders

Retail:

Garden Accents
4 Union Hill Rd.
W. Conshohocken, PA 19428
(215) 825-5525

Gooseberry Bush Garden Shop
Route 113
Downingtown, PA 19335
(215) 269-2028

Robert Montgomery Nursery
Route 113
Chester Springs, PA 19425
(215) 644-3406

Mostardi's Nursery & Greenhouses
4033 West Chester Pike
Newtown Square, PA 19073
(215) 356-8035

Primex
435 W. Glenside Ave.
Glenside, PA 19038
(215) 887-7500

Styers Garden Center
Route #1
Concordville, PA 19331
(215) 459-4040

Waterloo Gardens
136 Lancaster Ave.
Devon, PA 19333
(215) 293-0880

or

200 N. Whitford Rd.
Exton, PA 19341
(215) 363-0800

Mail Order:

Audubon Workshop
1501 Paddock Drive
Northbrook, IL 60062
1-800-325-9464

Duncraft
33 Fisherville Rd.
Penacook, NH 03303
(603) 224-0200

Gardener's Supply Co.
128 Intervale Road
Burlington, VT 05401
(802) 863-1700

Heritage Farms
P.O. Box 188
Cherry Valley, IL 61016
1-800-435-4525

Plow & Hearth
301 Madison Road
P.O. Box 830
Orange, VA 22960-0492
1-800-627-1712

HOMAGE TO SMALL EDENS

by Barbara Bruno

Some gardeners' green ambition is often idiosyncratic. A gardener with such a bent might opt for a garden for a single year, a single season, a single species or even just a single specimen. Romantic? Eccentric? The author finds some of these unorthodox gardens haunting, some witty, some adventurous. She describes a few of them here.

One summer in a faded country town that I travel through, a garden of sunflowers sprang from what had been a hard-trod front yard. A fence of barrel staves painted alternately pale blue and pink contained the riot of massive stems and leaves. My curiosity often lured me to this novel arrangement to monitor its lush ascent. Then one day the sunflowers' round pagan faces all nodded open toward the road, amiably mimicking the southern sun.

It was one of life's ephemeral rewards, a momentary savage splendor. What prompted this show of whimsy and wonder? Budgetary short fall? Or the casual inspiration of a few free seed packs? I suspect it had more to do with that odd obsession born of the overpowering itch of a green thumb.

It is likely that every commuter who appreciates individuality and invention has such a story: postage stamp plots chockablock with eclectic gatherings of blossoms that brighten even a blue Monday's trip to work. They are small celebrations that relieve a highway's tedium or idiosyncratic oases in a look-alike suburbia. Each reflects one gardener's passionate involvement with the green world.

I say passionate because I think passion is most often the compelling reason behind a garden. It is why "the lady who grows lilacs" grew lilacs, only lilacs, filling the neighborhood's largest yard and my memories of May with all imaginable lilac colors and perfumes. And it's why that old gent down the block fancied and fussed the year round over his locally famed "hundred azalea bushes." It was an odd obsession I thought then, the bushes dull green all year except for that brief time when we were all invited to bask with him in their seamless blaze of gorgeous clashing color.

One-note eccentricity

What moves a gardener to the one-note eccentricity of a single species garden? The practicality of uniform care or a fascination for plant breeding are understandable motives. Or is the gardener prodded by sentimentality or romance. For several summers I've fondly noted the penchant of an older woman for old-fashioned petunias. On most mornings when I pass, she is there, straw-hatted and green-gloved, lugging a watering can among the sugary white, pink, and near magenta blossoms that blanket her tiny plot. Why does she dote so on this one outmoded flower? Perhaps I am the romantic here, but I like to think the self-sowing multitude might be a perpetual homage to some dear departed, someone like my grandfather, who kept a narrow dusty border between house and drive reserved for these same perfumed and willing blooms. His stock, he confided, came many years earlier from his mother's garden.

What moves a gardener to the one-note eccentricity of a single species garden?

If the average gardener shakes her head at the rapturous monogamy of the one-species enthusiast, what is she to make of the single-specimen gardener? Does a single plant make a garden? I know of one. It is no more than a gnarled stump at bay, hunched against a porch foundation. Traffic at the mom and pop grocery store next door has churned whatever else grew in that tiny front yard into a dusty car park. A half circle of hooped wire diplomatically defines its space. Except for an occasional encouragement of a tea kettle of water, it is on its own. Yet come June its ancient canes garland the peeling pillars and sagging trim of that old porch in a traffic-slowing show of scarlet blooms.

Most gardeners aim for long and varied bloom. Single-season gardens are almost as rare as the single variety kind. Such a one flourished near my house. It was worth a detour, for in its brief glory it was a blaze of spring in shorthand. Forsythia and pussywillow opened earliest here, shouldering daffodils in variety. But the best moment came later when a gathering of tulipdom flanked a short cement walk. Their goblets held a dense, multicolored splendor against the dark frame of a deep old porch, itself framed in an aged wreath of wisteria. This was just another quiet dooryard for the rest of the year. What restrained this gardener from diluting the effect?

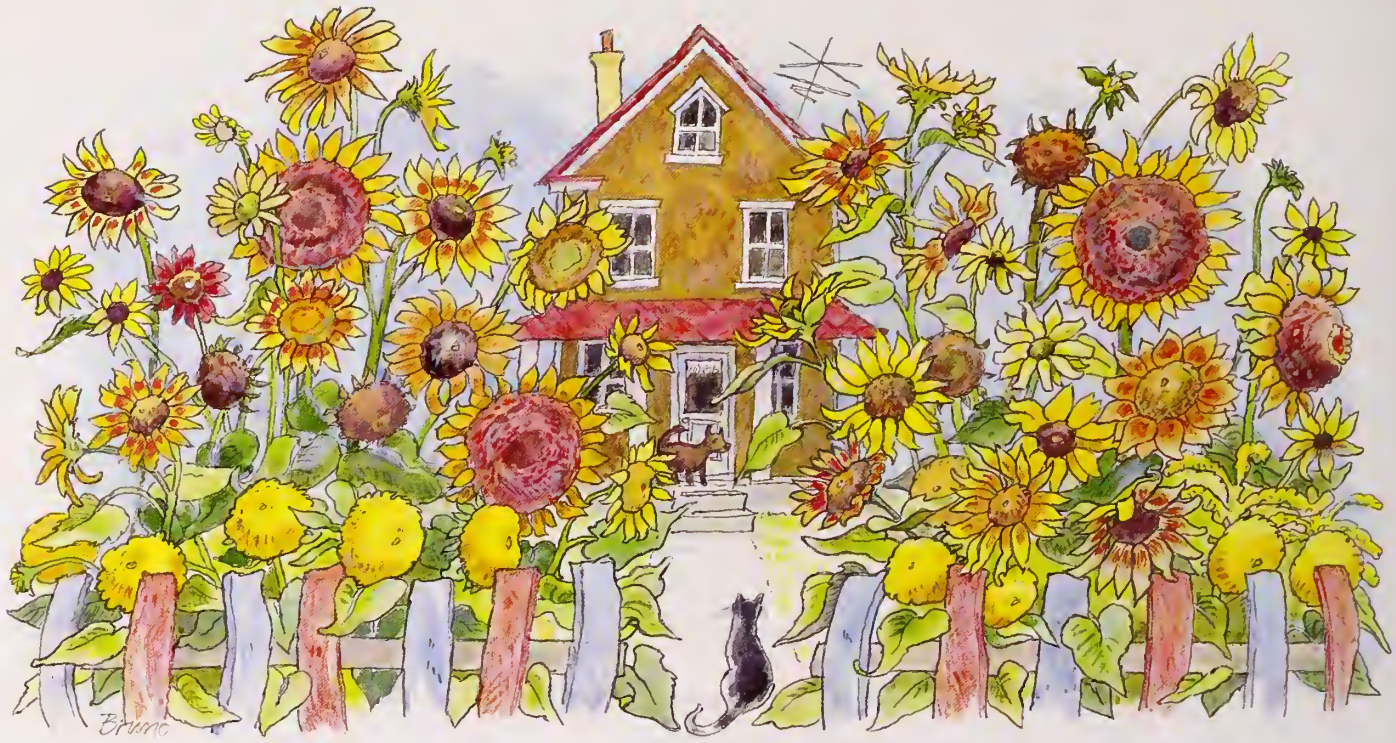
Some gardens surprise the passerby with their ingenuity. One gardener's solution to a common dilemma so delighted me that I was drawn back the hundred plus miles to wonder anew at this front porch Babylon. The bungalow's facade rippled with hothouse luxuriance, a cheerful display of a gardener's mania out of hand but still neatly under control.

Exotic greenery walled the porch, gathering all available light. Hanging baskets, jardinieres, window boxes, novelty plant stands dripped or sprouted vegetation, ob-

continued

A joyous fanfare of house plants: testimony to the overpowering itch of a green thumb.

illustration by Barbara Bruno



A roadside sunflower garden offers its unexpected splendor to every passerby.

illustration by Barbara Bruno

scuring all but the windows that, like flirtatious eyes above a veil, flashed darkly at the passerby. Other hanging baskets, ingeniously cantilevered from the eaves, gave an extra dose of sun and air beyond the twiney tapestry to some responsive free bloomers. The collection flowed down the front steps and along the walk in assorted pots and planters to where tall fountains of wrought iron, rather like upward-curving umbrella spokes, held a ring of pots' effervescing diverse blooms.

While I sketched this houseplant fantasia, I thought with awe of autumn's approach and return of distended greenery to the bungalow's interior. I mused also on the plant fancier's deafness to all floral possibility in the neat but unlandscaped surrounds.

The fast track

I can now take a fast track that streaks to any urban destination. Doubtless, I gain time. Yet, gardens I have come to know exist for me no more.

Along the bypassed route is a once bustling village crossroad. A young traveller then, I used to will the traffic light here to hold its hard red glow an extra moment so I might lose myself more completely in the guileless display that riveted with powers of enchantment.

The gardener had chosen to follow his most fanciful enthusiasms. In the cramped space between two cottages, he had conjured his fantasy in the unlikely medium of cement. The sturdy fairyland addressed the highway, its features were arranged to entertain the passing motorists.

Cement as a mode of garden expression is an oddity by any contemporary horticultural yardstick. Yet, this was not, in a sense, always so. This gardenmaker might have been moved by the same muse that inspired the endearing stonework grotesqueries of an 18th century villa. Among the frozen miniature landscapes of windmill and fairy-tale fortress stood all manner of urns, pots, and planters. These pebble and pottery shard encrusted containers spilled showy blossoms. The central feature, an exultant gathering of summer bloomers, filled an enormous, sinuous handled, cement replica of a flower basket.

Indomitable old perennials half smothered a pedestalled mercury ball and ramped around the bases of a dozen poles supporting a metropolis of flaking birdhouses.

We never stopped, but I could see tiny paths threading the gardenscape. Later when I trod those pathways, the gardener was no longer present to perform the menial and the magical, but self-sowers continued to brighten his stony tableau. Portulaca flooded the pretend moats. Sedums and sempervivums, spilling from iron pots and hollow logs, multiplied at pathside. Indomitable old perennials half smothered a pedestalled mercury ball and ramped around the bases of a dozen poles supporting a metropolis of flaking birdhouses.

I discovered the surprising comfort of a stony garden seat overlooking the busy landscape. A few warbled notes fell from small, gabled roofs above. A shimmer of serenity settled over ramblers that persisted in their frivolous course along a pebble-encrusted wall. As I ruminated over the power of dreams and the reach of green ambition, I felt a warm empathy with this unorthodox notion of what a garden ought to be.

Common theories of gardenmaking seem seldom to have swayed these intuitive gardeners. Their exuberant creations are mostly indifferent to the conventions of foundation plantings, fussed-over lawns, well-trimmed shrubberies. Varied and colorful solutions to classic problems have blossomed unrestricted by nicety or the sometimes stifling obligation of expected order. Some of these gardenmakers embody a tradition of blissful eccentricity. But even as they ignore tradition, they rejuvenate tradition with an offhand creativity.

Out-of-the-ordinary visions flourish along the roadside. Yet here are havens for ordinary flowers, freshly seen, freshly loved. In an elementary way these small edens are heir to the unselfconscious tradition of the English cottage garden. That is, gardening artlessly only for the sake of a love of flowers, a direct and unaffected expression of an ageless fascination.

Gardening for most of us is a private affair. These gardens call out to us as we pass. They are charged with a sense of adventure. They offer the receptive passerby fresh impressions of what a garden can be.

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Barbara Bruno enjoys her vicarious gardening on the road almost as much as her own gardening in South Jersey.

NEW WAYS TO CONTROL RHODODENDRON PESTS

by Kathleen A. Mills

It seems that just about every person who has a piece of ground to garden has a *Rhododendron.* This genus, which includes azaleas, contains an array of plants to fit several gardening situations: large and small, sprawling and upright, and almost every color imaginable. Despite their mass appeal, rhododendrons have several pest and disease problems. These stem from improper placement in the garden; full sun exposure (heat) high soil pH, and inadequate drainage. Once the plant is stressed, it's vulnerable to secondary attacks of both pests and disease. Common pest problems of *Rhododendron* include aphids, lacebugs, borers and the black vine weevil. Each attacks in a unique fashion.

Aphids are small insects that suck sap from the leaf, weakening the plant over time. A sure symptom of aphid damage is a distorted, shrivelled appearance of the leaves and the absence of a healthy green color.

Lacebugs, a perennial problem of the city-dwelling rhododendron, suck the sap of the plant from the underside of the leaf. I've seen them on every plant I've inspected that's trying to survive in a spot far too hot and a soil pH far too high for rhododendrons. With a hand lens you can see them under the leaf. The top of the leaf turns yellow while the underside turns brown. Over time lacebugs weaken the plant and along with the heat and high pH, destroy it.

When leaves yellow and wilt, check the stems of your rhododendrons for borer damage. Small entrance holes where the larvae entered the stem will be visible. Once inside they begin to eat, blocking nutrient flow further up the branch.

Black vine weevils can cause sudden rhododendron death. Irregular chew marks visible on the leaf indicate weevils may have hit your rhododendron. While the adults devour leaf tissue, the larvae feed on the roots and stem. In no time they girdle the main trunk, just below the soil line, and kill the plant.

Many chemical treatments in the past were effective but far from healthy for the environment or the applicator. The new world of beneficial insects, horticultural oils* and insecticidal soaps enable home gardeners to control insect pests without putting them at risk. The aphid midge is one beneficial insect that is effective in the war on aphids. Rodale Press's *Organic Gardener's Handbook of Natural Insect & Disease Control* suggests using three to five cocoons per plant or up to 250 in a small garden. Suppliers will also furnish you with information on how many beneficial insects you need to control your aphid problem.

Lacebugs are effectively controlled using horticultural oils or insecticidal soaps, readily available at garden centers. Apply according to the container directions and don't be lulled into thinking that one application will do it. Many generations of an insect, in various stages of development, infest a plant. One application may wipe out the adult population, but the eggs are impervious to the oils and may not hatch until the insecticidal soap has worn off. Thus a whole new generation will procreate.

photo by Albert E. Pye/BioLogic Co.

Six nematodes have infested and killed the weevil shown here. The white wormy nematodes measure about 3mm (25mm to the inch); the rust-colored head and gelatinous mass is the weevil. The number of nematodes needed to control weevils on a rhododendron is determined by the drip zone; you'd need 35,000 per sq. ft. in that area. Most of the nematodes would be applied at the base of the trunk.

To control borers, prune damaged limbs and fertilize to invigorate the plant. Dr. Albert E. Pye of BioLogic has designed a study that will inject beneficial nematodes into the borer's hole, and he's hopeful about the results.

The black vine weevil is a harmful rhododendron pest, yet beneficial nematodes offer control. At the Morris Arboretum of the University of Pennsylvania they have just begun to use nematodes to control their weevil problem. It's far too early for their results, but the staff is optimistic. The nematode, *Heterohabitis heliothidis* lives deep in the soil where it effectively controls the larva stage of the black vine weevil. Nematodes, affected by soil temperatures, need to be re-applied each spring if the weevil problem persists. The Rodale book suggests an application rate of 100,000 to 500,000 per square yard. The nematodes are mixed with water and then poured on to the soil around the affected plants.

Explore what beneficial insects can do in your garden. After addressing the soil pH and other site conditions, you don't need to bring out the respirator and chemistry lab to battle your pest problems. Beneficial insects are safe and help to restore the equilibrium lost in the environment of a poorly sited plant.

Sources of Beneficial Insects for the Home Gardener

BioLogic
P.O. Box 1777
Willow Hill, PA 17201
717-349-2789
Beneficial nematodes only

Gardens Alive!
5100 Schenley Place
Lawrenceburg, IN 47025
812-537-8650
Large variety of organic controls

Nature's Control
P.O. Box 35
Medford, OR 97501
503-899-8318
Free Brochure —
What's eating my plants?

Necessary Trading Co.
8311 Salem Avenue
New Castle, VA 24127
800-447-5354
Retail: but home gardeners must buy larger quantities

Books Available in the Pennsylvania Horticultural Society Library

Common-Sense Pest Control, William Olkowski, Sheila Daar & Helga Olkowski, The Taunton Press, Newton, Ct., 1991.

The Organic Gardener's Handbook of Natural Insect and Disease Control, Barbara W. Ellis and Fern Marshall Bradley, editors, Rodale Press, Emmaus, Pa., 1992.

A Plantsman Guide to Rhododendrons, Kenneth Cox, Ward Lock Ltd., Great Britain, 1989.

Success with Rhododendrons and Azaleas, H. Richard Reiley, Timber Press, Portland, Or., 1992.

*See *Horticultural Spray Oils: A Safer Way to Control Pests,* V. Bruce Steward, *Green Scene,* May 1992, p. 18.

Rustic Country Gardens For Small City Spaces

by Sasi Judd

photos by Sasi Judd

New fences, walls, and terraces set the stage for plants to grow around in this garden escape from the city.

We wrap ourselves in romantic images of naturalized gardens with plants clambering over weathered fences and worn walkways, all within a "borrowed" landscape of farmlands and fields. Yet how do we create such appeal when our "sense of place" is defined by the rear of neighboring buildings.

Probably the city gardener's biggest frustration is limited space. How can we create a pastoral scene on a 15 ft. x 20 ft. lot? You can't plant trees and shrubs with enough abundance to create a country context within the urban environs. We can, however, seek inspiration by looking at the architectural framework created by pastures and farmyards, fences, walls, gates, shelters and courtyards. These structures define places and make outdoor rooms. Also, the geometry of these structures provide the organizing factor that sets off the haphazard ramble of roses and the wild clamor of field flowers.

The countryside landscape has been established for a long time and has a look that improves as it ages. Some of the charm of this "old world" setting is not high-style sophistication, but the feeling that barnyards and field fences were not set out with a conscious design effort. Hand-made qualities and incidental accidents add to the visual interest; buildings that have been mended and rebuilt over time have enriched design patterns. Another source of beauty is nature's impact on architecture, the touch of wind, rain and sun creating the patina of weathered paint, the vibrancy of orange rust on metal, the softened edges of wood, the richness of moss on stone and the graceful sway of old fences.

Fences and trellises

How can you create an "old world" garden without relying entirely on plants? Fences and trellises provide unlimited design possibilities set within just a few inches of the property line. Heights can be adjusted to screen views, to create a sense of enclosure or to create a focal point. Solid board fences, used to provide privacy, can be topped with a classic picket fence to extend the sense of separation and at the same time let in the light and air. A free-standing lattic trellis built in front of a wall creates the visual foil of space and dimension through the interplay of light and

shadows. Posts, set another few inches into the property lines, can support a shelter for a romantic sitting bower or a setting for a focal point such as a mural. These structures will give a new garden the look of a forgotten country corner even before the new plants have grown.

Murals

A painted landscape can create an instant and relaxed mood of a quiet oasis on our unlimited supply of city walls. It can provide the tiniest garden with a seemingly endless horizon and distant vistas. The mural can also appear to be an extension of a small garden planting by making live grasses and daylilies appear to merge into a painted meadow view. And, with skillfully selected colors, a mural can give the appearance of a year-round garden.

drawing by Sasi Judd

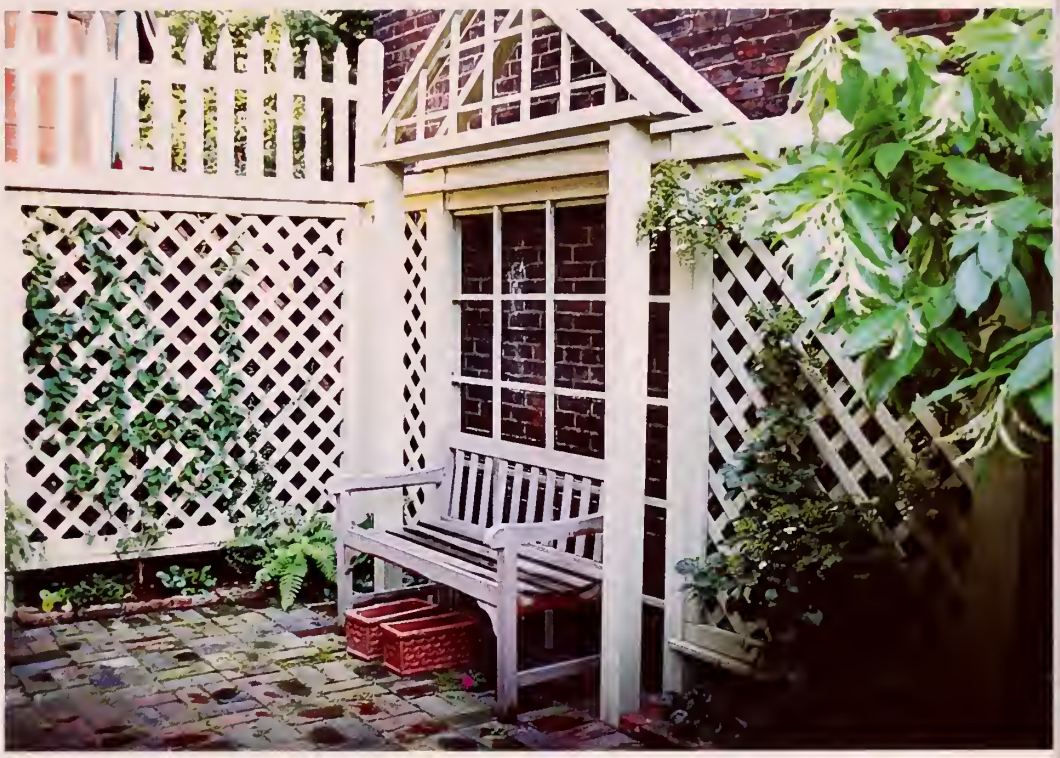
Fence treatment to provide privacy, light and air.

Colors

Colors can add dimension and give definition to a garden space. We all know the tried and true house painting rule that lighter colors make a smaller room seem larger and more expansive. Depth can also be created by contrasting colors. A light-colored trellis in front of a brick wall, for example, will accentuate the visual separation and therefore create more visual depth. A deeper-colored trellis will stand out from a neutral stucco wall and create the visual foil of depth.

The picturesque countryside paints a color mosaic of plants and flowers. Since

continued



(Top) Fences and trellises, which soften the brick walls of this 12'x12' garden, were inspired by farmland sheds and hay bins. **(Bottom)** Newly planted grasses, ferns, lirope and daylilies will merge into mural meadow. The stone footpath leads to a doorway concealed by the trellis to the right.

photo by Sasi Judd

A sturdy wooden seat made from salvaged building beams is a reminder of old barn walls.

our small city yards tend to be heavily shaded by surrounding buildings, even shade-loving plants grow slowly and can take years to become established. Standard commercial wood stains come in colors that can recall the hues and tones of foliage that last throughout the year. Fences and trellises painted in a shade of soft yellow-green or rich blue-green can suggest the lushness of a summer garden even on a cold winter day.

Walkways and paths

Walkways and paths can be built to immediately create a long-established and well-worn garden look. Intermix old and used bricks with carefully matched new brick. Design edges of paved walkways with irregularities that appear to have weathered away over time. Slight variations in the paving patterns will enrich the texture as well as give an aged quality by appearing to have been rebuilt during different times.

Gravel, available in many colors, is also excellent for walkways. It gives soft edges to what is commonly referred to as the "hard-scape" of gardens. Plants can creep into the gravel for a studied overgrown look. If the walk becomes too overgrown, the plants can easily be pulled out after a rain loosens the soil. Gravel also lets rain be absorbed into the ground, which helps the nearby plants to thrive.

Stone walls

Retaining walls can be built if there is a change in ground level. There are many kinds of facing stone available at quarry yards. Typically, stones with fleckings of browns and grays appear to be more weathered than stones of more uniform color. These stones should have rough and uneven edges, and the joint mortar should be darkened to a deep gray to disguise its freshness and newness. To provide seating, top the wall with wood cut from salvaged building beams. Such wood already weathered to a silvery gray, along with its carved texture of wood grain, adds to the pattern of the garden tapestry.

Availability

The home gardener can easily achieve the country look of unrefined building methods with readily available materials. Picket fences, solid wood fences and sections of lattice can be purchased at larger lumber yards and fencing companies. Their unfinished quality suits well the rustic old garden look. Additional woods for a sitting bower or posts for a shelter can be obtained at these yards. Used bricks are often available at some of the larger masonry supply companies. Stone quarries sometimes have remnants of old walls, weathered and already covered with moss. For finishing touches, architectural salvage companies and flea markets are excellent sources for old gates, benches, wood and fountains.

•

Sasi Judd has a landscape design practice in Philadelphia. She has taught and lectured at the Morris Arboretum, the University of Pennsylvania, and at Temple University's Ambler Campus.

Country Gardens in the City

1. Garden architecture

a. city gardens often lack sun due to surrounding buildings so plants grow very slowly — trellis-like sitting bowers, murals, fences, walls and terraces create an immediate country garden feeling

b. murals, trellises, and walls can create a country feeling with limited space for plants

c. the color, texture and materials of the garden architectural design create an effect that "looks as though it has always been there"

2. Plants

a. plantings should be inspired by observations of nature to create a feeling of country in the city

b. selected plants should be shade loving and maintenance free, and allowed to ramble and mingle as they grow

Examples shown are all within six months of installation

LETTERS TO THE EDITOR

A Stellar Crop

Up until this year I had felt slightly guilty about planting two *Magnolia stellata* ('Waterlily' and 'Royal Star') outside my kitchen window, given the current concern for using native plants and providing food for wildlife.

This year changed those feelings completely, however. By some freak of nature we did not have the usual heavy frost while the two magnolias were blooming, and they set an incredible crop of seeds. Michael Dirr in his *Manual of Woody Landscape Plants* describes the fruit of *Magnolia stellata* as "Aggregate of follicles, usually with only a few fertile carpels." Just about every flower must have been fertilized, and my tree was almost as colorful as a mountain ash, with beautiful brilliant orange seed clusters at the end of the branches. As soon as the first ripe fruits split open our mockingbird started to visit the tree many times a day, gobbling the fruits as fast as he could, and then regurgitating the seeds while perched on our deck railing. After about a week the chipmunk who resides outside the basement joined the mockingbird and spent a lot of time clambering to the tips of the branches collecting fruits in his pouches, until the trees were just about stripped bare.

Finally, the last fruits were consumed on October 22nd by five bluebirds who came back to check up on their ancestral box, which happens to be between the two magnolia trees. It was a spectacular sight to see two males and three females darting from branch to branch to strip the last fruits. Now I'm wondering whether I might find self-sown magnolias coming up at the edge of the woods.

Whether or not this happens, in future I shall no longer regard my trees as purely ornamental, but will always fondly remember 1992 as the year of the bumper wildlife food crop. I wonder if any other *Green Scene* readers had a similar experience this year?

Helen du Toit
Pittstown, New Jersey

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Jean Byrne, Editor

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Author Joanna Reed tells why it's important to renovate a garden (see page 11). Shown here are the iris and daylily beds on her property; read why she thinks it's important to continue planting more daylily species and cultivars even though they require daily deadheading.

photo by Joanna Reed

GREEN SCENE

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Grow a Variety of Potatoes

See page 25

7.

25.

Front cover: Grow your own potatoes to savor the potato's diversity. The varieties in the cover photo were grown in Southeastern Pennsylvania. See page 25.

Front Cover: photo by Bob Ferguson

in this issue

CORRECTION: The columbine referred to on page 16 of the January issue of *Green Scene,* column three of "Grow Columbine From Seed," is *Aquilegia clematiflora* 'Alba,' **not** *A. caerula* 'Alba.'

And whoops, we misspelled *Evodia* in the caption on page 11 of the same issue.

The Editor

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photo by Andrew Bunting

Tradescantia pallida 'Purple Heart' and *Senecio perpens* at Chanticleer Foundation in Wayne, Pa. The garden opens to the public in April.

Container Gardening at Chanticleer

by Andrew Bunting

Horticulture thrives at the Chanticleer Foundation, the estate of the late Adolph Rosengarten, Jr., in Wayne, Pennsylvania. This garden, which will officially open to the public in April, features rare, unusual, and ornamental plants. An Asian woodland boasts both woody and herbaceous plants arranged aesthetically; a native woodland walk leads the visitor from the bold and wild plantings around the pond to a meadow filled with 50,000 daffodils and a fine selection of small flowering trees. Perennial gardens abound.

In 1992, a new element was added: more than 50 containers of flowering and foliage plants on the terraces, patios, and walkways that surround the gardens at Chanticleer. This design change was influenced by the artistic use of containers in the gardens at Sissinghurst Castle, Hadspen House, Tintinhull House, and Powis Castle in Great Britain.

English garden writer Penelope Hobhouse states: "Well-planted pots can add to the garden dimensions and give extra panache and sophistication [that] can lift a garden out of the ordinary . . . [They] can turn a porch, terrace, courtyard and wide steps from bare, unwelcoming coldness into areas of luxuriant warmth, colour and scent." That's what happened at Chanticleer; no matter where pots were positioned in the garden, they added an extra dimension.

continued

photo by Andrew Bunting

Clustering Container Plants

photo by Andrew Bunting

Clusters of pots placed at the end of a long walkway, in the corner of converging paths, or in a visible section of a patio, can make flowery focal points in a garden.

For a group of containers to act as the main garden attraction there must be strong elements of flower and foliage color, texture, and a pleasing color combination that ties all the containers together.

In a courtyard at Chanticleer, three containers grouped together provided consistent interest throughout the summer. A large container of the deep blue flowering *Salvia cacaliifolia* provided the backdrop for two smaller containers. One container was planted with a creamy variegated *Osteospermum* 'Silver Sparkler,' that sporadically flowered with soft blue daisy-like flowers. This was interplanted with the dainty *Erigeron karvinskianus* that has penny-sized, whitish-pink, daisy-like flowers through the growing season. Complementing this collection of containers was a similar-sized container planted with *Buddleia* 'Lochinch,' which had a profusion of mauve bottlebrush inflorescences and gray-white leaves. Planted at its base was the small flowered, ever-blooming white *Verbena tenuisecta.*

Add Vertical Dimension to a Flat Site

On a terrace, terra cotta planters each planted with a different center specimen add a vertical aspect to a large, flat surface. The containers were placed equidistant along the terrace in front of the large house that provided a backdrop for the containers, as well as making the house more a part of the garden. One of the most pleasing of these containers during the growing season was a large terra cotta pot planted with a central specimen of *Dodonaea viscosa* 'Purpurea,' a subtropical shrub with narrow, glossy, red-purple leaves. To complement the leaf color of the *Dodonaea* we interplanted the container with *Capsicum annuum* 'Black Prince,' an ornamental pepper that reaches twelve inches tall, and whose small leaves are black throughout the season. In late summer the small peppers provide a tapestry of green, red, and black. Purple-leaf sage *(Salvia officinalis* 'Purpurea') provided excellent, dusty purple foliage from their planting in mid-May until we removed them in mid-November. The purple flowering *Heliotropium arborescens* (cherry-pie) *intermingled nicely amongst the various foliage and fruit colors.*

photo by Gary Keim

Creating a Focal Point

On a central set of steps on a shady section of a formal terrace, pots of *Fuchsia* 'Gartenmeister Bonstedt' underplanted with a simple white variegated *Hedera helix* (English Ivy) framed this garden focal point, already flanked on each side of the steps by two hawthorn *(Crataegus crus-galli).* The pots of *Fuchsia* repeated the symmetry already set by the hawthorns. This fuchsia has large coral flowers.

Atop balustrades, repeating terra cotta baskets filled with a simple, but stunning combination of the succulent, glaucous blue-leafed *Senecio serpens* interplanted with rambling purple-leafed *Tradescantia pallida* 'Purple Heart,' also added to the formal lines of the garden.

Osteospermum 'Silver Sparkler' was paired up with a planting of *Oxalis regnellii* 'Purpurea' with its stunning purple shamrock-like leaves.

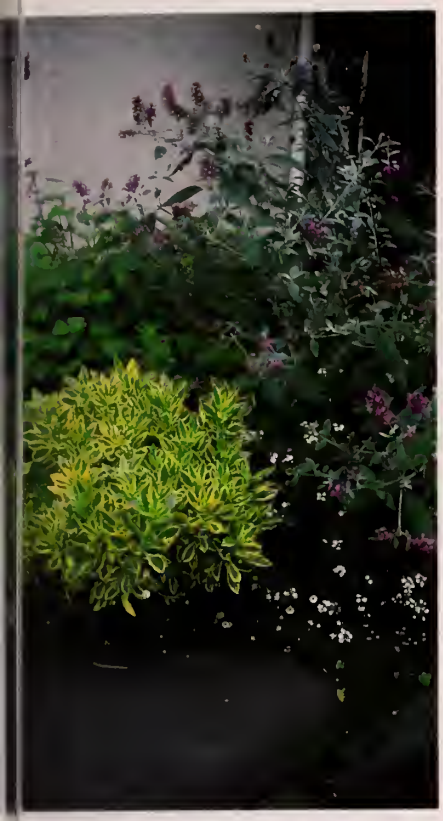

photo by Andrew Bunting

Foliage Plants

Lotus berthelotii has attractive cascading, fine, needle-like, silvery foliage. A unique specimen in a container is *Melianthus major.* This South African native has compound leaves made up of many leaflets that have edges that look as if they have been cut with scissors. The eye-catching silvery-white foliage color makes it a choice plant for any garden. Simple, erect, strap-like foliage is often necessary to break up the round nature of most container plants. Both *Agapanthus* (African lily) and *Eucomis* (pineapple lily) offer varying widths and lengths of strap-like foliage. An interesting, more vigorous substitute for the variegated ivy is *Senecio macroglossus* 'Variegatus.' Even upon close examination it appears ivy-like. It prefers full sun and grows very quickly.

photo by Gary Keim

Flowering Plants

Most verbenas flourish in a pot. Because of their procumbent nature they are the perfect plant to use for spilling over the edge. Montrose Nursery in Hillsborough, North Carolina, lists many outstanding color selections of *Verbena,* including a lovely lavender, striking red, and a dark and red purple. *(Verbena canadensis* shown here.) Similar in habit is *Sphaeralcea philippiana,* which has coral pink, quarter-sized flowers. Other good trailing plants include, *Diascia integerrima* with its tiny leaves and pink flowers. The popular houseplant, *Tripogandra multiflora,* which has delicate purple foliage and tiny baby breath-like flowers trails subtly from any container. More upright and bushy in nature are the multitude of common geraniums or *Pelargonium* with their variety of flower colors, leaf forms, and fragrance of foliage. 'Voodoo' has stunning blood-red flowers; 'Sorcery' small, maroon variegated leaves with coral-orange flowers; 'Bird Dancer' with maroon leaf markings and bird's foot-shaped leaves. Anisodontea x *hypomandarum,* despite some fairly cold weather, was still blooming heavily on November 12, 1992. This bushy plant, which will grow to two feet in a season, is covered with small, soft pink flowers similar to those of *Hibiscus.*

Create your own container garden

The plants shown here barely scratch the surface of the variety that can be grown in containers. Bulbs, perennials, annuals, tropicals, shrubs, and trees are all worth trying. Experiment to see what will thrive in the container environment.

Almost as many kinds of containers are available as plants. At Chanticleer terra cotta and cast stone containers are mainly used because they are in keeping with the natural stone paving. Although both are elegant additions to the garden, terra cotta containers must be handled with care. They tend to crack and chip easily. During the cold months store them in a frost-free environment. Because of the material's porosity, moisture can penetrate the walls. Later colder weather will cause frost to form and expansion will cause the pots to crack. Terra cotta's porosity benefits the soil by providing extra aeration, but plants dry out more quickly when moisture evaporates on the outside surface. Terra cotta tends to take on a natural look more quickly than most materials because algae grows easily on its rough surface.

Cast stone containers made from concrete are more durable than terra cotta, and much heavier too. They are less susceptible to breaking, chipping and frost damage than terra cotta. For added winter protection treat the cast stone with flat silicone or polyurethane spray. Some distributors of cast stone containers have available patina finishes that give them a more natural weathered look.

Planting the containers

Once you select a suitable container,

continued

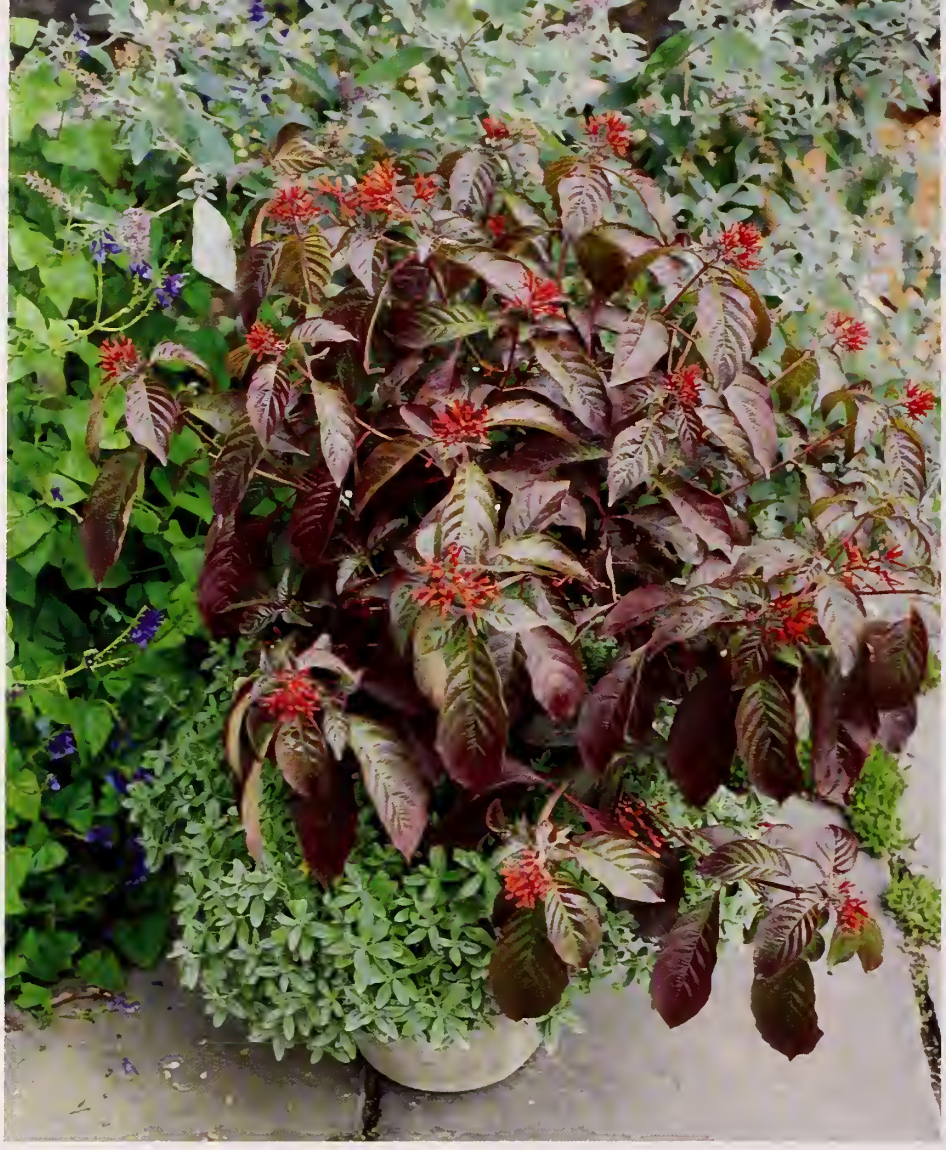

photo by Gary Keim

Unusual Specimens Planted Alone or with Suitable Companion Plants

The shrub firebrush *(Hamelia patens)* blooms with an abundance of tubular scarlet-orange flowers from August until frost. As the air temperature becomes cooler in late September the leaves take on bronze tones that gradually change to red. Here it's underplanted with *Helianthemum nummularium.*

your next step is to prepare for planting. Be sure there are enough drainage holes in the bottom to allow moisture to drain freely from the base of the container. Placing thin wedges of wood under the bottom of the container facilitates drainage.

Artificial soils are better than soil from the garden for many reasons. They are lighter and less dense. They drain better and absorb water more quickly. Because of their porous nature, the oxygen level is higher in the root zone. And, most important, they are generally free of disease-causing organisms and weed seeds. At the Chanticleer Foundation the two most common mixes are Metro-Mix 350, a combination of peat, vermiculite, sand and processed bark, and Pro-Mix BX, a mix of peat moss and perlite, which is slightly lighter in consistency.

Place the soil level at least one inch from the top; this prevents it from splashing out during rains or watering.

Because these mixes drain so readily, a polymeric water abosrbent mixed with the soil can help to increase the soil's ability to hold moisture and make it available to the plants when they need it. Supersorb or Soil Moist are popular brands.

You can fertilize two ways. When you put the soil in the container add a time-release fertilizer, such as Osmocote, which slowly releases the nutrients into the soil. Many formulations with varying lengths of activity are available.

At Chanticleer, pots are fed with a water-soluble fertilizer. Many plants grow vigorously and tend to be heavy feeders. Time-release fertilizers may not adequately fulfill the requirements of these heavy-feeding plants. Peters 20-20-20 applied once a week when plants are actively growing fulfills most plants' needs.

Keep an eye on watering and develop a regular fertilization schedule. Throughout the summer it may be necessary to remove dead blossoms from certain plants to encourage continuous blooming and it may necessary to cut back the foliage of some plants to rejuvenate them mid-way through the growing season.

Container gardening has great potential in the garden. At Chanticleer much of the enjoyment of container gardening comes from trying new plants every year, composing interesting and pleasing color combinations in the containers, and using these containers to provoke a greater interest in the garden.

Mail Order Sources for Container Plants

Canyon Creek Nursery
3527 Dry Creek Road
Oroville, CA 95965
(919) 533-2166

Glasshouse Works Greenhouses
Church Street
P.O. Box 97
Stewart, OH 45778-0097
(614) 662-2142

Logee's Greenhouses
141 North Street
Danielson, CT 06239
(203) 774-8038

Montrose Nursery
P.O. Box 957
Hillsborough, NC 27278
(191) 732-7787

Yucca Do Nursery
at Peckerwood Gardens
P.O. Box 655
Waller, TX 77484
(409) 826-6363

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Andrew Bunting is curator at Scott Arboretum of Swarthmore and formerly curator at Chanticleer Foundation. Bunting worked a little over a year at Tintinhull House in Somerset, England, and Titoki Point in Taihape, New Zealand. He is co-owner of a garden installation company, Fine Garden Creations. He has written for a number of publications including *American Nurseryman, The New Zealand Gardener,* and *Brooklyn Botanic Garden Handbook Series.*

Japanese Anemones & Aster 'Purple Dome'

Two fall blooming treasures to plant now

by Anne S. Cunningham

Anemones

Last September when I phoned a local garden center to see if they had any fall blooming anemones, the salesperson responded: "Oh, you mean those pink flowers that look as if they forgot to comb their hair?"

Well, no, that's not at all what I meant. I meant the charming, stately, graceful pink, white, purple or rose-colored flowers that bloom from late summer until frost, bringing much needed soft alternatives to the standard riotous fall palette.

Known loosely as Japanese anemones, this group of solitary two- to three-inch-wide flowers appears in glorious variations from elegant singles to rich semi-double or doubles, with anywhere from five to 20 sepals. Their stems can be delicate thin wisps that sway in the breeze and turn with the light, or they can be thick woolly stalks that stand tall and straight in driving rains and hurricane-force winds.

Technically, the term Japanese anemone refers to *A.* x *hybrida,* though most garden centers sell fall blooming *Anemone hupehensis* (in dwarf form, as small as 8 inches tall), *Anemone hupehensis* var. *japonica* (2-3 ft. high), and *A. vitifolia* (grape leaf anemone) under the umbrella name of Japanese anemones.

They fit well into a perennial garden, cutting garden, light woodland border, or rock garden, and flourish in any good soil, in partial shade or full sun as long as they're thoroughly watered in well-drained soil. In the taller cultivars, solitary flowers stand way above the vigorous clumps of deep green foliage, so for maximum effect, they should be planted in groups. Two of the most striking plantings I've seen highlighted bright rose-colored double Japanese anemones above a carpet of gray lamb's ears *(Stachys lanata),* and a frothy collection of delicate light pink singles in front of a thick, deep blue-green holly hedge. Another eye-catching grouping combines Japanese anemones with *Aster* 'Purple Dome.' (See below.)

Just as the nomenclature distinction is blurred by different sources, so is the Zone hardiness. Most references say Japanese anemones are hardy from USDA Zones 5 through 9; a few consider them hardy as far north as Zone 3, able to withstand temperatures as low as -40°F. In all cases, they benefit from a winter mulch of leaf mold.

Literature refers to fall blooming anemones in garden culture as early as 17th century in Japan, China, and Nepal. The well-known plant collector Robert Fortune introduced them to Europe in 1844, after he discovered their delicate late garden colors spilling from the sides of tombs built on ramparts in Shanghai. The first record of *Anemone* x *hybrida* appears to be in 1848, and according to David Stuart and James Sutherland in *Plants from the Past* (Viking-Penguin Books, Div. of Penguin Press, New York, NY, 1990), "the [Japanese anemone] was a common cottage garden plant in Britain by 1849, and in America by 1870." Stuart and Sutherland declare *A. hupehensis* and *A. japonica* "essential for every Victorian or Edwardian border, and certainly for any modern garden."

The first Japanese anemones that came to my partially shaded garden were spring cleaning root divisions from a generous neighbor and landscape designer, Sally Wood. Her well-established stand

continued

photo by Anne S. Cunningham

Anemone x *hybrida* 'Pamina' flowers brilliantly in spite of its shaded position under a large shrub.

Top left: The low, white *Anemone x hybrida* 'Alba' flowers profusely on short stems during the months of September and October. **Top right**: The semi-double deep rose *Anemone x hybrida* 'Prince Heinrich' (Prince Henry) glows in the autumn light. **Middle right**: *Anemone hupehensis* 'September Charm' sways on light airy stems in the early fall breezes. **Bottom**: *Aster* 'Purple Dome's' habit is so neat and well formed, it almost looks as if it's been pruned.

of 'September Charm' grace a semi-shaded tiered garden and bloom profusely from mid-August through early fall. One year, in a campaign to keep them in flower until an October 17th garden wedding, she conscientiously deadheaded each spent flower, but in general they bloom happily for four to six weeks without deadheading. Also, some gardeners prefer to leave the woolly rounded seedheads intact for contrast or for future flower arranging.

In addition to those early gifts, I've purchased named, no-named, and incorrectly named varieties in nurseries from Pennsylvania to Massachusetts, and they've all performed magnificently. They're disease and pest resistant, though they're not entirely idiot proof. During one hot July vacation, my 'September Charm' received so little water that their parched leaves dried out and fell off, but as soon as I resumed watering them, buds sprouted and flowered on bare stems from August to late September. The later blooming, sturdy, tall, white varieties showed no ill effects and bloomed through several light frosts until early November.

Listed in the box on this page are just a few of the many late summer and fall blooming Japanese anemones, though few nurseries or garden centers carry more than three or four varieties at one time.

Asters

One brilliant September day almost 10 years ago, Dr. Richard W. Lighty was driving back to Delaware after visiting a nursery near Allentown, Pennsylvania, when he decided to travel along rural Route 100 instead of the main highway. As director of Mt. Cuba Center for the Study of Piedmont Flora, Dr. Lighty's passion for native plants often leads him down country lanes, and this time he struck gold.

For a 10-mile stretch along the side of the road, at the base of battered RFD mailboxes and lining well-kept driveways, he noticed tidy mounds of bright violet-purple asters. The composite, daisy-like flower was clearly a relative of the New England aster, *Aster novae-angliae,* but the dwarf size and neatly mounded habit was unusual. When he inquired about the name and source of the plant, local residents just shrugged. It seems they'd shared it back and forth for years without knowing this compact treasure was unique to their area.

Lighty secured several divisions of the aster and began to propagate them at Mt. Cuba in Delaware. The 18- to 24-inch-high mounds, about 2½ feet wide, continued to grow true and stay tight as long as they were propagated vegetatively, while seed propagations quickly reverted to the taller, more familiar wispy New England aster.

Lighty's discovery, now named *Aster* 'Purple Dome,' has a few characteristics in common with its New England relative. They both grow in a wide variety of conditions from moist meadows to hostile roadsides. Just as they adapt to different soils, they thrive in full sun or in partial shade, with as little as four hours of sunlight. Both have the same late summer lower foliage die back problem, but because the 'Purple Dome' mat of flowers and late summer growth is so dense, the lack of lower foliage is unnoticeable. 'Purple Dome' is hardy in Zone 5, but Lighty expects to find it's much hardier, when northern gardeners start to grow it.

From solitary colorful accents to long, low hedges, the intense bright color and manicured look of 'Purple Dome' lead to all sorts of creative placement in home landscaping. Lighty recommends featuring it in borders with other late bloomers or "set off by contrasting foliage of such early blooming perennials as irises." Amateur gardeners who've grown 'Purple Dome' from tiny divisions find it takes three years for the plant to reach its full, glorious stature.

Late Summer and Fall Blooming Anemones

Name	Height	Color/Characteristics
'Alba'	1 - 2 ft.	white/single
'Avalanche'	2½ - 3 ft.	white/double
'Bressingham Glow'	2 ft.	rose purple/semi-double
'Honorine Jobert'	3 - 4 ft.	white/single
'Kriemhilde'	2½ - 3 ft.	pink/semi-double
'Louise Uhink'	3 - 4 ft.	white/single
'Margarette'	3 ft.	pink/double
'Max Vogel'	2 - 3 ft.	pinkish mauve/semi-double
'September Charm'	2½ - 3 ft.	silvery purple pink/single
'White Giant'	3 - 4 ft.	white/single
'Whirlwind'	2 - 3 ft.	semi-double/white

Sources for Japanese Anemones and Aster 'Purple Dome'

Robert Montgomery Landscape Nursery
Route 113
Chester Springs, PA 19425
(215) 363-2477

Snipes Nursery
US Route 1 at Route 13
Morrisville, PA 19067
(215) 295-1138

Yardley-Langhorne Rd.
Langhorne, PA 19047
(215) 968-4440

591 Durham Road
Newtown, PA 18940
(215) 598-3168

J. Franklin Styer Nursery
US Route 1
Concordville, PA 19332
(215) 459-2400

Styer's Garden Center
US Route 1 and Brinton Lake Rd.
Concordville, PA 19331
(215) 459-4040

Waterloo Gardens
136 Lancaster Ave.
Devon, PA 19333
(215) 293-0800

200 N. Whitford Rd.
Exton, PA 19341
(215) 363-0800

Mail Order

Kurt Bluemel, Inc.
12740 Greene Lane
Baldwin, MD 21013
(301) 557-7229

Crownsville Nursery
P.O. Box 797
Crownsville, MD 21032
(410) 923-2212

Andre Viette Farm & Nursery
Route 1, Box 16
Fishersville, VA 22939
(703) 943-2315

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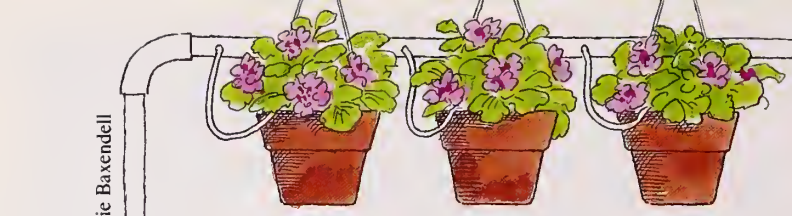
A freelance writer and photographer, Anne S. Cunningham never spends enough time on her Pennsylvania garden, so she's relieved to find plants that look great by the end of the summer, in spite of her scattered schedule.



drawing by Julie Baxendell

A FOUR-STORY SYSTEM WATERS A CITY ROOF GARDEN

by Mary Lou Wolfe

1992 Pennsylvania Horticultural Society's City Gardens Contest Winner Container Gardens/Rooftop Category

"What a knockout this garden is with over 350 plants living in a space of 600 square feet. With a greenhouse for propagating seeds and a four-story watering system, from the basement to the roof garden, this one has to be seen to be believed."

Judges' comments

He started gardening four years ago, and he has won the top prize in the Pennsylvania Horticultural Society City Garden Contest, Container Gardens/ Rooftop category for the last three years. When I heard about Franklin Shore's 20x30-ft. Eden near the Italian Market in South Philadelphia, the first feature always mentioned was his automatic watering system. A master plumber, I thought, or perhaps an electrical engineer. When I met Shores and climbed the stairways to the roof, I kept my eyes open for clues. From the handsome interior and ingenious renovations it was obvious that the owners, Franklin and his wife Barbara, know art, antiques and creative uses of space. Shores turns out to be neither master plumber nor electrical engineer but an artist, trained at the Pennsylvania Academy of Fine Arts. He is a self-employed conservator of works of art on paper.

When electrical and plumbing work has been done on his home in the past, he has watched, questioned, and caught on quickly. He said, "I kind of innately understand about structural stresses and things." That's good because he has built, by himself, a complicated series of gardening spaces and a 12 ft. x 12 ft. greenhouse atop his 1900's garage and outbuilding. This gives him 600 square feet of space that supports 350 plants in containers, each watered by an almost invisible maze of plastic tubing.

Since Shores does not need to reach each container to water it, his mixture of annuals, perennials and shrubs is grown for mass effect rather than to display individual specimens. "I like to be surrounded by the whole thing." And he is, with a jungle-like sitting area festooned with climbing vines of mandevilla, hanging baskets overflowing with red and pink geraniums ('Balcon'), orange marigolds, dwarf cannas ('Tropical Rose') and a blood-red climbing rose ('Colonel Don Juan').

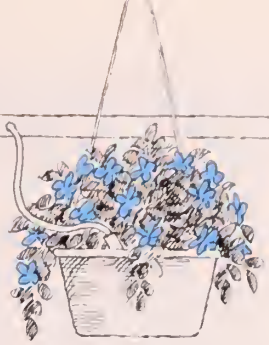
Shores paints with plants, choosing color combinations carefully, making those pink/red/orange blooms vibrate against restful greens. In the midst of this trellised jungle hangs a tiny yellow plastic swing for two-year-old daughter Briana Jean, who must look like a butterfly flitting in her father's jungle.

Still skeptical that someone could learn so much about plants in such a short time, I

photo by Mary Lou Wolfe

photo by Ann L. Reed

Top: Franklin Shores in the greenhouse that he built on a section of the roof. **Bottom**: Large planters line the perimeter of Shores's roof garden on the second floor of his South Philadelphia home.



This gives him 600 square feet of space that supports 350 plants in containers, each watered by an almost invisible maze of plastic tubing.

grilled him as we sat enjoying coffee in his second floor kitchen one misty September Saturday. Yes, he had gardened with his dad and uncles growing up in Poquoson, Virginia. In his own garden there, as a nine- or ten-year-old, he grew enough one summer "to feed 10 families." With Barbara he has grown vegetables during summers in Maine, always having to return before harvest time. Maine neighbors in the poultry business let him truck a load of ten-year-old chicken manure to spread on his northern garden. Even with this jump-start fertilizer boost, the harvest is too late so Barbara, Franklin and Briana head back to Philadelphia each year saying "Neighbors, enjoy our garden."

A neighbor's encouragement

What really started Shore's Philadelphia project atop the row house where he has lived for 18 years was the encouragement of a neighbor, lawyer John Belisonzi, who introduced Shores to the Pennsylvania Horticultural Society. Shores joined, read *Green Scene*, devoured Jane Pepper's Philadelphia *Inquirer* articles, and began to S.O.S. the PHS's Horticultural Hotline for help with special problems.

When neighbor Belisonzi finished building a rooftop garden deck over his garage four years ago, Shores purchased his excess lumber. At the same time Belisonzi made a gift to Shores of fine wooden spindles, which became part of the railings. Shores launched his own roof deck project. The roof, which supports most of his garden, was built in 1900 with massive beams 3 in. wide, 12 in. deep, on 16 ft. centers. Over this roof he laid a special modified mineral membrane roofing material applied with hot tar. He built the basic deck in two days and constructed the trellis, sides and roof on the third. Everything in this area is put together so that it can be removed for roof repairs or design changes. The Shores's second floor kitchen has six-foot sliding

continued

photo by Franklin Shores

photo by Ann L. Reed

photo by Franklin Shores

Left: Shores's 12 ft. x 12 ft. double layer poly quonset-type greenhouse structure, which he uses as a holding and propagating area, is set at the far end of the roof garden. **Top right**: Shores in a quiet moment in the small area set aside for people to relax. Are plants taking over here too? **Bottom right**: *Mandevilla* 'Alice du Pont.'

doors that open out first, onto a small sunken deck. This leads to a raised sitting area over the end of his house.

As we toured the labyrinth of the roof garden Shores began to tell how he acquired some of the 79 species he lists growing in his 1992 garden. It was soon obvious that I had met a master trash picker with a positively fluorescent green thumb. He knew exactly where each plant had come from. Many were trash can rescues spotted when Shores strolls his South Philadelphia neighborhood. From one split pot dumped on a street 10 years ago, he extricated a sickly *Philodendron monstera* that now climbs 6 ft. and luxuriates in a 15-gallon pot. A rescued yucca flourishes in its second life as has a fibrous begonia now bearing huge clusters of pink blossoms.

After the first summer's roof gardening experiments Shores was hooked in spite of rampaging squirrels, challenging winds and the whole new world of tropical plants.

All this rescue work could be of no avail unless one knows what to do with retrieved, stressed plants. Shores experiments and has learned to successfully prune back, divide, repot, and fertilize. He uses plastic pots with Pro Mix for his potting medium. He is beginning to keep records about what works and what doesn't. He feels there's a lot to learn about container gardening that's not included in books.

Adding a greenhouse

After the first summer's roof gardening experiments Shores was hooked in spite of rampaging squirrels, challenging winds and and the whole new world of tropical plants. He needed space to house his growing collection of exotics and wanted the pleasure of gardening year round. There was space above his garage, enough to construct a 12 ft. x 12 ft. greenhouse with areas on the sides for a walkway and a small raised planter space. He built a double layer poly quonset-type structure that he uses as a holding and propagating area.

To heat the greenhouse he installed an electric hot water heater that circulates hot water through a giant loop: first into fins on the side walls, then through 400 ft. of copper tubing under the floor, and then back to the heater. A fan above the door provides ventilation and if it gets really hot, he opens the door or rolls up the poly side walls. Shores watches his electric bills carefully and breathes a sigh of relief as costs decrease in February when the sun climbs higher. The entire greenhouse cost Shores less than $2,000 to construct. He did everything by himself except installing the final outer poly layer, a two-person project. He maintains a minimum night temperature of 50°F; an alarm alerts him in his bedroom (Thermalarm) when temperatures get too high or low.

This winter the space is crammed with mandevillas, passion flower, banana trees, along with cuttings of favorites like geraniums (two 'Balcon' colors), angel wing begonias and gardenias. Disease problems have been limited so far to mold, which he controls with carefully applied Benomyl. For propagating seeds, he finds the greenhouse too cool and crowded so he uses a light unit in his basement and also sets seed trays on top of the kitchen TV set. Good bottom heat generated there seems to work well.

As we exited the greenhouse I inquired about the invisible but famous watering system for the summer rooftop container plantings. "Easy to hook up. All you need is a little plastic push thing that they send you and a sharp knife. Everything just pushes together. You push a little hole for the micro-tubing, stick it in, wrap the end around and tuck it back in." When Shores got to "back flow preventers," "pressure regulators," and "heavy ends," my eyes were glazing over.

Luckily for you, the reader, he has drawn a simple diagram of his system and has listed suppliers for system components. Should you want his own several-page description of his system and a schematic, send a stamped, self-addressed, business-size (#10) envelope to *Green Scene* (325 Walnut St., Phila., Pa. 19106) to request a copy. I was able to envy, if not thoroughly understand that a timer in his house activates a siphon that pulls a 16-part water/one-part fertilizer solution from a five-gallon jar in the greenhouse, through the network of tubing, watering 350 plants for 15 minutes at 7 a.m. and 3 p.m. every day. Those plants thrive!

When I visited Shores again this fall he had just learned that he had won the City Garden Contest, Container Gardens/Rooftop category for a third time. He said he might drop out next year and offer to judge instead, but he hasn't made up his mind about that. I asked what new projects he plans for next year, contest or not. "More ;mandevillas, and maybe I'll master getting their cuttings to root." He will continue to grow, from saved seed, the Burpee tomatoes 'Delicious' and 'Super Beefsteak.' Also, dwarf hollyhocks, dwarf glads, love-in-a-mist *(Nigella damascena)* and some new, yet-to-be-chosen fuchsias are on his agenda. Friends and neighbors keep sharing treasures with this talented gardener and, who knows too, what he'll rescue next from the trash?

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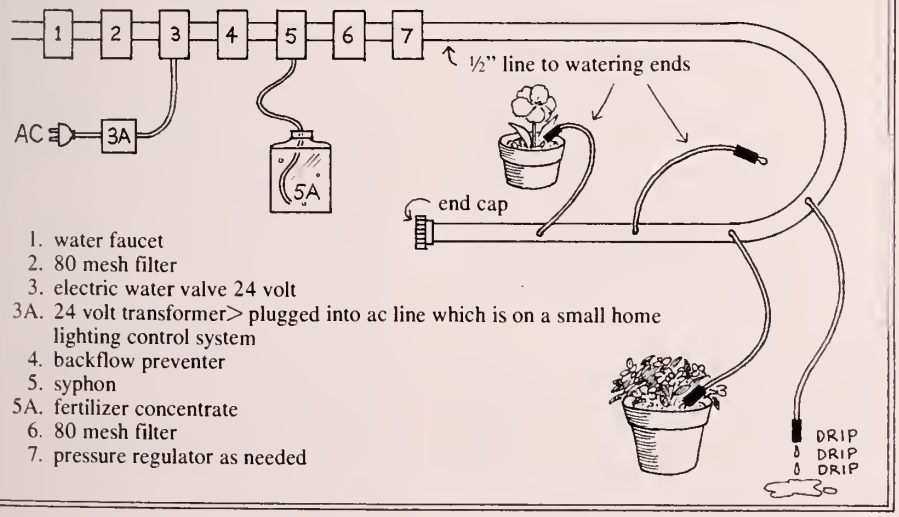
Photographer/writer Mary Lou Wolfe gardens in the country and enjoys learning the tricks of small garden spaces in high rise city gardens.

Schematic of Shore's automated watering system



1. water faucet
2. 80 mesh filter
3. electric water valve 24 volt

3A. 24 volt transformer> plugged into ac line which is on a small home lighting control system

4. backflow preventer
5. syphon

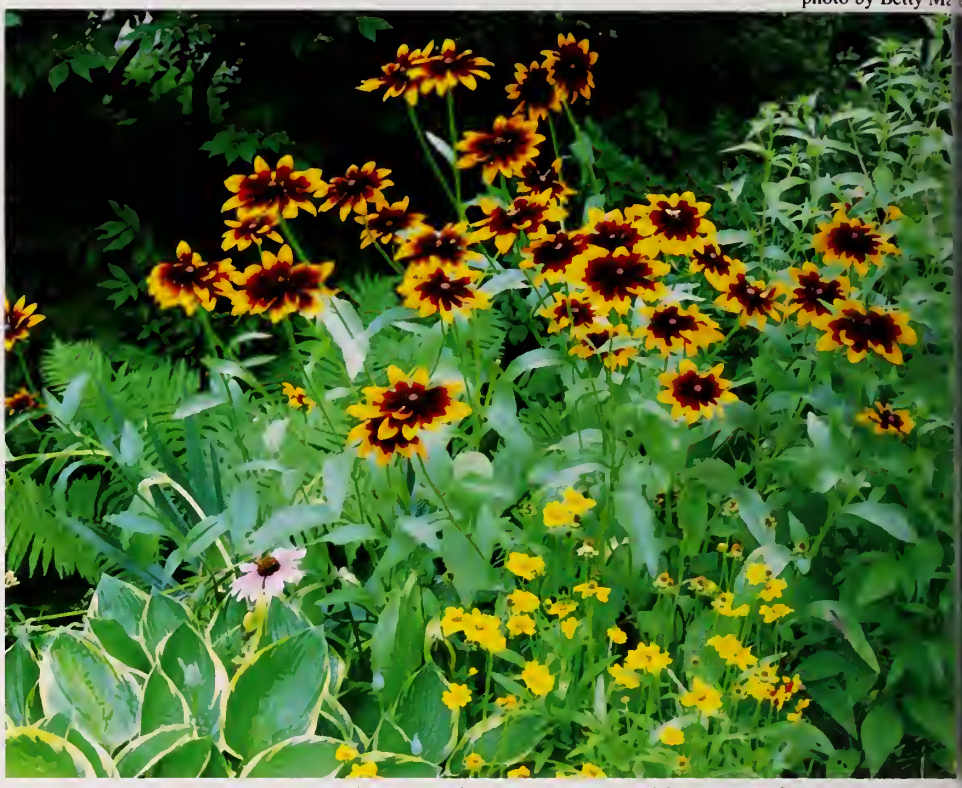
5A. fertilizer concentrate

6. 80 mesh filter
7. pressure regulator as needed

A CUTTING GARDEN FOR PARTIAL SHADE

by Betty Mackey

photo by Betty Mackey



Although *Rudbeckia* is listed as a plant for the sun, it can tolerate a surprising degree of shade.

The sky is a narrow blue band between the treetops. The problem with the zinnias in the flowerbed below is no mystery. There isn't enough sunlight each day to keep the stems strong and stout. The plants lean, have spotty leaves, and would flop to the ground if they weren't staked.

I do not try to be kind. "Stop kidding yourself," I say to my friend Deb Morrison of Wayne. "What you have here is a shade garden. The sun is on it now but it's not enough. Forget the zinnias and put in hostas, ferns, Japanese anemones, and Virginia bluebells. Or cut down the trees."

It has been observed that Pennsylvania wants to be a forest. Drive through any settled neighborhood here or in nearby Middle Atlantic states, and you will see immense deciduous trees spreading a beautiful canopy of green over the houses, streets, lawns, and gardens. For gardeners like Deb and me, who like to grow flowers for bouquets, all that shade makes it difficult, **and** we love our trees. We must learn to assess the degree of shade and restrict ourselves to appropriate shade-tolerant species.

Some of the most prolific flowers for bouquets are annuals and biennials, e.g. shirley poppies, zinnias, scabiosa, cosmos, larkspur, and sweet william, by and large a sunloving group that continues to bloom for months. There are many shrubs and perennials that tolerate light to deep shade much better, but since most bloom only once during the year, they tend to provide fewer flowers in the same amount of space. If shade is what you have, however, healthy shrubs and perennials are far better than leggy, floppy annuals.

When plants grow in too little light, they stretch out and reach for more, and staking becomes necessary. Generous feeding only makes it worse. A full sun exposure means a minimum of six to eight hours of full-strength, unfiltered sunlight per day. Four hours of bright sun a day may seem very sunny, but it's still technically a partial shade exposure. Unless you want to gain enough more sun by removing trees or their lower branches, stop fighting nature and plant those shade-tolerant flowers that grow best there.

If your shade is from deciduous trees, not evergreens, sunloving spring bulbs such as muscari, tulip and daffodils will have plenty of time to bloom and leaf out before the leaf canopy fills in overhead.

Degrees of shade

There are several kinds and degrees of shade, and it can be difficult to diagnose exactly which exposure you are dealing with. Areas of *deep shade* receive little or no direct sunlight; areas of *partial shade* may be in either filtered shade receiving stray bits of sunlight most of the day, or spend many hours in total or filtered shade, but also up to six hours in sun at full strength. A flowerbed in an exposure receiving deep shade all morning and evening, but several hours of sun at full strength at midday is the most difficult to deal with. There's not enough sun for true sunlovers, but when the sun hits it is too strong for the shade plants. (Find plants like *Monarda* and *Lobelia* that grow in sun or shade, and be sure to water on hot dry days.)

Because of the change in the earth's axis of rotation, a spot may catch sun in one season, and shade in another. And of course the annual cycle of trees leafing out in spring and losing their leaves in fall greatly affects the sun/shade ratio. So does leaf size: the dappled shade under a small-leaved locust is much brighter than the deep shade below a large-leaved maple.

Another factor is the type of soil: is this moist shade or dry shade? A spot that is filled with surface tree roots will not support much other plant growth. For flowers, a deep bed of moist but well-drained, loamy soil is best.

The hours of sun a bed receives may be measured by marking it with stakes and checking hourly to see whether they are in sun or shade. Tally up the hours of sun for your results. It is best to do this when trees have leafed out fully and the sun is in its summer position in the sky. Early spring

photo by Betty Mackey

Digitalis (left) in partial shade.

photo by Ed Mackey

Phlox stolonifera.

sun can be very deceptive.

When I moved to Wayne from Florida, it took me several years to understand that my bright-seeming front border has a sunny tip, but is mostly in bright to moderate partial shade, merging into deep shade at the far end. Through research and trial and error, I've learned what does well for me and in similar gardens nearby without much staking or fussing. Here's my annotated list of plants for bouquets that thrive in partial to deep shade.

Annuals and biennials

Coleus hybrids. Branched plants are grown for foliage in any degree of partial shade. Pinch off flowers. Side branches picked for bouquets may grow roots in the vase and then be planted in the garden.

Impatiens wallerana. This one flowers all through the frost-free period in light to deep shade. New Guinea hybrids take full sun or light shade. Keep soil moist. To use as a cut flower, slit the base of the stem to prevent wilting.

Myosotis sylvatica, forget-me-not. Plant seeds of this charming biennial in summer for a month of bloom the next spring, or set in transplants in fall or spring. Provide a well-drained spot in partial shade. Once established, it will self sow.

Torenia fournieri, wishbone flower. A heat-loving annual for partial shade, an alternative to impatiens. Tubular flowers on branched, one-foot plants come in varied, speckled colors.

Viola cornuta, viola. Small-flowered pansies bloom from April until July, sometimes longer if conditions are just right. It prefers bright partial shade and may self sow. Protect it from slugs and pinch back occasionally.

Hardy perennials

Alchemilla mollis, lady's mantle. This plant for partial shade and moist soil features attractive round, pleated leaves and long-lasting, yellow-green flowers that are good fillers in bouquets. Flowers may be air-dried in upside down bunches.

Anemone hupehensis, Anemone vitifolia, Japanese anemone. Growing 3 ft. tall, this has September-blooming, poppy-like flowers in red, pink, or white. May be too pretty to pick; it is a graceful garden plant for bright to average partial shade.

Aquilegia species, columbine. Plant may be short lived but it self sows prolifically in many colors and tolerates light to deep shade. The distinctive, glaucous seedlings are easily transplanted. Columbine is prone to leaf miner; pick and destroy affected leaves.

Astilbe species. Long lived and reliable in light to deep shade. Astilbe has feathery flower plumes for several weeks in early summer, which may be white, pink, red, or lilac. Its fernlike foliage stays neat in the garden until after frost.

Begonia grandis. In late summer, until frost, this striking hardy plant features showy sprays of pink flowers above large, waxy leaves. It grows 2 to 3 feet tall in light to deep shade.

Bergenia species. Growing in light to deep shade, bergenia offers waxy spires of pink, red, or white flowers and round, leathery, 8-inch leaves. Both are used in bouquets. Leaf edges may burn if they receive too much sunlight. Some years when winters are mild, leaves remain till spring.

Brunnera macrophylla, bugloss. Featuring big, heart-shaped green leaves and delicate sprays of forget-me-not-like blue flowers in midspring, bugloss tolerates light to deep shade. Its leaves stay nice all summer, but plants can be killed by too bright an exposure and high heat. A cultivar with variegated leaves, 'Dawson's White,' is available.

Campanula species. The many types offer bell-shaped flowers in shades of blue, white, and lavender. They do best in partial, not deep, shade and loamy soil. If crowded, transplant basal rosettes in early spring.

Cimicifuga racemosa, bugbane. A large, dramatic plant that blooms with vigor even in deepest shade, in good, moist soil. Tall white spires on 4-foot plants bloom in fall, adding brightness against a dark back-

continued

photo by Ed Mackey

Dicentra spectabilis, white form.

photo by Betty M[illegible]key

Hosta sp.

ground of fencing or evergreens.

Convallaria majalis, lily of the valley. Grows in a thickly matted clump and is used as groundcover in either moist or dry shade. The fragrant blooms open in late spring; plants look neat all summer.

Dicentra species, bleeding heart. The varied types do well in light to deep shade. *D. spectabilis,* with pink or white heart-shaped flowers on arched stems, is better for cutting than *D. eximia,* but the latter is everblooming and evergreen until hard frost. The foliage of *D. spectabilis* vanishes or yellows in summer, but may be screened by planting ferns or impatiens in the same area.

Digitalis species, foxglove. Foxgloves, with their tall spires of pastel-colored bells, are perfect for partial shade and can be increased easily for a dramatic naturalized garden. Many tend to be biennial, dying out after bloom. The seed can be ripened, gathered, and planted on the surface of a flat filled with soil and placed in shade in summer. By fall, scads of seedlings will be evident. Transplant them to larger pots if you have time, or leave them in the flat outdoors through winter. Transplant them to garden places or larger pots in the spring. Some will bloom by late spring, others will need another year. Also, leaf rosettes forming at the base or on stems of old plants take root readily if moved to fresh soil in early fall and kept moist.

Ferns. Many genera and species are available for shade gardens, including *Adiantum, Dryopteris,* and *Athyrium.* Most grow well in loamy soil in partial to deep shade. To condition fronds before arranging in bouquets, try dipping stem ends into boiling water, then submerging the whole leaf in cool water for several hours. If this fails for the type you are using, try again without the boiling water treatment.

Geranium species (cranesbill, not *Pelargonium).* Geraniums flower for many weeks in bright to average partial shade and moist, loamy soil. Tall types like *G. pratense* are best for cutting.

Helleborus species, Christmas or Lenten rose. Waxy blooms appear in late winter and early spring and last a long time in bouquets. Plants prefer a spot in loamy soil under deciduous trees for sun in winter, shade in summer.

Hemerocallis species and hybrids, daylily. Usually the flowers close by afternoon or evening, whether cut for bouquets or in the garden, but newer types with thicker petal substance stay open longer. Daylilies grow with ease in sun or partial shade, in any soil, but bloom less in shade. They can tolerate a spot that swings daily between deep shade and intense sun.

Hesperis matronalis, sweet rocket. A short-lived perennial that provides masses of lilac, pink, or white flowers. Three- to 4-foot plants grow in sun or shade in average to moist, loamy soil and are widely naturalized in eastern Pennsylvania. Stem cuttings sprouting leaf rosettes root with ease in September.

Hosta species, plantain lily. *H. plantaginea* has large, white, fragrant flowers, excellent for bouquets. Leaves and flowers of all species and cultivars may be used, but do not cut more than two or three leaves from any one plant, or you'll weaken it. Check current books and catalogs for the wide array of leaf and flower colors, sizes, and textures. I like the types with yellowish-green leaves, but not their violet flowers, so I pick those off for bouquets as soon as they open.

Lilium (some species). Tolerance of shade varies among species and cultivars. Native lilies like Turk's Cap are very good for shade, and so are martagon lilies. In partial shade, lilies usually need staking.

Lobelia cardinalis, L. siphilitica. Cardinal flower with its scarlet blooms offers an attractive and unusual color for shade. *L. siphilitica* is usually blue, sometimes white. Both species bloom with spires of flowers in August and September. New hybrids (see p. 26 of the March/April '92 issue of *Green Scene)* are now available in pink, ruby, and purple shades. 'Ruby Slippers' is particularly choice. Lobelias need moisture, but tolerate either sun or shade.

Mertensia virginica, Virginia bluebell. Once established, this ephemeral woodland

photo by Ed Mackey

Hespis matronalis.

plant forms thick woody roots that yield soft pinkish-blue flowers bountifully each spring, in partial to deep shade. The foliage yellows and vanishes by summer. Overplant it with impatiens for summer color, but do not dig the bed deeply, just slip in transplants.

Monarda didyma, bee balm. A good plant for difficult spots near buildings or walls that go from total shade to total sun, this grows in both environments. 'Cambridge Scarlet' is best known, but there are other cultivars in soft pink, bright rose, lilac, and deep purple. Bee balm can take dry shade, but needs more water if in sun. Be warned, this is a vigorous, invasive plant.

Phlox divaricata, P. stolonifera, mountain phlox. These native woodland phloxes are perfect for shade gardens. In May, the flowers form clusters atop one-foot stems, above a neat mat of foliage. Flower color includes blue, violet, white, and, rarely, pink. Trim off remaining flower heads and their stems after they finish blooming. Thin and transplant divisions in fall or early spring.

Primula species, primrose. Primroses are just right for spots under deciduous trees that are sunny in spring but shady in summer. Most prefer a moist, loamy soil. *P. vulgaris* and *P. japonica* are widely grown in the Middle Atlantic region.

Pulmonaria saccharata, lungwort. Moist shade is best for the easily grown lungworts. A well-known cultivar: 'Mrs Moon.' Although the flowers are not plentiful, they bloom early and withstand deep shade where little else will thrive.

Rudbeckia species, black-eyed susan, gloriosa daisy. In my experience, all the *Rudbeckias,* usually listed as plants for sun, tolerate a surprising degree of shade, but may need staking. They are branching and productive for cutting.

Solidago species, goldenrod. Expect variable results with this sun- or shade-tolerant native. For shade, choose shorter types. Goldenrod gives lots of color in partial shade.

Shrubs

Of the many shrubs for partial to deep shade, I recommend these for ease of growth and cuttable flowers and foliage.

Corylus species, hazel or filbert. *C. avellana* 'Contorta,' known as Harry Lauder's walking stick, has twisted branches and dangling catkins that are marvelous for arrangements, but the shrubs is slow growing. *C. maxima* 'Purpurea' is a faster growing hazel with purple leaves. Either grows in partial shade or sun.

Hamamelis species, witch hazel. Species vary in height and flower color, but all bloom early and grow well in shade below taller deciduous trees. Most are yellow-flowered. *H.* x *intermedia* 'Arnold Promise' is hardy and offers long-petaled, golden flowers. *H.* x *intermedia* 'Diana' blooms in rusty red. *H. mollis* is fragrant. Branches from any of the witch hazels may be cut and forced indoors in winter.

Kerria japonica, kerrybush. Blooming well in partial shade, this small shrub has arching branches loaded with round, golden flowers in spring. The single-flowered type has fewer, but larger and more distinctive blooms than the double. Neither form is seen often enough.

Leucothoe fontanesiana, fetterbush. A broad-leaved evergreen for partial to deep shade; a good source of glossy foliage and fragrant white flowers. Cultivars vary in height, leaf color (green, variegated green and white, or bronze), and shape.

Rhododendron species, azaleas and rhododendrons. In endless variety, with types to bloom from late March well into summer, this group is deservedly a standby in shady Delaware Valley gardens. Go to local nurseries or American Rhododendron Society sales and select yours while in full bloom, to see exactly what flower shape and color you will get. (See dates of local sales through American Rhododendron Society on page 33 of this issue of *Green Scene.*)

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Betty Mackey and Anne Halpin wrote *Cutting Gardens,* produced by Roundtable Press and released by Simon & Schuster in February 1993. Mackey also published *A Cutting Garden for Florida* in 1992, which she wrote with Monica Brandies. (B.B. Mackey Books, Wayne, Pa., 1992.)

Conditioning Homegrown Floral Material

Flowers and foliage stay fresh longer when they are conditioned after cutting and before arranging. Harvest your bouquet materials either in the evening or the early morning, with long stems if possible. As you gather, immediately plunge them into a deep bucket of cool water. Then bring them to your work area and fill a deep, wide container with water mixed with floral preservative according to directions, or a mixture of bleach and sugar, a tablespoon of each per gallon of water. Recut each stem on the diagonal and place into the conditioning water for several hours.

For materials with woody stems, also make one or several slits at the base. Mashing the ends is sometimes recommended, but can cause blockage of the vessels.

Flowers are usually immersed up to their necks, but foliage may be totally immersed in the conditioning water. Submerge flowers blooming in spires about halfway up the stalk.

Uncommonly Choice Shade Flowers

by Patricia A. Taylor

Area experts recommend 10 choice, easy care shade flowers. For a longer list, read the author's recently published Easy Care Shade Flowers.

It was an unfair request, but I made it anyway: "Please list only 10 of your favorite easy care shade flowers."

I addressed the request to 16 institutions and seasoned gardeners across the country as part of the research for my book: *Easy Care Shade Flowers.* What made the request so difficult, in my opinion, was that the choices had to be limited. I would have a hard time restricting myself to recommending just 10 such plants.

As *Green Scene* contributor and well-known Delaware Valley gardener Marnie Flook noted, the selections were not necessarily the gardener's most prized plants because of the stipulation that the flowers had to be easy care, ones needing little or no fertilizers or pesticides.

Despite my tight restrictions, contributors named more than 100 plants. Of these, only the native bluebells *(Mertensia virginica)* and bleeding hearts *(Dicentra eximia)* were common to as many as five submissions. I reaped a rich information harvest from these knowledgeable gardeners.

Many of the plants, I was intrigued to learn, are difficult to find in commercial trade. I call these gems my uncommonly choice shade flowers. The following describes a selection of these plants, all perfect for shade gardens in the *Green Scene* circulation area.

Doll's eyes *(Actaea pachypoda)* has finely cut foliage similar to that of astilbes. Its white flowers in spring slowly transform themselves into exotic white berries with black "eyes." Growing 2 ft. to 4 ft. tall, this is a handsome plant for deep shade area.

Recommended by: Holden Arboretum.
Source: Crownsville Nursery.

Fernleaf corydalis *(C. cheilanthifolia)* has 12 in. spikes of yellow early spring flowers and striking feathery green foliage. In my gardens, the foliage remains evergreen in protected corners and fades to a fall yellow in more open areas.

Recommended by: Winterthur museum, garden and library.
Source: Winterthur's Garden Shop (Fall '93).

Yellow corydalis *(C. lutea)* blooms from May to September in a bright shade corner of my house that receives no direct sun. The small yellow flowers on this 12-in.-tall front-of-the-border charmer pop up among blue-green foliage, similar to the closely related *Dicentra eximia;* the two plants are handsome together.

Recommended by: Linda Yang.
Source: Crownsville Nursery (Fall '93).

The dwarf hosta *(H. venusta)* has violet midsummer flowers and dark green foliage. At maturity, it forms a mound only 6 in. high.

Recommended by: Marnie Flook.
Source: Crownsville Nursery.

Crested irises *(I. cristata)* brighten up spring woods throughout the east. These 6-in.-tall plants bear flowers in a variety of colors — blues, purples, and white. The latter is my favorite; it glistens among the brown leaves and emerging greenery of an early spring forest floor.

Recommended by: Holden Arboretum.
Source: Crownsville Nursery, Montrose Nursery, Native Gardens.

Though most garden literature insists *Penstemon smallii* is a sun-loving plant, Ken Moore, associate director of the North Carolina Botanical Garden, wrote that "it is the best eastern native penstemon for the woodland garden." I took his advice and planted several, some in bright open shade and others in medium heavy shade with lots of dappled sun. All grew 18 in. to 24 in. tall and had colorful pink buds that opened

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1. *Actaea pachypoda:* By mid-July, the black "pupils" on the distinctive white berries of doll's eyes have begun to form.
2. The flowering raspberry *(Rubus odoratus)* bears rich pink flowers throughout July and August.
3. *Iris cristata* 'Alba.' The glistening white flowers of the crested iris are among the author's favorites.
4. *Penstemon smallii,* a beautiful late spring flower that is rarely grown in shade gardens.
5. *Corydalis cheilanthifolia:* fernleaf corydalis, pictured in a late March garden, is one of the first shade perennials to bloom.
6. The celandine poppy *(Stylophorum diphyllum)* bears bright yellow flowers from mid-spring into early summer.

photos by Patricia A. Taylor

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photo by Patricia A. Taylor

Fir pink *(Silene virginica)* blazes away in spring shade gardens.

to stunning pink and white flowers in late spring.

Recommended by: North Carolina Botanical Garden.
Source: Native Gardens, The Primrose Path.

The native flowering raspberry shrub *(Rubus odoratus)* can reach 9 ft. in height if left unpruned. It sports rich pink flowers throughout the summer months, blooming in one of my garden spots with only one hour of direct high summer sun and bright shade the remainder of the day. This plant does spread and is probably best in a large, informal setting.

Recommended by: Bowman's Hill Wildflower Preserve.
Source: The Primrose Path.

Fire pink *(Silene virginica)* has brilliant red flowers, one of the few shade plants claiming this color. A spring bloomer, it grows 18 in. to 24 in. tall and does well in soil enriched with organic matter and shaded by deciduous trees.

Recommended by: North Carolina Botanical Garden.
Source: Montrose Nursery, Native Gardens.

The yellow flowers of the celandine poppy *(Stylophorum diphyllum)* rival those of the daffodil in size and cherriness of color. Unlike daffodils, however, the flowers on this 12 in.- to 18-in.-tall spring plant will keep appearing for almost two months.

Recommended by: Holden Arboretum and Linda Yang.
Source: Native Gardens, The Primrose Path.

I consider the variegated forms of Virginia tovara *(Polygonum virginianum* 'Painter's Palette' formerly *Tovara virginiana* 'Variegata' one of the great finds for my book. These have green and cream-splashed foliage throughout the growing season and then sprout wands covered with bright red flowers in September. My plant grows 3 ft. tall and thrives in a moist, bright shade setting with three hours of high summer sun.

Recommended by: Linda Yang.
Source: Montrose Nursery.

In addition to the plants listed here, I'd like to add gorgeous, little-known woody shade ornamentals honored by The Pennsylvania Horticultural Society's Gold Medal Award program. As *Green Scene* readers know, this program singles out plants that are not only beautiful and low-maintenance but also under-utilized. For a list of Gold Medal Award winners,* as well as wholesale and retail sources of each, send a stamped, self-addressed #10 envelope to: PHS Gold Medal Award, Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106.

With the plants honored by The Pennsylvania Horticultural Society plus the choices offered by contributors to my book, shade gardeners need never again complain that it is difficult to have all-season color in their beds and borders.

See also *Green Scene* January 1993, pages 3 through 10.

Mail Order Sources

The Crownsville Nursery
P.O. Box 797
Crownsville, MD 21032
Catalog: $2

Montrose Nursery
P.O. Box 957
Hillsborough, NC 27278
Catalog: $2

Native Gardens
Route 1, Box 494
Greenback, TN 37742

The Primrose Path
R.D. 2, Box 110
Scottdale, PA 15683
Catalog: $2

Winterthur Garden Shop
Winterthur, DE 19735
800/767-0500
Catalog: Free

Plant Pickers

Here's a brief description of the individuals or institutions recommending the shade flowers in this article.

Bowman's Hill Wildflower Preserve: an 80-acre collection of plants found in Pennsylvania and grouped by native habitat. For information about membership and activities (including seed sales), write to Bowman's Hill Wildflower Preserve Association, Inc., Washington Crossing Historic Park, P.O. Box 103, Washington Crossing, PA 18977.

Marnie Flook, garden lecturer and author, has served on the boards of the American Rock Garden Society and Longwood Gardens. She and her husband are now in the process of creating their third garden in the greater Delaware Valley area; as with their first two gardens, it is already a popular stop on garden tours.

The Holden Arboretum: a unique 3,100-acre preserve containing over 6,800 plant species and cultivars in natural woodlands, horticultural collections, and display gardens. For information, write The Holden Arboretum, 9500 Sperry Road, Mentor, OH 44060.

The North Carolina Botanical Garden: a regional center for research on and conservation of plants, particularly those native to the southeastern U.S. For information, write North Carolina Botanical Garden, The University of North Carolina at Chapel Hill, Campus Box 3375, Totten Center, Chapel Hill, NC 27599-3375.

Winterthur Museum, Gardens and Library, Henry Francis duPont's gift to admirers of beauty, is one of the most elegant naturalistic gardens in the world. For information about visiting, call 800/448-3883.

Linda Yang is a Manhattan gardener who writes a regular column for *The New York Times.* Her book, *The City Gardener's Handbook: From Balcony to Backyard,* Random House, New York, 1990, gives complete details on how to garden in small places.

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Patricia Taylor's *Easy Care Shade Flowers* was published by Simon & Schuster, New York, in February 1993.

THE CASCADE GARDEN

New at Longwood Gardens

by Rick Darke

The Cascade Garden walls are constructed of a lustrous mica stone from a Media, Pa., quarry. The striking red floral bracts of *Guzmania* 'Super Amaranth' at upper left pick up on the red leaf tips of the *Neoregelia* hybrids in the center foreground. Tropical maidenhair ferns (*Adiantum*) emerge from rock crevices.

photo by Larry Albee

continued

THE CASCADE GARDEN

New at Longwood Gardens

photo by Rick Darke

Roberto Burle Marx developed this garden at his home, Sitio Santa Antonio da Bica, outside Rio de Janiero, Brazil.

Amidst a richly textured mosaic of bromeliads and other denizens of tropical habitats, sheets of water drop precipitously down vertical rock channels, spew from the ends of cut granite runnels and finally splash into pools below. Giant philodendron leaves emerge from the mists as lianas ascend the walls and columns, seemingly reaching the sky. Part of the new Cascade Garden, these artistic scenes are inspired by and evocative of the beauty of the South American rain forest. The garden, a collaboration between Roberto Burle Marx & Associates, Landscape Architects, Rio de Janeiro, Brazil, and Conrad Hamerman, ASLA, Philadelphia, lushly fills a glasshouse at the western end of Longwood Gardens' 3.5-acre conservatory complex near Kennett Square in Pennsylvania.

photo by Larry Albee

Longwood Gardens horticulturist Rolfe Smith, Roberto Burle Marx, and Conrad Hamerman (left to right) work on the initial planting of the Cascade Garden in June 1992.

Creator of the modern garden

Born in 1909 in Sao Paulo, Brazil, Roberto Burle Marx has been making gardens for more than 60 years, and is widely considered to be this century's preeminent landscape architect. When awarding him its Fine Arts Medal in 1965, the American Institute of Architects in Washington, D.C. called Burle Marx "the real creator of the modern garden."

Burle Marx's unique style, often characterized by complex arrangements of organic and geometric outlines, evolved from his enduring love of music, painting, architecture, and the native Brazilian landscape. Conversant in five languages as well as his native Portuguese, Roberto is both a fine singer and a painter of international renown. Brazilian architect Lucia Costa, town planner for the capitol city Brasilia, said of Burle Marx "He is a survivor from the Renaissance, a musician who makes music with plants."

While studying music and painting in Germany in the late 1920s, Burle Marx visited the Berlin Botanic Garden and was overwhelmed by the beauty of its collections of native Brazilian species. Back in Brazil in the 1930s, while working on his first public garden commissions, Burle Marx soon realized very little of the Brazilian flora was available for use in gardens. Along with Brazilian botanist Henrique Lahmeyer, he began making excursions into many wild places in Brazil, including the Amazon river basin. These expeditions provided the opportunity to bring back propagations of splendid rare species, and to gain a deep appreciation for the patterns and arrangements of plants in their natural surroundings. Several of the species discovered on these forays proved unknown to science, and were subsequently named in honor of Burle Marx. A few, including bromeliads *Aechmea burle-marxii* and *Neoregelia burle-marxii* can be seen in the Cascade Garden. Although Burle Marx has since become known through his lectures and writings as a staunch advocate of the preservation of the South American rain forest flora, his gardens, perhaps, speak most eloquently for the beauty of these plants.

In 1949, Roberto purchased a "sitio," or small farm, just outside Rio de Janiero. Over the years he has developed his Sitio Santa Antonio da Bica into an extraordinary home garden, as well as a world-famous plant nursery. Enveloped by his signature gardens, the farmhouse has gradually evolved into a live-in gallery for Roberto's paintings and sculptures, and is often populated by visiting botanists and artist friends from around the world. The nursery produces the majority of the plants used in Burle Marx's gardens, and contains a remarkable assemblage of Brazilian species and cultivars.

Burle Marx has completed scores of major public and private gardens in Brazil. His work shows a remarkable diversity, including huge landscapes with plants arranged in broad, painterly strokes and modest courts with strong vertical plantings reminiscent of the rain forest's often dizzying heights. He is perhaps best known internationally for the magnificent sidewalks and plantings along the Copacabana in Rio. There he modified the traditional Portuguese tile patterns into flowing mosaics, interspersed with groupings of tropical trees and shrubs. Although he also received commissions in numerous other countries including Argentina, Chile, South Africa and France, his work was not represented in North America.

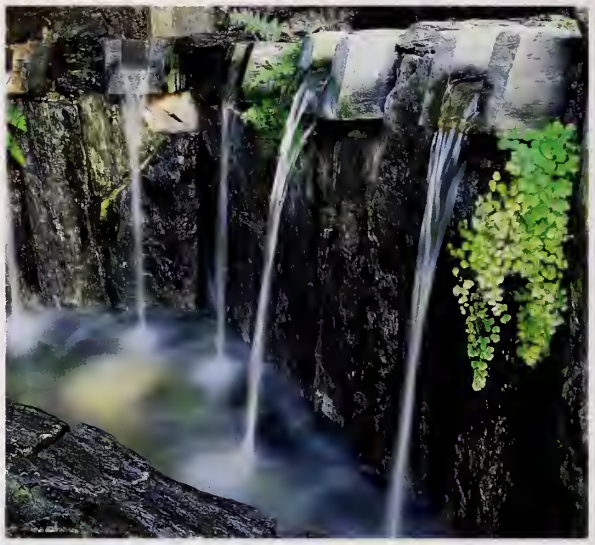
Longwood Gardens director Fred Roberts had long been aware of Burle Marx's work and had hoped, through Longwood, to bring his unique style to the Delaware Valley. By 1988, a series of indoor display changes left the glasshouse on the west end of the conservatory complex vacant and available for redesign. This house formerly held desert plants. Erected in 1958, it has a curved, sloping walkway and many vertical aspects to its structure. Roberts felt Burle Marx was the ideal choice to design the new display, since many of his gardens feature strong vertical elements.

Philadelphia landscape architect Conrad Hamerman provided a critical connection between Longwood and Burle Marx. Hamerman, who has consulted for Longwood on other occasions spent much of his youth in Brazil and speaks Portuguese fluently. He and Burle Marx began a close friendship when Roberto was lecturing at the Museum of Modern Art in New York in 1954, and the two have worked together many times since then. Former Longwood Display specialist Landon Scarlett provided the program of requirements for the new display and by 1989 preliminary plans were approved. These featured a planting plan prepared in Rio by Burle Marx & Associates and a design for the hardscape

At center and upper left, huge specimens of *Vriesea imperialis* sit like living sculptures. Native to Brazil, this imposing bromeliad is one of Burle Marx's signature plants. In the foreground is *Orthophytum gurkenii* another Brazilian native popularized by Burle Marx. Its Brazilian-coffee-colored leaves are intricately variegated, and its green floral bracts are more arresting than stop-light red. It can be grown in a home greenhouse or on a sunny windowsill.

photo by Larry Albee

photos by Larry Albee



Water spills from granite runnels and drops into swirling pools below. Tropical ferns cascade from crevices in the mica rock walls.

At right, a giant leaf of Brazilian native *Philodendron maximum* emerges from the mist. At far center an imposing specimen of *Vriesea imperialis* leans over multiple waterfalls. *Vriesea hieroglyphica* climbs the walls in left foreground.

prepared in Hamerman's Philadelphia studio.

More than two years to construct

The "Cascade Garden," named for the house's 16 waterfalls, took more than two years to construct, owing to the large amount of detailed stonemasonry and development of the water features. Many prototypes were prepared, and almost all the construction was done in-house by Longwood's masons, carpenters, plumbers, electricians and metal workers. Conrad Hamerman was on hand almost daily for several weeks to supervise the selection and placement of each stone. The walls are built primarily of Pennsylvania mica from a Media quarry, with occasional blocks of pink quartz for accent.

Roberto Burle Marx initially visited the construction site in May 1990, and the following spring Longwood staff members, including me, travelled to Brazil with Hamerman. This trip provided a wonderful opportunity to discuss Burle Marx's gardens with him and to study in detail his use of plants. Some of the more unusual species and cultivars designated for the new garden were not available in the U.S. These were obtained from Burle Marx's nursery and hand-carried through U.S. Customs on the group's return.

Longwood horticulturist Rolfe Smith, a specialist in tropical plants, is responsible for the care and continued development of the Cascade Garden plantings. After returning from Brazil, Rolfe searched specialty nurseries in Florida to find and purchase or contract to grow the large numbers of plants needed. The hardscape was completed by June 1992, and Burle Marx returned to Longwood to work on the initial planting with Rolfe and Conrad Hamerman. They covered the soaring, angular walls and structural columns with a rich, colorful palette of epiphytic plants. Many of these belong to the bromeliad family, as does the cultivated pineapple. In their native environment, epiphytes root into the rough bark of trees or into moss or organic litter that accumulates in rock crevices. They extract their nutrients primarily from rainwater and the naturally humid atmosphere of the tropics. The vertical surfaces in the Cascade Garden were covered with a special partially porous composite material developed at Longwood to provide a foundation for the epiphytes. Beneath the composite layer a network of special tubing provides supplemental heat. Rolfe Smith and his crew devised a method of anchoring the plants initially by using eyescrews and osmunda fern roots. A fogging system maintains constant 80% humidity in the house, and the plants will eventually root directly into the composite walls.

Since June, the plantings have filled in at a remarkable rate to produce a lushness truly reminiscent of the rain forest. The house has been transformed by the magic of Burle Marx, who concludes, "With all these different spaces, Longwood's greenhouses are like a symphony. The Cascade Garden is a crescendo, a finale to the experience."

Sources of Plants

Many of the plants used in Longwood's Cascade Garden can be easily grown in a small home greenhouse or even on a sunny windowsill. Below are retail mail-order sources of bromeliads and other tropical plants. Catalogs are available on request.

Glasshouse Works Greenhouses
Church Street
P.O. Box 97
Stewart, OH 45778-0097
(614) 662-2142

Michael's Bromeliads
1365 Canterbury Road North
St. Petersberg, FL 33710
(813) 347-0349

Pineapple Place
3961 Markham Woods Road
Longwood, FL 32779
(407) 333-0445

Southern Exposure
35 Minor at Rusk
Beaumont, TX 77702
(409) 835-0544

Tropiflora
3530 Tallevast Road
Sarasota, FL 34243
(813) 351-2267

•

Rick Darke is curator of plants at Longwood Gardens.

GROW A VARIETY OF POTATOES

by Dorothy Noble

photo by Bob Ferguson

Past and Present. These varieties have been enjoyed for over 100 years. Moreover, they are related. In 1861 'Early Rose' (in the back) occurred as a seedling of 'Garnet Chili' (in front). 'Irish Cobbler' (beside the antique potato masher) appeared as a sport of 'Early Rose' in 1861. 'Russet Burbank' (in the basket) also developed from 'Early Rose' in 1876.

Why grow potatoes? Plucked from its native ground high in the Andes by explorers and introduced to Europe in the mid-1500s, this nutritious tuber was first cultivated for its blossoms. With fragile-looking blue, pink, lavender, or white petals contrasted by bright yellow-orange anthers and set off by pretty green foliage, potato flowers certainly appear exquisite.

But your reasons for growing potatoes may be to try different varieties.

The Fashionable Potato

Once considered lowly and exclusively for the poor, potatoes are currently fashionable. It's about time. Their versatility amazes, ranging from simple soul-satisfying comfort food to the heights of elegant cuisine. Fine dining restaurant chefs are creating imaginative dishes worthy of the superb eating qualities for both traditional and unusual potatoes.

What could be more memorable at your dinner party than nuggets of 'Yukon Gold' surrounding your perfectly prepared entree? Imagine delicately steamed slices of pretty pink 'Alaska Sweetheart' gracing your nicest china. Why not savor a salad where pale yellow, waxy 'Russian Banana' allows the dressing to glisten? Your avant-garde guests will appreciate the iridescent deep blue skin and pretty lavender flesh of baked 'All Blue.' Accent a dish with chunks of the thoroughly purple, mealy 'Peruvian Purple.' Or, for a traditional celebration, whip the heirloom 'Irish Cobbler' into the flavorful mashed potatoes your grandmother probably made.

Varieties To Choose

Of the over 100 potato varieties grown in this country, just a handful account for three-fourths of the potatoes found on store shelves and in freezer cases. These, plus a few more, also become potato chips and fast-food french fries.

Contrast a typical South American street market. Hues of red, brown, purple, blue, and yellow among twisted, knobby, and smooth tubers of astonishing variations in shape and size abound. Andean farmers cultivate thousands of varieties encompassing eight species; many more species are wild.

With varieties of even only one species, however — e.g. *Solanum tuberosum* — you can sample the potato's diversity. Grow your own.

Potatoes are grown in every state and in 125 countries. In fact, potatoes produce more nutrition in less time and on less land than any other crop in the world.

Climate and soil greatly influence potato growing. Varieties differ in disease susceptibility and in their ability to withstand heat and moisture stress. Consequently, variety choice, along with proper cultural management, can affect the degree of success.

Consider desired use of the potatoes also. Are they to be used as 'new' potatoes — enjoyed fresh without storing? Or, are they for winter use? Many varieties taste best at a certain stage.

What culinary dishes do you most enjoy? Starch content — expressed as specific gravity in the potato industry — determines how potatoes work in recipes. The high starch varieties, lower in moisture and mealy in texture, cook light and dry. These starchy varieties make fluffy mashed and baked potatoes and produce excellent french fries that are nice and crispy on the outside with a soft, dry interior. Low starch potatoes, higher in moisture, have a firm, waxy texture. Since these hold their shape in cooking, they are better for boiling and sautéing.

Be mindful of personal preference. Some people like a moist baked potato. Many seek the flavor they remember as a child. Others demand the unusual.

Given reasonable care, these flavorful old and new varieties should please potato growers in Southeastern Pennsylvania and vicinity.

Round Reds

Are you in a hurry for results? Sensational as 'new' potatoes, dug before maturity, the round red-skinned, white fleshed potatoes deserve a place in your plot. Try the tasty 'Chieftain,' the favorite market red in Canada. Smooth-skinned, shallow-eyed, attractive 'Norland' is scab-tolerant and stores well. Its low starch quality keeps it firm for creaming and scalloping. 'Sangre' is often used in restaurants for its appearance and flavor. All these varieties give abundant harvests.

Whites

Looking for impressive yields? Often marketed as Maine potatoes, all-purpose white varieties generally will not let you down. The widely grown old standard, 'Katahdin,' is disease- and somewhat drought-tolerant. Since it stores well, you will enjoy excellent salads and boiled potatoes throughout the winter.

continued

True to its name, 'Superior' yields uniform tubers. Adaptable, it is scab-tolerant but verticillium wilt-susceptible. Steal a few from the vigorous plants just after the lavender flowers bloom for a special early treat.

For the ultimate in mealiness for a baked potato, try 'Bake King.' Preserve the quality of this and any baker with the dry heat of an oven.

'Kennebec' is hard to beat. The long-keeping, large tubers can be used a number of ways. A high yielder, it is resistant to late blight and mild mosaic but susceptible to verticillium wilt.

If you can manage the ample water and possible fungicide requirements of 'Shepody,' it will reward you with good yields and

Bug Eaters, mammoth machines, vacuum-suck the insects from the plants. More effective is an even more drastic-sounding measure — propane flamers.

probably some oversize 'lunkers.' In addition, it can provide the culinary characteristics of the russets, such as superb french fries.

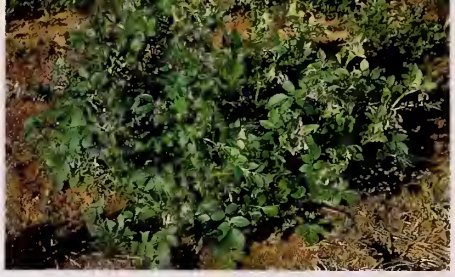
Russets

The russets have not grown as well for me as other types. Alas, this includes the typical Idaho potato — 'Russet Burbank' — famous for processing, baking, and fast food french fries. Robert Leiby, County Extension director in one of Pennsylvania's principal potato-producing areas — Lehigh — explains that russets need uniform water and light, loose soil. These conditions are not common in Southeastern Pennsylvania. If you can approximate this ideal, however, there are several that warrant trying.

'Russet Norkotah' is widely grown in Pennsylvania. You may get huge bakers from this satisfying Canadian potato. 'BelRus,' also grown in parts of this state, was bred specifically for the Northeast. Robert Johnston, Jr., president of Johnny's Selected Seeds, suggests that if you want a russet, try the acclaimed 'Frontier.'

Heirlooms

Several potato varieties developed in the 1800s endure even as we approach the next century. 'Irish Cobbler,' released back in 1876, was all the rage during the Roaring Twenties. Easily grown, it epitomizes real potato flavor. 'Green Mountain,' available since 1885, in many places still sets the standard for the old familiar 'mealy' taste. It has some virus susceptibility but stores beautifully.



A cross between two species, this possibly cold-tolerant specimen was bred by Dr. Paul Grun, Professor of Cytology and Cytogenetics, Pennsylvania State University. Flowering usually — but not always — indicates tuber development. Flower characteristics are a key to variety identification, but flower color in itself does not reveal tuber hue.

Yellow Fleshed

If your taste tends toward European epicurean delights, you have struck gold when you unearth yellow-fleshed potatoes. Costly — when you can find them — these are the most popular varieties abroad. And they are probably responsible for the resurgence of potatoes among lovers of gourmet food. No wonder, with such wonderful flavor. Some say they taste nutty, others classify them as buttery. They certainly appear rich and prebuttered. Moreover, they are versatile.

'Yukon Gold,' released by Canada 10 years ago, appears to be the easiest to grow in this area. It is medium-sized with dryish flesh. Very early, about 55 days from planting to maturity, with violet flowers, this beauty tolerates blight and some viruses. Reputedly scab-susceptible, mine have been scab-free.

Holland's 'Bintje' is attractive and usually trouble-free. Developed around 1910, it is the world's most widely grown yellow-fleshed potato.

'Carole,' a recent German import, keeps well and is scab-tolerant. Known also as 'Carola,' it has smooth skin and has been the largest-sized yellow-fleshed potato in my plots.

Specialties

'Desiree,' a smooth red-skinned potato with yellow flesh, tastes marvelous baked or steamed. From Holland, it is the most popular red in Europe.

Noted for delicious, moist, fluffy, and snowy-white mashed potatoes, 'Caribe' is increasingly in demand. Harvest its high-yielding tubers early and contrast its showy blue-purple skin with a red variety.

The firm flesh of the large yellow fingerling 'Russian Banana' makes it a natural salad potato. Its medium-starch quality and outstanding flavor adapts easily to many other uses for its substantial harvest.

'Ruby Crescent,' with its superlative taste and texture, has a creamy richness that cooks to perfection roasted, microwaved, or sauteed. Be sure to provide even moisture, as it is prone to knobs.

photos by Bob Ferguson

Their brilliance undimmed by age or storage, just-dug 'new' potatoes treat the eye as well as the palate. Providing the pink colors here are 'Alaska Sweetheart' and the salmon-pink 'Sangre.' 'All Blue' and 'Yellow Finn' display their respective hues, while 'Scotia Blue' shows off mottled purple.

Another fingerling, 'Purple Peruvian,' has mealy, deep purple flesh. Its flowers are white. During the 1991 drought it produced better than a dozen other specialties in my plot. Also, its storage capability provided unusual dishes until summer.

For the adventuresome, the blue-skinned, blue-fleshed varieties turn any potato dish into a deliciously colorful experience. Often mealy in texture, high in starch, yet suitable for a number of culinary purposes, blue-fleshed potatoes cook blue or light purple. According to David Ronniger, whose catalog offers over 160 varieties including many colors, 'All Blue' is the most prolific of the blue fleshed.

The rainbow continues with pink-red skin and flesh. Both 'Alaska Sweetheart' and 'Levitts Pink' from my crop last season cooked to luscious shades of pink.

Multi-colored potatoes provide yet another dimension. 'Pinto,' with its pink-splashed yellow skin and creamy interior, creates a most interesting presentation. Still other varieties have color-streaked flesh.

Experimentals

A potato with flesh the color of cantaloupe? One recently appeared in one of the Agriculture Department's test plots.

Tater Mater's experimental varieties exhibit a palette of blues, red-pinks, and vivid yellows plus potatoes bred specifically for flavor.

Researchers are breeding potatoes for pest resistance and improved keeping quality, as well as other promising attributes. Who knows what special appeal the potato of the future will have?

Final selection

Dr. Richard Cole, Penn State University's potato specialist, now retired, suggests starting with 'Chieftain,' 'Katahdin,' 'Kennebec,' 'Norland,' or 'Superior,' but urges you to try a few different varieties each season. Your exciting new discovery that shows mere promise one year may well emerge a winner the next.

Growing Terrific Tubers

Potatoes are not the easiest crop. Not in this area, anyway. We can simply stick its relative, the tomato, in the ground and get possibly not prize-winners, but at least tasty tomatoes. With potatoes, similar nonchalance can produce insignificant, spindly, scabby tubers.

Easily invaded by devastating diseases, the potato is sensitive to soil type, acidity, and fertility, plus temperature and water stress. And it is the preferred food of one of the worst insect pests known.

But don't be dismayed. Potatoes are grown in every state and in 125 countries. In fact, potatoes produce more nutrition in less time and on less land than any other crop in the world.

A relatively new technology, tissue-culture potatoes, are disease-free. Marketed as mini or tiny tubers, they are currently expensive.

Just understand the potato, meet its specific requirements, and choose varieties according to your time constraints and garden conditions.

First steps

Select a well-drained, sunny site where neither potatoes nor its family members have grown for several years. Potatoes, tomatoes, peppers, and eggplants share many insect pests and diseases.

Begin with a soil test. Soil test reports* specific for a potato patch outlines the soil fertility and pH levels and recommends fertilizer requirements and any necessary amendments. The proper soil acidity may be a problem for a small plot that is to be rotated to other vegetables unless the soil is amended carefully. Follow the Cooperative Extension Service guidelines.

Next prepare the seedbed. Potatoes require deep, loose soil. Till to a depth of 8-12 inches. Do not overwork it, which can quickly happen when rototilling.

Planting time

Potatoes are often planted around St. Patrick's Day or as early as the soil is dry enough. Working wet soil compacts it, especially undesirable for potatoes. If unseasonably cool, wait until the soil temperature reaches 50°F, measured 4 inches deep at 8 a.m. Warmer soil lessens seedpiece rot and hastens plant emergence. Although potatoes do not like hot, dry weather, they can be planted here as late as the beginning of June.

Dig a trench deep enough to cover the seedpieces with 2-3 inches of soil. Row

continued on p. 28

*Check your local County Extension agent for information about soil tests. See Source list.

Prize Potatoes Sprout from Quality Seed

Since many diseases are transmitted by seed potatoes, professional growers pay a premium for certified seed. Potatoes for certified seed are usually grown in Northern states — notably Maine and Idaho — where lower temperatures show viral disease symptoms more easily, thus permitting more reliable detection. Also, disease-spreading insects are less prevalent. Plants are grown from healthy plant seed during the winter in a Southern state, inspected, and if acceptable, the seed becomes certified by the state's agricultural authority.

Because commercial varieties dominate certification, it may be difficult or impossible to get certified seed for most uncommon potatoes. In this case, obtain seed potatoes from experienced, reliable sources that inspect their seed plants.

Potato eyes can also be certified. They are cheaper but riskier if planting conditions are not ideal.

A relatively new technology, tissue-culture potatoes, are disease-free. Marketed as mini or tiny tubers, they are currently expensive.

Growing potatoes from true seed also avoids tuber-borne diseases. Not yet commonly in use except by breeders, there have been recent improvements that stabilize varieties. True seed is started and transplanted like tomatoes.

Using purchased eating potatoes for seed can lead to trouble because diseases may be present. Also, the potatoes could be recently harvested, which is often the case with potatoes shipped from California in the winter. These potatoes may be still dormant and will not sprout.

Planting your own previous year's potato harvest for seed is shunned by experts. If you insist, select not the best potatoes, but those that came from the best hill. Monitor carefully and coldheartedly rogue. Investigate having tissue cultures made if you need to unload viruses from a precious family heirloom.

Whole seed is both easier and safer to plant, particularly if the weather turns unfavorably cold and wet. Egg-size, 1½-2 oz., is ideal. If cutting, strive for that size; cut into blocky shapes with at least one eye or sprout. Use a flame to sterilize the knife between varieties. Dust cut pieces immediately with a fungicide labelled for seedpiece treatment.

Quality seed potatoes will be shipped from cool storage. They should be firm with only tiny sprouts. You may wish to plant these right away. If the weather — or your schedule — will delay your planned planting date, refrigerate or presprout them. Do not let them freeze.

Presprouted potatoes emerge from the soil about two weeks earlier. You will get good stubby sprouts by spreading them a layer deep and exposing them to sunlight, at 70°F, for about two weeks.

Ten pounds of seed will plant a 100-foot row and should produce one to two bushels. Specialty potatoes typically yield less; fingerlings usually give more.

Fall Potatoes

New potatoes in the fall? Of course, if the weather cooperates.

Potato plants tend to grow faster at warm temperature, and with long days, high moisture and fertility. Just the opposite conditions favor tuber development, however. Comfortable with this knowledge, and curious to see how this traditional spring crop would do in Southeastern Pennsylvania's late summer with typically warm days and favorably cool nights, I experimented with an early August '92 planting.

The results? Good enough to be cautiously optimistic about repeating late summer planting on a limited basis. Amazingly, the only Colorado potato beetle observed had already died. Aphids, too, were not a problem. No disease symptoms appeared. Even with deeper planting, the warmth pushed many plants through in a week. Thankfully, rainfall levels required little irrigation. The dreaded early frost did not occur. By the time frost killed the plants — after a few nips — in the third week of October, tuber development was well underway.

Rain delayed the final harvest, however. Worse, unseasonably cold conditions loomed. When the internal temperature of potato tubers drops below 29°F, ice crystals form, then rupture when thawed. If this happens, they are completely ruined. Covering with leaves and additional soil fortunately prevented this.

But one of the coldest, wettest late falls in recent memory continued. There was no ideal harvest period. Either the soil was too wet, the air temperature too low (it should be above 50°F), or both. This interfered with tuber skin set and caused rhizoctonia on a few varieties.

Mixed results best describes the yield. Of many trial varieties — not all those in the chart (page 29) — a few were promising. Many 'Yukon Gold' tubers were as large as they get. 'Alaska Sweetheart' yielded large numbers but few larger than 1½ inches in diameter.

continued

Their color was indeed more beautiful. The normally prolific 'Russian Banana' set vast quantities of tiny crescents. My 8-inch spacing should have been widened to 12 inches. 'Sangre' provided abundant medium-sized, delicious potatoes with superior skin color.

If you choose to try a similar experiment — and please remember you are taking a chance with the weather — early varieties will likely be the best producers. Don't expect large potatoes nor superior keeping qualities, because the plants may not reach maturity. You may have to refrigerate the seedpieces all summer since it is normally unavailable at that time.

On the plus side, you'll enjoy fashionably small, very tasty, tender-skinned potatoes out of season. And without the usual pest problems. Good luck.

Pest Management

For potatoes especially, you should adopt integrated pest management. In this approach, first you identify the pest, then monitor it to determine the extent of damage. A number of strategies can be used — cultural, mechanical, biological, and chemical — to properly balance economic and environmental effects. The goal is to suppress the pest, rather than to eradicate.

In this region, growing quality potatoes without pesticides can be extremely frustrating. Yet, both pesticide effectiveness and availability change continually. The degree of insecticide resistance of the Colorado potato beetle, for instance, varies among localities. And, registration of the controls necessary for this and other potato-loving insects vary by state and even by county within some states. Further, frequent changes have become the norm as existing products are withdrawn, reinstated, and as new formulations are developed.

Contact your county extension office for current recommendations. In addition to registration information, their pest monitoring and weather tracking systems, along with their knowledge of local conditions, enable them to advise you of appropriate measures. For example, timing of application is critical to fungicide effectiveness — many factors, including crop maturity and weather conditions play a part. The extension office can provide the latest data so that you can develop your own integrated pest management program for potato and other garden delights.

photo courtesy of
Montgomery County Cooperative Extension

The voracious feeding of the Colorado potato beetle larvae can ruin your potato crop. Adults lay eggs on the undersides of leaves.

photo by Bob Ferguson

Knobs on three of 'Ruby Crescent,' scabs on 'Early Rose,' rhizoctonia on the red 'Sangre,' and growth cracks plus rhizoctonia on 'Yukon Gold' clearly spoil outward appearance. Eating quality, happily, is not affected. Pare these potatoes and nobody's tastebuds will be offended.

application uses less fertilizer than broadcasting, but be sure to keep it to the side and below, not touching, the seedpieces. Depending on the type of cultivation planned, space rows 24-36 inches apart. Space the seedpieces within the row 8-12 inches, depending on the variety. Wide spacing, in general, gives larger tubers.

If frost threatens the young plants, cover with straw or a similar mulch.

Start hilling when the plants are about a foot tall. With a hoe, mound about 8 inches of soil from each side of the row. You will need to hill again; I hill several times for weed control as well. Adequate soil coverage for the developing tubers is essential. Sun exposure makes them green, unfit for eating. Keep in mind that the plant sets tubers above the seedpiece.

Water evenly

Potatoes require plenty of water. More important, the moisture needs to be evenly distributed throughout the season. Drought — particularly when accompanied by heat — overly stresses plants, reducing yields. Too much rain invites fungal diseases. Alternating dry and wet periods cause abnormalities such as hollow heart, growth cracks, and those knobby 'airplanes,' often ornamented with silly decorations in the vegetable freak category at the county fairs.

If rainfall doesn't provide a minimum of an inch per week — the equivalent of 65 gallons per 100 square feet — watering will be necessary. Water thoroughly at weekly intervals moistening the soil to an 8- to 12-inch depth. To help avoid diseases, water early enough in the day for the foliage to dry before dusk.

Insect patrol

One of the most destructive pests in agriculture today, the Colorado potato beetle has made potato growing unprofitable for many farmers. In some areas it has become resistant to insecticides. When left to itself, infestations of its larvae can completely defoliate a potato plant. This unhappy situation has spawned some creative ideas. Alternative hosts, planted nearby to lure the insects, so far have failed to entice; potato leaves remain the favored food. Bug Eaters, mammoth machines, vacuum-suck the insects from the plants. More effective is an even more drastic-sounding measure — propane flamers. Yes, they literally burn the bugs. Surprisingly, when performed at the correct stage of plant development, the young plant quickly recovers. For a small plot, choose the low-tech approach. Collect and destroy adults and larvae by hand. Inspect the undersides of leaves and crush the orange egg masses.

The foliar feeding of flea beetle adults is not troublesome, unless extensive. However, the larvae can seriously damage the tubers.

Aphids suck plant juices and worse, spread disease. Control becomes even more critical with varieties without disease tolerance, including many unusual ones.

Leafhoppers secrete a toxic substance while feeding on the leaves, damaging them while also transmitting some diseases.

Wireworms feed on developing tubers in the soil, causing holes that look as if they were made by a pencil point.

Disease troubles

Many diseases are notorious for their destructive impact on this important crop.

Late blight caused the Irish Potato Famine in 1845-47 when a million people starved. Spores of that fungus, which infest leaves, stems, and tubers, ruined the entire European crop. It effectively wiped out the entire species under cultivation there at that time.

In general, late-maturing potatoes tend to be more susceptible to late blight; early varieties are more prone to early blight. Robert Leiby observes that in this area, early blight has been a greater problem than late blight for the past 10-15 years. Damp conditions favor both blights; consider a consistent fungicide program if either seems likely.

Another bothersome fungus, verticillium wilt, attacks potatoes and their relatives too. Some tomatoes are resistant but eggplants are not.

Varieties to Try in Southeastern Pennsylvania

Variety	Type	Skin Color	Flesh Color	Starch Content	Season for Harvesting
'Alaska Sweetheart'	specialty	rose pink	light pink	low	main
'All Blue'	specialty	dark blue	deep to medium blue	high	main
'Bake King'	oblong white	white, slightly russeted	white	high	main
'BelRus'	russet	brown	white	high	early
'Bintje'	specialty	tan	yellow	high	late
'Caribe'	specialty	blue-purple	white	medium high	early
'Carole'	specialty	deep yellow	yellow	medium high	late
'Chieftain'	round red	red	white	medium	late
'Desiree'	specialty	rose	yellow	medium	main
'Frontier'	russet	brown	white	high	late
'Green Mountain'	round white	tan	white	high	late
'Irish Cobbler'	round white	tan	white	high	early
'Katahdin'	round white	buff	white	medium low	late
'Kennebec'	oblong white	buff	white	medium high	main
'Levitts Pink'	specialty	dark rose	pink	low	main
'Norland'	round red	red	white	medium	early
'Pinto'	specialty	pink splashed yellow	cream	high	main
'Purple Peruvian'	fingerling	dark purple	deep purple	high	late
'Ruby Crescent'	fingerling	rose	pale yellow	low	late
'Russet Norkotah'	russet	dark brown	white	high	early
'Russian Banana'	fingerling	buff yellow	pale yellow	medium	late
'Sangre'	round red	red	white	medium	early
'Shepody'	oblong white	tan	white	high	late
'Superior'	round white	white	white	medium	early
'Yukon Gold'	specialty	buff with pink eyes	yellow	medium high	very early

Significant Potato Diseases and Helpful Remedies

	Use disease-free seed	Use resistant varieties	Clean crop debris	Rotate crop	Control aphids	Use fungicides	Maintain uniform moisture	Avoid planting in cold soil
Early blight	x	x	x	x		x		
Late blight	x	x	x	x		x		
Rhizoctonia	x			x				x
Scab	x			x			x	
Verticillium wilt	x	x	x	x				
Leaf Roll and Mosaics	x	x	x	x	x			

Rhizoctonia exists in Southeastern Pennsylvania. A soil fungus, it causes an ugly black scurf. Cold, wet soils favor development of this 'dirt that won't wash off.'

When soil moisture is low during tuber initiation — usually around the time of flowering — the potato skin can be infected by scab-causing bacteria. Too much lime applied at once, manure, and improper pH are all scab-inducing factors. While disappointing, rhizoctonia scurf and scab lesions, along with growth cracks and knobs, can be peeled away.

Appearing like manna, volunteer plants from your previous year's missed harvest often infect the current crop. Get rid of them.

Also, mercilessly rogue any mottled-looking plant. A mosaic virus probably seized it, and could contaminate your peppers also. The aphids, which transmit these viruses, also spread leaf roll virus.

continued

Defenses

Crop rotation is vital for both insect and disease control of potatoes. Avoid rotating to the other solanaceous vegetables — eggplants, peppers, and tomatoes — for minimally three years. Try to include a cover crop such as rye or clover in your crop rotation plan. These build the soil with nutrients and valuable organic matter as well as fortify your battle against insects and diseases.

Since pesticide effectiveness varies among regions and registration changes frequently, contact your county extension office for current pest control recommendations.

Given quality seed and proper management, an important defense for infamous potato maladies is vigorous growth, maintained by appropriate fertility. Remember, happy harvests depend on healthy plants.

Enjoy Your Harvest

The flowering plants herald the harvest. You can use the potato patch for freshly dug, i.e. not stored, 'new' potatoes. Or let the plants mature, harvest in early fall, store, and enjoy potatoes throughout the winter. Or, have it both ways with continual harvests.

Those wonderful new potatoes

Somehow more delectable tasting and certainly fresh, the first new potatoes rank among the most exhilarating of garden rewards. They were a spring ritual in my family. My mother pares a thin strip around golf ball-sized ones and gently boils them. In their 'jackets,' buttered or served with cream and fresh peas, they equal the first sweet corn or ripe tomatoes of the season.

Anxious to sample my unusual varieties, my treats begin with quarter-sized spheres lightly steamed, sometimes enhanced with butter and sprinkled with spring onions, dill, and parsley. When a little larger, try oven roasting with olive oil and a robust fresh herb such as oregano, rosemary, or thyme and a little garlic. These tiny treasures need no peeling.

For new potatoes, gently loosen the soil around the plant and pull away the ones desired. Watering afterward helps the plant. The plant will continue to enlarge the tubers until it dies naturally or is killed by frost.

Marvelous winter fare

Mashed, fried, and baked — your potato stash will add a hearty touch to winter menus. When baking, leave the skin unadorned to savor the texture of a classic baked potato. A foil-wrapped potato steams, rather than bakes. A microwave oven also cooks with moist heat. Use it to speed the preparation of stored potatoes in satisfying dishes.

Storage potatoes should be harvested one to two weeks after the vines die. Test the skins by pressing with your thumb. Once the skin ceases to slip with pressure, it has set sufficiently to keep well. Dig them during a dry period. Handle the freshly dug tubers like eggs. Do not expose the tender tubers to sun or wind.

Cure them at 65°F with humidity of 85-95% for two weeks. The skins will toughen and minor wounds should heal. Gently brush the soil off. Do not wash — it reduces keeping ability.

Storing the Bounty

After curing, sort, and select only sound potatoes for storage. Potatoes should be stored at about 40°F with 85% humidity. Colder temperatures affect their sugar balance, making potatoes undesirably sweet. Adequate ventilation is important. Stack the potatoes no more than three to four layers in wooden baskets or slatted crates raised off the floor.

They must be kept dark. Exposure to sun or artificial light causes greening, producing solanine. Be certain to cut it away if it somehow occurs; it is toxic and can make you ill if eaten in sufficient quantity.

Ideal storage conditions are difficult to achieve without a root cellar or other facility designed for that purpose. The basement of some older homes may suffice for a few months. Don't try a garage — the temperature fluctuates too much and the danger of freezing is too great. Frozen potatoes are an ugly, black, useless mess.

If properly cured and stored, your potatoes should stay in good condition for two to four months.

Experience Variety

Few garden experiences equal the thrill of working the soil and turning out beautiful potatoes. Potatoes evoke sustenance and hearty good eating more than anything else you're likely to grow. And, uncommon varieties boost the realm of potato enjoyment to new heights.

To fully experience the often striking, but sometimes subtle differences in color, flavor, and texture of this varied vegetable, grow them.

•

Dorothy Noble experiments with specialty vegetables, particularly solanaceous crops, near Phoenixville.

Sources

Seed Potatoes

Johnny's Selected Seeds
Foss Hill Road
Albion, ME 04910
(207) 437-4301

Pinetree Garden Seeds
Route 100
New Gloucester, ME 04260
(207) 926-3400

Local Garden Centers

Seed Potatoes and True Seed

Tater Mater
1201 40th Street, #68
Bakersfield, CA 93301
(805) 321-0497
Call or write (include SASE for availability)

Mini Tubers

Liberty Seed Co.
P.O. Box 806
New Philadelphia, OH 44663
(216) 364-1611

Territorial Seed Company
20 Palmer Avenue
P.O. Box 157
Cottage Grove, OR 97424
(503) 942-9547

Mini Tubers and True Seed

Park Seed
Cokebury Road, P.O. Box 46
Greenwood, SC 29648-0046
(803) 223-7333

Seed and Premium Eating Potatoes

Ronniger's Seeds
Star Route
Moyie Springs, ID 83845
mail orders only / catalog $2

New Penny Farm
P.O. Box 448
Presque Isle, ME 04769
(800) 827-7551

Potato Eyes

W. Atlee Burpee & Co.
300 Park Avenue
Warminster, PA 18991-0001
(215) 674-9633

Gurney's Seed & Nursery Co.
110 Capital
Yankton, SD 57079
(605) 665-1930

Soil Test Kit

Available from your county Cooperative Extension office. (In Pennsylvania price is $6 - $6.50 depending on whether you pick it up or have it mailed.)

PLANT SOCIETIES' MEETINGS IN 1993

AFRICAN VIOLET SOCIETY OF AMERICA, INC.

National Convention
April 19-23, open to public April 23
Sheraton Lancaster Golf Resort and Conference Center
2300 Lincoln Highway East
Lancaster, PA 17602

Contact:
Anne Tinari
Tinari Greenhouses
2335 Valley Road, Box 190
Huntingdon Valley, PA 19006
215-947-0144

DELAWARE **AFRICAN VIOLET** SOCIETY

African Violet Show: "Fiesta of Violets"
March 27, 1:30-9:30pm
March 28, 11-4pm
Christiana Mall, just off I-95 in Newark, DE

Plant Sale
same as show

Contact:
Bessie Pyle
2015 Foulk Rd.
Wilmington, DE 19810
1-302-475-3765

AFRICAN VIOLET SOCIETY OF PHILADELPHIA

African Violet Exhibit and Plant Sale
April 30, 12-9pm
May 1, 9:30am
Plymouth Meeting Mall
Germantown Pike
(exit 25 off Pa. Turnpike)
Plymouth Meeting, PA 19462

Contact:
Margaret Cass
920 Andorra Rd.
Lafayette Hill, PA 19444
215-836-5467

MID-ATLANTIC **BONSAI** SOCIETIES

Tenth Annual Mid-Atlantic Bonsai Spring Festival
Featured guests include: Horst Krekler, Ben Oki, Katherine Shaner, Bruce Baker, Hal Mahoney
April 16, 17 & 18
Sheraton Hotel & Towers
1 International Blvd. & Rte 17 North
Mahwah, NJ 07495
Full registration for the three-day seminar, $105. Friday evening and Saturday only, $75. Sunday only, $45. Call for information.

Contact:
Kurt Wittig
17 Old Mill Drive
Denville, NJ 07834
201-361-6642

BRANDYWINE CONSERVANCY

Plant Sale
May 8 & 9
9:30-4:30pm
Brandywine River Museum
Route 1 & 100
Chadds Ford, PA 19317

Contact:
Stefanie L. Taylor
Brandywine Conservancy
P.O. Box 141
Chadds Ford, PA 19317
215-388-2700

PHILADELPHIA CACTUS AND **SUCCULENT** SOCIETY

See Exhibit at Philadelphia Flower Show
March 7-14
Philadelphia Civic Center
34th & Civic Center Blvd.
Philadelphia, PA 19104
Admission to Flower Show: $11.50

Plant Sale
October 2 & 3
9-5pm
Peddlers Village
Lahaska, PA 18931

Contact:
Necija Van Basselaere
1120 Brennan Drive
Warminster, PA 18974
215-672-2784

DELAWARE VALLEY **CHRYSANTHEMUM** SOCIETY

Annual Mum Show
October 23, 1-5pm
October 24, 10-5pm
Longwood Gardens
Kennett Square, PA 19348
Longwood Admission: $10.00

Plant Sale
May 22, 10-4pm
Tyler Arboretum
Lima, PA 19037

Contact:
Norman C. Yeoman, Jr.
116 Bondsville Rd.
Downingtown, PA 19335
215-269-2226

CHRYSANTHEMUM SOCIETY OF SOUTH JERSEY

44th Annual Mum Show
November 6 & 7, 1-5p.m.
Gloucester County College
Tanyard Road
Sewell, NJ 08080
609-468-5000

Plant Sale
June 4, 3-8p.m.
June 5, 9-5p.m.
Home of Edwin Erickson
323 Columbia Avenue
Pitman, NJ 08071
609-589-2475

Contact:
John Kelly
122 Princeton Ave.
Gloucester, NJ 08030
609-456-3349

DELAWARE VALLEY **DAFFODIL** SOCIETY

Daffodil Show
April 17, 1-5pm
April 18, 10-5pm
Longwood Gardens
Kennett Square, PA 19348
Longwood Admission: $10.00

Plant Sale
October 2, 10-1pm
Jenkins Arboretum
Devon, PA 19333

Contact:
Joy Mackinney
535 Woodhaven Rd.
West Chester, PA 19382
215-399-1211

NEW JERSEY **DAFFODIL** SOCIETY

18th Annual New Jersey Daffodil Show
April 23, 12:30-5:30pm
April 24, 10-3pm
Frelinghuysen Arboretum,
Haggerty Building
Morristown, NJ 07960

Contact:
Katie Porter
Pleasant Valley Road, RD#2
Mendham, NJ 07945
201-543-4003

GREATER PHILADELPHIA **DAHLIA** SOCIETY

Dahlia Show
September 18, 1-6pm
September 19, 10-6pm
Longwood Gardens
Kennett Square, PA 19348
Longwood Admission: $10.00

Tuber Sale
May 20, 6pm
Details TBA

Contact:
Pauline Fanady
201 W. Evergreen Ave.
Philadelphia, PA 19118
215-247-6577 (evenings)

DELAWARE VALLEY **DAYLILY** SOCIETY

Flower Show
Details TBA

Plant Sale
Details TBA

Contact:
Joan Jackson
22 Summit Rd.
Malvern, PA 19355
215-341-2354

DELAWARE VALLEY **FERN & WILDFLOWER** SOCIETY

Annual One-Week Field Trip
June 21-28
Lost River State Park
Mathias, WV
$100 (covers lodging only)

Contact:
Dana E. Cartwright, Jr.
263 Hillcrest Rd.
Wayne, PA 19087
215-687-0918

FRELINGHUYSEN ARBORETUM **GESNERIAD** SOCIETY

Regional Flower Show
October 3, 12-4pm
Frelinghuysen Arboretum
Hanover Ave.
Morristown, NJ 07962

Plant Sale
same as show

Contact:
Jeanne Katzenstein
1 Hallvard Terrace
Rockaway, NJ 07866
201-627-2755

AMERICAN **GOURD** SOCIETY INC.

31th Annual Gourd Show
October 2, 12-6pm
October 3, 9-5pm
Fairgrounds
Mt. Gilead, OH 43339
Fee: $2.00

Contact:
John Stevens
P.O. Box 274
Mt. Gilead, OH 43338-0274
419-946-3302

HOBBY **GREENHOUSE** ASSOCIATION — DELAWARE VALLEY CHAPTER

Meetings
3rd Saturday, bimonthly
10am
Horticulture Center
Fairmount Park
Philadelphia, PA 19131

Contact:
Bernie Wiener
229 Ellis Road
Havertown, PA 19083
215-446-2160

HARDY PLANT SOCIETY

Spring Plant Sale
May 15, 10am
Jenkins Arboretum
631 Berwyn Baptist Rd.
Devon, PA 19333
members only

Fall Plant Sale
September 18, 10am
Jenkins Arboretum
631 Berwyn Baptist Rd.
Devon, PA 19333

Contact:
Betty Mackey
440 Louella Ave.
Wayne, PA 19087
215-971-9409

HERB SOCIETY OF AMERICA, DELAWARE VALLEY UNIT

Plant Sale
May 15, 10-4pm

Contact:
Joan Schumacher

continued

PLANT SOCIETIES' MEETINGS IN 1993

HERB SOCIETY, Delaware Valley Chapter — *continued*

Prallsville Mill
Route 29
Stockton, NJ 08559

25 Rosemore Drive
Chalfont, PA 18914
215-997-1549

HERB SOCIETY OF AMERICA, PA HEARTLAND UNIT

"Herbal Delights" Symposium
'EAST MEETS WEST'
June 21 & 22, all day events
Albright College
Reading, PA 19612-5234
Fee: TBA

Contact:
Darlene Henning
173 Deysher Road
Fleetwood, PA 19522
215-987-6184

HERB SOCIETY OF AMERICA, PHILADELPHIA UNIT

Annual Herb Sale
May 13, 10-2pm
Douglas Farm
1694 Pughtown Rd.
Kimberton, PA 19442

Contact:
Joyce Douglas
P.O. Box 672
Kimberton, PA 19442
215-933-1492

HERB SOCIETY OF AMERICA, SUSQUEHANNA UNIT

13th Annual Herb and Geranium Sale
May 1, 9-1pm
Farm and Home Center
1383 Arcadia Road
Lancaster, PA 17601

Contact:
Genevieve Libhart
1980 Marietta Pike
Marietta, PA 17547
717-426-1527

THE HIGHLAND **HISTORICAL** SOCIETY

The Highlands Garden Party and Herb Sale
May 19, 10-3pm
May 20, 11-6pm
7001 Sheaff Lane
Fort Washington, PA 19034
Fee: $3.00 general admission.
May 19 only: $22.00 for lecture, luncheon. Herbs and plants sold all day at Garden Party.

Contact:
Catherine G. Lynch
7001 Sheaff Lane
Ft. Washington, PA 19034
215-641-2687

NATIONAL **HOLLY** SOCIETY — DELAWARE VALLEY CHAPTER

Spring & Fall Meeting
Details TBA

Plant Sale
in conjunction with meetings

Contact:
Mrs. Thein Myint
933 Morris Ave.
Bryn Mawr, PA 19010-1851
215-525-0599

HORTICULTURAL SOCIETY OF SOUTH JERSEY

Flower Shows
May 11, 8pm
September 14, 8pm
Cherry Hill Community Room
820 Mercer Street
Cherry Hill, NJ

Contact:
Rita Hojnowski
517 Cecelia Drive
Blackwood, NJ 08012
609-227-0599

DELAWARE VALLEY **HOSTA** SOCIETY

Slide/Lecture: Tony Avant, Raleigh, NC
March 20, 2pm
Ramada Inn
Routes 1 & 202
Chadds Ford, PA 19317

Plant Sale
June 19, 2pm
Ms. Inta Krombolz
1660 Fox Crossing
West Chester, PA 19380

Contact:
Warren Pollack
202 Hackney Circle
Wilmington, DE 19803
302-478-2610

PHILADELPHIA CHAPTER OF **IKEBANA** INTERNATIONAL

Ikenobo Demonstration.
Helen Flaig, Senior Professor, 1st Grade.
April 22, 10am
First Presbyterian Church
Kings Highway
Haddonfield, NJ 08033
Guest Fee: $5.00

Contact:
Ronell Douglass
57 Allendale Rd.
Wynnewood, PA 19096
215-642-2885

DELAWARE VALLEY **IRIS** SOCIETY

Iris Show
May 23, 1-5pm
Details TBA

Plant Sale
July 17, 10-2pm
Jenkins Arboretum
Berwyn Baptist Rd.
Berwyn, PA 19312

Contact:
Betsy Conklin
91 Duncan Lane
Springfield, PA 19064
215-544-3984

DIAMOND STATE **IRIS** SOCIETY

Iris Show
May
Details TBA

Plant Sale
July 10, 10-2pm
Details TBA

Contact:
Mrs. Arthur F. Martin
116 Meriden Drive
Hockessin, DE 19707
302-998-2414

AMERICAN **IVY** SOCIETY, EASTERN CHAPTER

3rd Annual Ivy Show
September 25, 11-5pm
Longwood Gardens
Kennett Square, PA 19348

Quarterly Meetings
1st Saturday in February, May, August, November

Contact:
Russell A. Windle
P.O. Box 179
Lionville, PA 19353

Longwood Admission: $10.00

9:30am
Longwood Gardens
Kennett Square, PA 19348
Longwood Admission: $10.00

215-363-6481 (H)

MID-ATLANTIC **LILY** SOCIETY

Annual Lily Show
July 3, 1:30-5:30pm
July 4, 10-5pm
Longwood Gardens
Kennett Square, PA 19348
Longwood Admission: $10.00

Plant Sale
October 30, 10-1pm
Jenkins Arboretum
Berwyn Baptist Rd.
Berwyn, PA 19312

Contact:
Joy MacKinney
535 Woodhaven Rd.
West Chester, PA 19382
215-399-1211

MARIGOLD SOCIETY OF AMERICA

Annual Meeting
Details TBA
Annual Dues: $12.00, includes *Amerigold* & 4 newsletters

Contact:
Jeannette Lowe
P.O. Box 112
New Britain, PA 18901
215-348-5273

NATIVE PLANT SOCIETY OF NEW JERSEY

Annual Meeting
Details TBA
Cook College Campus
New Brunswick, NJ 08903

Plant Sale
April 24, 8am
Cook College Campus
New Brunswick, NJ 08903

Contact:
Robert L. Swain
Office of Continuing Professional Education
Cook College
P.O. Box 231
New Brunswick, NJ 08903-0231
908-938-5474 (H)
908-928-0600 (W)

DELAWARE VALLEY **ORCHID** COUNCIL

5th Annual Speakers Forum — Vandaceous & Angraecoid Orchids
March 27, 9-4pm
Cherry Hill, NJ
Fee: $25, includes lunch

Contact:
John L. Leonard
4 Kershaw Road
Wallingford, PA 19086
215-565-0718

DELAWARE **ORCHID** SOCIETY, INC.

Annual Orchid Plant Auction
March 21, 1pm
Talleyville Fire Hall
U.S. Route 202
Talleyville, DE
(just north of Wilmington)

Contact:
Mr. A. A. Chadwick
520 Meadowlark Lane
Hockessin, DE 19707-9640
302-656-1091

GREATER PHILADELPHIA **ORCHID** SOCIETY

Monthly Meeting
4th Thursday, January thru June
3rd Thursday, November & December
8pm
Merion Friends Activities Center
615 Montgomery Ave.
Narberth, PA 19073

Annual Plant Auction
September 23, 7:30pm
Merion Friends Activities Center
615 Montgomery Ave.
Narberth, PA 19073

Contact:
Lois Duffin
7411 Boyer Street
Philadelphia, PA 19119
215-248-3626

SANDPIPER **ORCHID** SOCIETY

Orchid Auction
August 26, 7:30pm
Mays Landing Library
Mays Landing, NJ 08330

Monthly Meeting
4th Thursday of every month
Mays Landing Library
Mays Landing, NJ 08330

Contact:
Judy Mutschler
2033 Philadelphia Ave.
Egg Harbor, NJ 08215
609-965-0048

SOUTH JERSEY **ORCHID** SOCIETY

Monthly Meeting
3rd Sunday of every month except December, July & August, 1pm
Wenonah United Methodist Church
105 E. Willow St.
Wenonah, NJ 08090

Plant Auction
November 21, 1pm
Wenonah United Methodist Church
105 E. Willow St.
Wenonah, NJ 08090

Contact:
Barbara Inglessis
204 Winding Way
Moorestown, NJ 08057
609-722-7037

SOUTHEASTERN PENNSYLVANIA **ORCHID** SOCIETY

Orchid Show
February 11-14, Mall hours
The Court at King of Prussia
King of Prussia, PA 19406

Orchid Auction
Fall
Call for date & time
All Saints Episcopal Church
Gypsy Lane at Montgomery
Narberth, PA 19072

Contact:
Deborah Robinson
2604 Horseshoe Trail
Chester Springs, PA 19425
215-827-7445

AMERICAN **PRIMROSE** SOCIETY, DORETTA KLABER CHAPTER

Garden Visits
Details TBA

Plant Sale
June
Details TBA

Contact:
Dot Plyer
18 Bridle Path
Chadds Ford, PA 19317
215-459-3969 (H)

AMERICAN **RHODODENDRON** SOCIETY, GREATER PHILADELPHIA CHAPTER

Rhododendron & Azalea Flower Show
May 8, 11-3pm
Morris Arboretum of the University of Pennsylvania
100 Northwestern Ave.
Philadelphia, PA 19118
Gate Fee: $3.00

Plant Sale
May 8, 10-4pm
Morris Arboretum of the University of Pennsylvania
100 Northwestern Ave.
Philadelphia, PA 19118
(Gate fee rebate with minimum $15 purchase)

Contact:
Brian T. Keim
1189 Sewell Lane
Rydal, PA 19046
(215) 576-6494

AMERICAN **RHODODENDRON SOCIETY**, VALLEY FORGE CHAPTER

Flower Show at Longwood Gardens
May 9, 1-5pm
Longwood Gardens, Fern Floor
Kennett Square, PA 19348
Longwood Admission: $10.00

Plant Sale
May 1, 9-3pm
May 2, 11-3pm
Jenkins Arboretum
631 Berwyn-Baptist Rd.
Devon, PA 19333

Contact:
Eva Jackson
730 Limehouse Road
Radnor, PA 19087
215-687-2289

AMERICAN **ROCK GARDEN** SOCIETY, DELAWARE VALLEY CHAPTER

See Exhibit at
Philadelphia Flower Show
March 7-14
Philadelphia Civic Center
34th & Civic Center Blvd.
Philadelphia, PA 19104
Admission to Flower Show: $11.50

Monthly Meetings
2nd Saturday of each month, 10-12pm
Location TBA in newsletter
Annual fee: $5.00

Contact:
Richard Rosenberg
5 Westview Rd.
Bryn Mawr, PA 19010
215-525-8683

DEL-CHESTER **ROSE** SOCIETY

33rd Annual Rose Show
June 12, 1-5pm
Longwood Gardens (in Restaurant)
Kennett Square, PA 19348
Longwood Admission: $10.00
no fee for exhibitors

Rose Pruning Demonstration
April 13, 10am
Memorial Garden
St. Maximilian Colby R.C. Church
Westtown Township (off Rt. 202)
West Chester, PA

Contact:
Pam Coath
1632 Lark Lane
Villanova, PA 19085
215-692-4076, Pat Pitkin

PHILADELPHIA **ROSE** SOCIETY

47th Annual Rose Show
June 5, 1-5pm
Roses entered & judged in AM
Open to public 1-5pm
Widener Education Center
Morris Arboretum of the University of Pennsylvania
Philadelphia, PA 19118
Gate fee: $3, free to exhibitors

Pruning Demonstration
March 27, 1pm
Rain date March 28
Morris Arboretum Rose Garden
100 Northwestern Avenue (entrance)
Philadelphia, PA 19118

Contact:
Mrs. Pat Pitkin
923 Springwood Dr.
West Chester, PA 19382
215-692-4076

WEST JERSEY **ROSE** SOCIETY

Annual Rose Show
Horticultural & Design Sections
June 5, 1pm
entries, 7am
Details TBA

Plant Sale
June 5, 9-9pm
at Rose Show

Contact:
Gustave Banks
117 Farmdale Road
Mt. Holly, NJ 08060
609-267-3809 (H)
609-722-9111 (W)

DELAWARE VALLEY **WATER GARDEN** SOCIETY

Pond Tour & Progressive Dinner
July 18, 12pm,
rain date July 25
Details TBA

Contact:
Fred Weiss
339 Valley Rd.
Merion Station, PA 19066
215-667-7545

INTERNATIONAL **WATER LILY** SOCIETY

9th International Symposium
July 29 thru August 1, 8am-6pm
Rye Town Hilton
Rye Brook, NY
Fee: TBA

Post Symposium Tour
at Longwood Gardens
August 2 & 3

Contact:
James A. Lawrie
74 E. Allendale Rd.
Saddle River, NJ 07458
201-327-0721

BOWMAN'S HILL **WILDFLOWER** PRESERVE ASSOCIATION, INC.

Wildflower Weekend
May 15 & 16, 8am
Members: $20 for one day, $35 for both. Non-members: $25 for one day, $45 for both.
Washington Crossing Historic Park
P.O. Box 103
Washington Crossing, PA 18977
(2 miles south of New Hope)

Spring Plant Sale
May 8 & 9, 10-4pm
Washington Crossing Historic Park
P.O. Box 103
Washington Crossing, PA 18977
(2 miles south of New Hope)

Contact:
Tom Stevenson
Bowman's Hill Wildflower Preserve Association, Inc.
Washington Crossing Historic Park
P.O. Box 103
Washington Crossing, PA 18977
215-862-2924

Additional Plant Society Information
For list of other local and national plant society contacts, check with the Pennsylvania Horticultural Society Library (215-625-8256).

For Future Listings
Green Scene publishes a list of area plant society meetings and plant sales annually in the March issue of *Green Scene*. DEADLINE: October 30. Please follow format used here. Write to: Editor, *Green Scene*, PHS, 325 Walnut Street, Philadelphia, PA 19106-2777.

C L A S S I F I E D A D S

continued

CLASSIFIED ADS

Bed & Breakfast Joseph Reynolds House (c 1693), National Historic Landmark. 2 night minimum stay, includes entrance fee to Blithewold Arboretum, Bristol, RI. RSVP P.O. Box 5, Bristol, RI 02809 **(401) 254-0230.**

DR. MARTIN POLE LIMA BEAN SEED
1992 Crop of excellent quality and quantity.
For Order Form write Fern Hill Farm,
P.O. Box 185, Clarksboro, NJ 08020.

Secluded mini estate on 4.5 acres located on prestigious Main Line. A gardener's delight with perennial garden, herb garden, formal rose garden and many specimen plantings. Historic French stucco home with 6 bedrooms, 4½ updated baths. Country kitchen with oversized windows that invite the outdoors in. Garage is a converted stone barn. Truly a 4 seasons home. **$780,000**. Contact Tressa Glynn, Roach Brothers Realtors, **(215) 651-2700.**

GARDEN VISITING HOURS
Longview Farm
Bodine Road Box 76
Malvern, PA 19355
Noon to Dusk
April 15th to October 15th
Thursday–Friday–Saturday
Admission $5
Children under 12 free
The garden design moves from an architectural extension of the house and outbuildings to the nutured meadows and woods.
Appointments necessary for large and out-of-town groups with schedules.
Unusual plants for sale.
You are welcome to bring a picnic to eat in the barnyard.
Map mailed on request.
Joanna Reed, Gardener

The last of the Simple Nursery Sale.
Specializing in Horticultural Art.
Espaliered Specimens and Topiaries
Hollies, Chamaecyparis, Viburnums
Magnolia virginiana, Pachysandra procumbens
Cunninghamia lanceolate 'Glauca'
Buxus 'Kingsville,' *Buxus* 'Aureo variegata'
Cephalotaxus harringtonia 'Fastigiata'
Forsythia 'Arnold's Dwarf'
Lonicera nitida 'Baggensen's Gold'
Dwarf conifers
Hyperlufa troughs, trellises, ground covers and more.
April 2-3, 9-10, 16-17, or by appointment.
3 miles south on Rt 10 from Honey Brook (Rtes 322 & 10). Right on King Road to the Stop.
Simple's Nursery, Box 69G, Honey Brook, Pa. 19344-9222. 215-273-3938

National Pond Society
Pondscape Magazine
$24/yr, 10 issues in full color
PO Box 449, Acworth, GA 30101
(404) 975-0277

A RARE COMBINATION
Classic 24 ft. Lord & Burnham glass greenhouse, **WITH ATTACHED** 18th century farmhouse, **SURROUNDED BY** 10 acres of common open space and ponds. House has 4 BR, 2½ baths, family room, study, large kitchen & many fireplaces. Property is near Chanticleer in Wayne, Pa. Price: $629,000. Call Liz Witter at Roach Bros., (215) 687-1800. George or Ellen Aman (215) 688-1113.

PENNSYLVANIA'S BEST
Oak Bark Mulch — Dark, Fine Shredded. Picked up or delivered in bulk. Mushroom Soil & Topsoil also available.
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GARDEN DESIGN — Design and installation of specialty gardens including perennial borders, herb, kitchen and English cottage gardens. **CAROL MANICONE** (215) 348-4830.

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QUALITY WORK AT A FAIR PRICE
Springhouse Restorations
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Decks, Flagstone, Brickwork
Carpentry & Landscape Structures
Call for Free Estimate
76-A Bodine Road
Malvern, PA 19355
(215) 827-9663

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NEW AGE EATERY
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Fresh, Natural Gourmet Dining
with just a hit of decadence
Hours begin 5:00 pm:
Wednesday — Saturday
Now serving Friday
• lunch 11:30-2:00
Weddings, catering & private parties.
MANATAWNY ROAD, PINE FORGE, PA 19548
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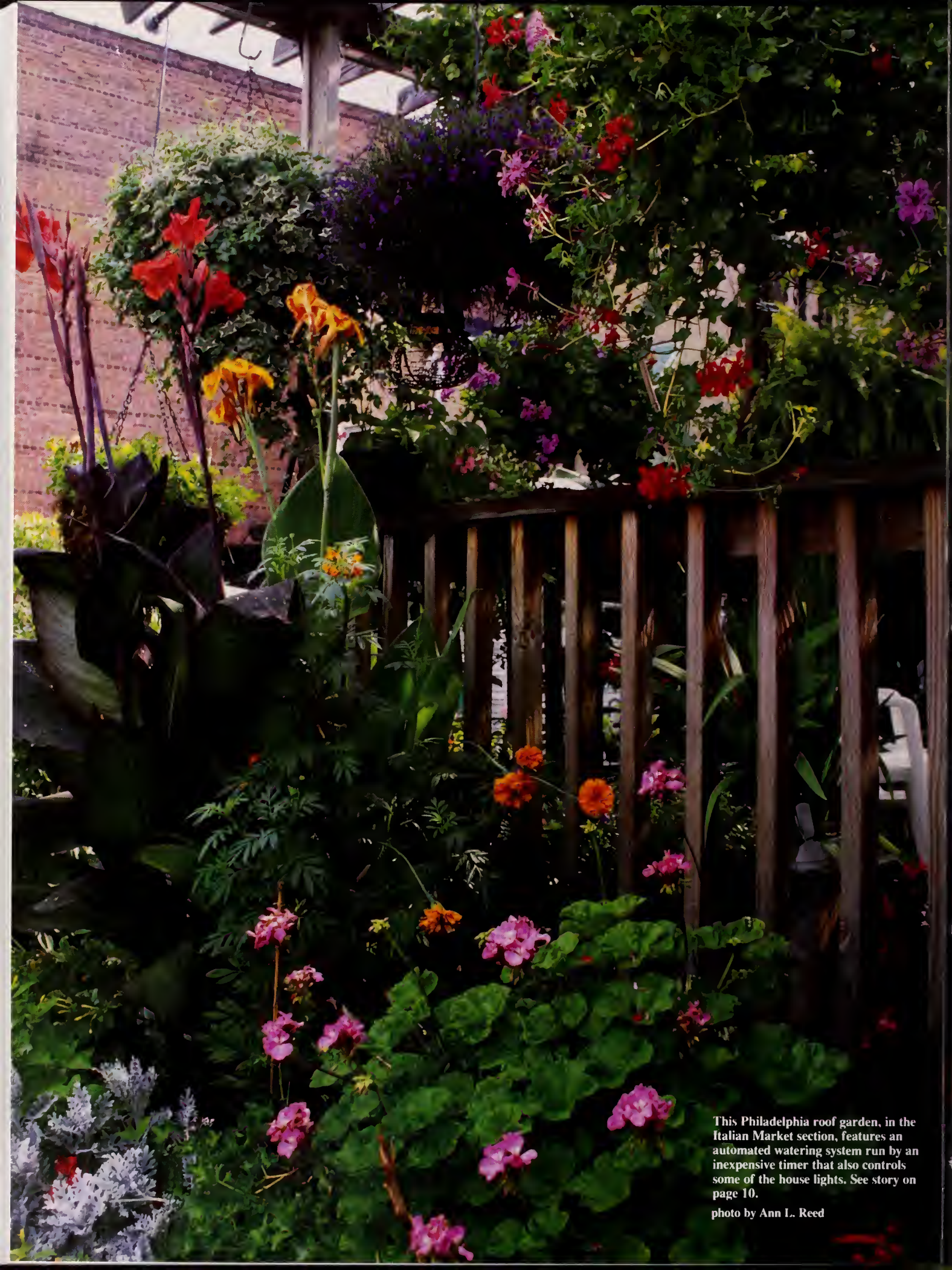

This Philadelphia roof garden, in the Italian Market section, features an automated watering system run by an inexpensive timer that also controls some of the house lights. See story on page 10.

photo by Ann L. Reed

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See page 13

4.

13.

18.

Front cover: Ruby chard, edible and beautifully ornamental, chosen with care for Chanticleer's vegetable garden. (See p. 13.)

Front cover: photo by Christopher Woods

in this issue

CORRECTIONS

Mea culpas are in order for the March/April issue:

page 3: *Senecio serpens* is correct, not *perpens* as we printed it.

page 5: The photo above "Flowering Plants" noted that *Verbena canadensis* was shown; it was *Sphaeralcea philippiana.* We originally were going to use a photo that showed both plants and did not change the body copy when we changed photos.

page 17: That was *Hesperis matronalis* on page 17, not *Hespis.*

The Editor

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Education, a New Public Garden, Hydrangeas, and a Tender Rivalry

by Jean Byrne

When a Pennsylvania Horticultural Society team of long-range planners comprised of members, staff, and interested associates gathered to talk about the next 10 years, they all agreed that for the future of horticulture education is a crucial priority. So, we are pleased to include in this issue of *Green Scene* two articles about opportunities for both young people at the high school level and for people seeking further education for mid-career changes.

The first, Camden County Vocational Technical School in Pennsauken, New Jersey, offers state-of-the-art training for persons from 13 to 18 years of age, as well as college-accredited evening classes for adults who want to move on to advanced training. Students learn not only horticultural skills but assume bottom-line responsibility in the greenhouses, grounds and retail shop. When they leave for the work world they know what to expect and may even find that their training often rivals that of people already working in the field.

The second incredible educational opportunity for the incipient garden pro is Longwood Gardens' free two-year Professional Gardener Training that includes residence on the Longwood Gardens' grounds. We first heard of the program from PHS staffer Eileen Gallagher who has taken her training out into the streets of Kensington's Norris Square, working with neighbors as part of the Society's community greening program. Other alumni have gone on to jobs at botanical gardens and arboretums, private estates, nurseries or garden centers and even indulged their entrepreneurial bent by starting up their own business. (See story on page 27.)

★ ★ ★

Executive director Chris Woods writes here about how he is guiding Chanticleer in Wayne, Pa., from a private estate through the first stages of birth as a public garden. We've heard Chris Woods say privately that someday he'd like Chanticleer to rival Sissinghurst in England. An ambition worthy of this former Brit who has clearly demonstrated his capacity to act and to dream on a grand scale. (See stories on pages 9 and 13.)

★ ★ ★

Not long ago we heard two first-rank gardeners wishing they could find more information about hydrangeas. We were lucky enough to catch premier gardener Charles Cresson between books (he's recently written three for the Burpee series — two published and one still to come — and is part of a team working on an encyclopedia of garden plants). Cresson exuberantly attacked the hydrangea assignment, and we're sure his experience and ideas about this underrated and underused plant will stimulate new enthusiasm and experiments with the interesting range of varieties available.

★ ★ ★

And finally, Wayne Clifton, new to these pages, writes about his small suburban plot in Chester County as though it were a farm. An ardent composter, Clifton believes only attention to the soil will generate high quality and abundant growth in the garden. Clifton's cross-country competition with his dad who uses chemicals in his garden as opposed to Clifton's determined organic experience, interested us. Their love of gardening, although cheerfully competitive, shows in their partnership: Clifton's dad comes from California every November to help with the composting. A tender rivalry indeed.

HYDRANGEAS FOR

by Charles O. Cresson

drawings by Lauren Baxendell

The hydrangeas are worthy of greater popularity and a greater presence in our gardens. Though they may lack the deep historical and political associations of old roses, they have a gentle history of their own, and a charm that carries the garden through the summer months.

During a tour of my garden in late June last year, the most admired plant of all was a lavender-blue hydrangea with lacy flat heads. In spite of its out-of-the-way location in a shady bed, it attracted plenty of attention. In fact, it was the first of a succession of different species and cultivars of hydrangeas to bloom over the next two months. The flower heads of most remain attractive through the summer, even as they age and deepen in color, transformed into papery ornaments for the winter landscape. Some varieties develop fall foliage colors of yellow and reddish-bronze.

The Choices

Hydrangeas are an attractive, too little known, group of summer flowering shrubs and vines. Many prefer moderate shade, but some are tough enough to tolerate hot sun and drought. The largest types approach small tree stature and the smallest grow only a couple of feet high. Colors range from blue shades to lavender, pink, and white. In all, more than 20 species are native to eastern North America, Central and South America, and Asia. Parts of Asia and eastern North America have similar climates, and many of the species endemic to these areas make good ornamentals for the Delaware Valley in USDA hardiness Zones 6 and 7. In addition, many cultivated varieties, or cultivars, have arisen during the past several centuries in Japan and Europe, and more recently in America.

Lacecaps and hortensias

Hydrangeas bear their flowers in terminal clusters at the end of the current year's shoots. This inflorescence or flower head is composed of two kinds of flowers: the tiny, fertile, inner florets bear the seeds, while the sterile, larger, outer, "ray" florets have three to five large showy sepals (like petals), and serve only to attract pollinating insects to the inner florets.

The shape of the flower heads varies among different species and cultivars. Most species bear flat flower heads, and in wild types the inner zone contains the small fertile florets, surrounded by the sterile, or ray, florets. This natural flower form is called a "lacecap."

In cultivation, selected mutant plants bear a greater quantity of the large showy florets. Numerous and crowded, they form a large spherical inflorescence, the gaudy flower form called a "mophead" or "hortensia." In some varieties, the oversized heads are too heavy to be good garden plants and, in fact, find their greatest use as florist's pot plants. After a rain in the garden, when overburdened with water, the heads are weighed down and often break their stems.

A few species bear cone-shaped panicles of flowers instead of the flat heads of the lacecaps. Cultivated forms of these may also be embellished with extra sterile florets.

American landscapes seem to have become overburdened with the coarse, gawky hortensias, particularly in seashore gardens. No wonder they carry the stigma of vulgarity from overuse, although they do have their place in formal settings.

In England, I first saw the softer lacecaps combined with rhododendrons, azaleas, and other woodland plants. What a brilliant idea! The hydrangeas flower in summer, a season short of bloom in shade, with their lacecaps blending comfortably into woodland settings. The large, light green, mat foliage provides a welcome contrast to glossy, dark green rhododendron foliage and to small evergreen azalea leaves alike. In winter, the naked stems with tan bark hold their papery inflorescences defiantly

THE DELAWARE VALLEY

photos by Charles O. Cresson

Top left: *Hydrangea macrophylla* 'Blue Wave' bears its blue lacecap flowers in early July. This plant is about 10 years old. **Top right**: The same plant three months later in October. The sterile florets have deepened to garnet tones. Soon, the foliage will turn yellow.

against the elements in front of this background of evergreens. The deciduous nature of hydrangeas presents the additional opportunity for such early spring bulbs as crocuses and snowdrops to grow under their bare branches.

The French hydrangea

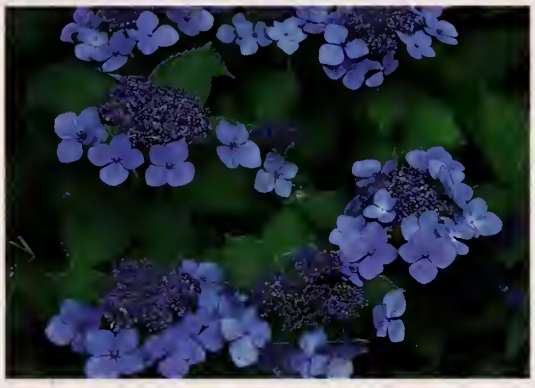
The most hybridized and popular species is *Hydrangea macrophylla,* the bigleaf hydrangea, with its many hortensia and lacecap cultivars, most of which were developed in France from 1895 into the early half of this century. In fact, *Hortus Third* lists its common name as the French hydrangea. Such heady names as 'Beauté Vendômoise' (1908), 'Générale Vicomtesse de Vibraye' (1909) and 'Mme Emile Mouillère' (1909, after the breeder's wife) allude to the lush and overblown beauty of these flowers of the exuberant *Belle Epoque,* a period of high style and unbridled sensuality. Alas, many of these hybrids are probably not quite hardy for us in the Delaware Valley, but Scott Arboretum is planting them for trial at Swarthmore College to find the hardiest ones.

The most commonly available lacecap cultivar, 'Blue Wave,' introduced by the famous French plant breeder Emile Lemoine in 1904, has beautiful, large, deep blue flower heads in early July, above lush, bright green foliage. As the flowers fade, the ray florets flip over and develop a garnet coloration that deepens through the summer to combine with butter-yellow foliage in October. 'Blue Wave,' perfectly hardy in my garden most years, suffered dieback from a severe late spring freeze a few years ago. When that happens, it won't bloom the following summer. 'Tokyo Delight' is another lacecap, said to be an old Japanese variety, with blue, fertile florets in the center, surrounded by white sterile florets.

Such names as 'Mariesii Variegata,' 'Mariesii Silver' and 'Variegata' refer, of course, to variegated leaved cultivars. I suspect they are all the same cultivar here in America. The one I've seen has leaves attractively edged with white and makes a bright foliage plant in the shade garden, even when it dies back to the ground, as often happens during a Delaware Valley winter. Although it won't flower after dying back, the flowers are no great loss in this variety.

If you can't resist the hortensias, 'Otaksa,' an historic, blue, Japanese cultivar introduced by Von Siebold in 1862, is still available. Unfortunately, it is a bit tender and its weak stems do not quite support its wet mopheads. 'Nikko Blue' is a newer hardy blue, and 'Forever Pink' is just what it says. 'Pia,' a dwarf pink hortensia, grows only to two feet and is a bit tender for severe winters here. 'Ayesha' ('Silver Slipper'), one of my personal favorites, is not quite hardy outdoors, so I grow it in a pot on the patio for the summer and keep it in a coldframe for the winter. 'Ayesha,' a hortensia, also called the "lilac hydrangea," bears lilac petals with a unique spoon shape

continued



Hydrangea serrata 'Blue Billow' originated in the Delaware Valley. 'Blue Billow' received the PHS Gold Medal Award in 1990 for its deep blue flowers on a compact plant and superior hardiness. It reaches its peak of bloom in late June or early July.

The rough sandpapery leaves of *Hydrangea sargentiana* can be up to 10 inches long. Note the bristly stems. This plant, propagated from the plant at the Morris Arboretum of the University of Pennsylvania, flowers in mid-July.

that give the appearance of lilac blossoms, and it is one of the few hydrangeas to have any fragrance. On my patio, the flowers remain attractive from late June to frost. Its origins are unknown, but it apparently appeared in the last 50 years.

Hydrangea macrophylla is a vigorous species, and depending on the variety, may reach a height exceeding five feet in our climate, and spread even wider. It is native to coastal regions of Japan.

Other species

H. serrata is a more delicate looking species with smaller inflorescences and leaves on thinner stems. Some botanists consider it to be a botanical subspecies of *H. macrophylla,* but to gardeners it is distinct. Native to inland woods in Japan and South Korea, the plants introduced from Japan were not reliably winter hardy in the Delaware Valley. In 1966, however, Dr. Richard Lighty collected seed on the wooded slopes of Mt. Halla, Cheju-do Island, South Korea, and these plants have proven to be much hardier. From a bank of the seedlings planted in Lighty's Kennett Square (Pa.) garden, a few self-sown seedlings were given to the late Hal Bruce at Winterthur Museum and Gardens. From these few seedlings, Bruce selected a particularly compact plant with deep blue flowers and named it 'Blue Billow.' It received the PHS Gold Medal Award in 1990 and is probably the most easily obtained lacecap. 'Blue Billow' tops out at a height of four and a half feet, but slowly widens its base to become much wider. *H. serrata* is less hybridized than *H. macrophylla* and all the cultivars are lacecaps.

The origin of 'Blue Lace,' a cultivar found in a few Delaware Valley gardens, remains a mystery. Its blue ray florets are toothed, and the plant habit is stiffly upright and tall. I would like to hear from anyone that knows about the origins of this plant, which first appeared in the 1960s.

'Preziosa,' introduced by the German hybridizer G. Arends in 1961, is among the few hortensia types that I grow. A hybrid from *H. serrata* and *H. macrophylla,* it has the slighter build of the former, although it has reached six feet in my garden. On a neutral soil, the rounded flower heads are pink, but on my acidic soil they are a lovely blend of pink and violet. As they age through the summer, they transform themselves to garnet and green.

Of even more dramatic textural contrast in the woodland garden are what I call the "large leaved hydrangeas," *H. aspera* and *H. sargentiana.* The rough sandpapery leaves may be as large as 10 inches long. They reflect light differently than any other plant. In mid-July they bear large, lavender lacecaps, up to eight inches across. Mine have grown to about six feet, but they are said to grow as tall as 10 feet. *H. villosa* is now considered a synonym of *H. aspera,* but the plants with this name that I have seen in gardens have narrower, slightly smaller leaves. By any account, *H. aspera* is a variable species, first discovered in Nepal in 1825, but found in the wild throughout southeastern Asia from Nepal to China and Java. Only the hardiest forms take kindly to our winters, and gardeners further north must, sadly, do without them altogether. *H. sargentiana* (often considered a subspecies of *H. aspera)* has particularly dense, sticky bristles along the stocky stems and was introduced by American explorer E. H. Wilson for the Arnold Arboretum in 1908. A fine old specimen grows at the Morris Arboretum of the University of Pennsylvania.

If your hydrangeas turn pinkish, you can restore the color to a good blue with an application of aluminum sulphate (available at most garden centers). To improve the pink ones, add lime to bring the soil closer to neutral, but don't overdo it.

H. involucrata, a close relative of *H. aspera* from Japan and Taiwan, is the last hydrangea to bloom in late July or August. It is so named for the "involucre bracts" that enclose the young inflorescence. Not fully hardy it often kills back to the ground in winter, but has the ability to bloom anyway, reaching about 18 inches tall. The sterile florets of 'Hortensis' are double and more numerous. This novelty originated in Japan before 1867.

The largest growing lacecap species in my garden is *H. heteromalla,* from the Himalayas and China. During the last nine years it has grown to nearly eight feet, and has never suffered winter damage. I've seen larger specimens in England, where it reputedly reaches 20 feet. The off-white, flat inflorescences, seven inches wide, differ from typical lacecaps in that a few ray florets occur among the fertile ones, as well as around the edge. Among the earliest species to bloom, often before the end of May, they tower attractively above the surrounding late-flowering rhododendrons in partial shade. It also shows good drought tolerance.

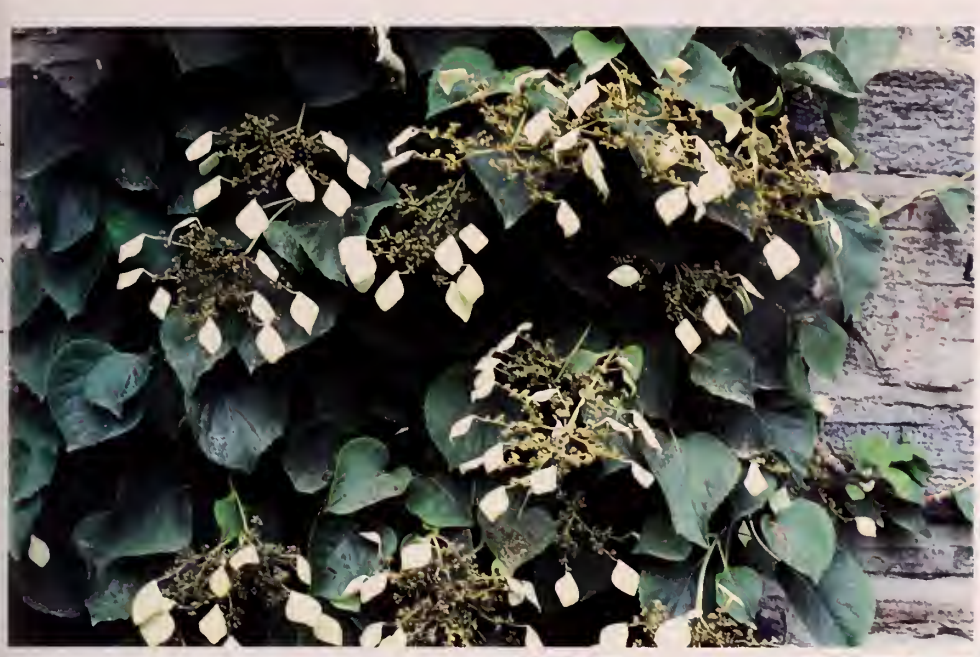
H. heteromalla, although introduced in 1821, is a rare species in American gardens. Apparently easy to grow, it should be more popular. *H. heteromalla* 'Bretschneideri' *(H. bretschneideri),* perhaps easier to obtain, is more highly regarded for its rich brown exfoliating bark. It originated from seed collected in the mountains near Peking in 1882 by Dr. Bretschneider, a Russian physician.

The panicle hydrangea, *H. paniculata,* from Japan and China, is a familiar garden plant in the Delaware Valley landscape. The largest species, it occasionally reaches 20 feet in height, with large, conical, white panicles in mid to late summer. As the flowers age they often assume pink tones. The old-fashioned peegee hydrangea, *H. paniculata* 'Grandiflora,' is the best known form, with its oversized inflorescences jammed with sterile florets — a real eyeful. Specimens are often pruned back to the trunk each spring, which forces strong growth with even more vulgar flower heads. Lighter, more graceful and less distracting flower heads are found on the early blooming 'Praecox' and the late flowering 'Tardiva.' The exciting news is that the first pink-flowered cultivars, 'Burgundy Lace' and 'Pink Diamond' have been developed in Belgium, at the Arboretum Kalmthout. I'd expect these pink cultivars of an already popular plant to be a big hit, but they are not yet available here.

In spite of its name, *H. arborescens,* is not tree-like. Instead, the "smooth hydrangea," a bushy, many stemmed shrub, grows only three to five feet tall. It's a native to the eastern United States from New York southward. The hortensia types have globular flower heads that begin a cool light green, mature to white and then age to papery brown by winter. 'Annabelle' has the largest heads, often a foot across. Dr. J.C. McDaniel at the University of Illinois selected and introduced it for its large heads and strong stems, which hold them up even when heavy with moisture. 'Grandiflora' is an older variety with heads only six to eight inches wide. Lacecaps, such as *H. a.* subspecies *radiata,* are available if you can find them. The smooth hydrangea, native in the eastern United States, is useful in locations where the soil is too dry for *H. macrophylla* and *H. serrata.*

One of the most serviceable species is

photos by Pamela Harper



Top left: Japanese hydrangea-vine, *Schizophragma hydrangeoides* resembles the true climbing hydrangea, but can be distinguished because it has only one sepal per sterile floret.

Top right: The panicle hydrangea, *H. paniculata*, an attractive small tree for mid-summer bloom.

Sterile florets crowd the gaudy inflorescences of *Hydrangea paniculata* 'Unique' at the garden at Winterthur, near Wilmington.

Hydrangea paniculata 'Tardiva' flowers later in summer than most cultivars of the panicle hydrangea. Fewer sterile florets give a less pretentious appearance, more closely resembling the wild species.

the oakleaf hydrangea, *H. quercifolia*, native from Georgia and Florida to Mississippi. The large, lobed, oak-like leaves, up to eight inches long, give rise to its name. A tough plant it takes sun or shade and drought with ease. It grows to about six feet tall, with a wider spread. 'Snow Queen,' a popular cultivar with additional, but not excessive, sterile florets, received the PHS Gold Medal Award in 1989. The double-flowered 'Snowflake' has the unique ability to grow fresh petals from the center of each floret, which keeps it looking fresh and white for weeks after the others have faded. Up close, the collar of brown petals that build up behind each floret look a bit sloppy, so plant is across the lawn, where it will be seen from a distance.

For vertical spaces, such as walls and tree trunks, several related species climb by clinging holdfasts, much as English ivy does. The best known climbing hydrangea, *H. petiolaris*, climbs 60 to 80 feet, given the space. Certainly not a plant for a small wall! Off-white lacecaps appear in June, with sterile florets composed of three to five, but usually four, sepals. The deep green foliage, attractive all summer long, lacks fall color, dropping unceremoniously while still green. Old trunks have an attractive peeling, cinnamon brown bark. A native of Japan, Korea and Taiwan, it was brought to western gardens in 1878.

Beautiful as the climbing hydrangea is, the closely related *Schizophragma hydrangeoides*, Japanese hydrangea-vine, is probably a better choice for most gardens. It grows to only about half the size, and is less bulky, lacking the long, horizontal branches that hang out from the wall or trunk. Although similar to the true climbing hydrangea, the distinctive Japanese hydrangea-vine has only one sepal per sterile ray floret, and is thus placed in its own genus. The deep green foliage is also similar, but more prominently toothed. Although it lacks the peeling bark of *H. petiolaris*, its wintry beige paper-like sepals cling to the vine until spring.

Schizophragma integrifolium, a spectacular Chinese species, grows in English gardens, with much larger flowers and foliage. I've been wanting to try it for years. It's thought to be just a little too tender for our winters, but I've never talked to anyone who has tried it locally. New wild collections from China hold further hope of hardy forms, and I've finally obtained some. Time will tell!

Decumaria barbara, a native vine from the southeastern states, is hardy in the Philadelphia area. It scrambles up tree trunks to a height of 30 feet in the woods, has light green leaves, and its flat, off-white flower heads lack the ray florets typical of the other species. While considered the least attractive of the hydrangea vines, it has the asset of butter-yellow fall color.

Cultural Hints

Hydrangeas are easy to grow. Most prefer partial shade, although the hortensias generally require more sun than the lacecaps. Most hydrangeas need a well drained soil that does not dry out completely in

continued

summer. In dry locations, *H. macrophylla* and *H. serrata* will taunt you mercilessly with that pathetic, limp, thirsty look. *H. paniculata* and *H. quercifolia* tolerate drier soils. *H. paniculata* does best with full sun, but does not require it.

H. arborescens and *H. paniculata* can be severely pruned in winter or early spring because they flower on new wood. If the others are cut back or winter killed, they will not flower that year. All species have soft wood; remove the oldest trunks when they lose vigor after about three years. I prefer to prune off the old flower heads in late winter to clean up the plants for spring.

I have noticed few pest and disease problems with hydrangeas. Perhaps the most noticeable pests are Japanese beetles, which are attracted to climbing hydrangea foliage in hot sun. They are also attracted to the flower heads of *H. aspera,* which blooms during the adult beetles' active period. While beetles may attack the foliage of other species, I have not noticed them to be a significant problem.

Flower color changes

H. macrophylla and *H. serrata* change flower color, which baffles gardeners. Soil pH strongly affects color through the availability of aluminum ions. Acid soils release more of the ions and promote a deep blue flower color, while neutral soils tie up the ions, causing pink flowers. In an acid soil, pink varieties develop more blue pigment and become lavender-pink. In a neutral soil, blue varieties will lose their deep blue color.

If your hydrangeas turn pinkish, you can restore the color to a good blue with an application of aluminum sulphate (available at most garden centers). To improve the pink ones, add lime to bring the soil closer to neutral, but don't overdo it.

Alkaline soils cause a shortage of iron, and the symptomatic yellow leaves, for which iron chelate should be added (along with a bit of aluminum suphate to lower the pH). The best time to treat the soil is in the fall, because the full effect requires a few months.

Non-blooming hydrangeas

Another baffling problem for gardeners is the hydrangea that never blooms. Chances are this plant was originally a florist plant for Mother's Day, later moved to the garden. Florist hydrangeas, usually varieties that only bloom from their terminal buds, are not fully winter hardy here. The tips of the shoots get killed every year, but the plant can still grow vigorously. The best advice: replace it with a variety more suited to your climate.

During the last several years late spring frosts have been a serious problem for *H. macrophpylla* and *H. serrata* in the Delaware Valley. If the young shoots are frosted once growth has begun, the plant will not flower that year. Throw a bedspread, or similar cover, over these low plants on a frosty night to prevent most frost damage.

* * *

The ubiquitous overblown flowers of the hortensias have alienated many gardeners from hydrangeas, yet less than a century ago they were celebrated as the latest creations of contemporary hybridizers. As I've looked at and learned about the many other kinds of hydrangeas, I've developed an appreciation for their diversity and their importance in our summer and fall gardens, and tempered my aversion to the gaudy hybrids as well. On a sultry summer afternoon I am apt to pause and reflect on the hydrangeas' connection to distant places and times past. The modest beauty of the wild species evokes images of primordial mountain forests. At the turn of the century, explorers in China were still discovering new species and varieties, while in France the fancy hybrids of the *Belle Epoque* were being created half a world away.

Books About Hydrangeas

You can find basic information about hydrangeas in books about trees and shrubs. The standard horticultural work on the subject is *The Hydrangeas* by Michael Haworth-Booth, Constable Press, London, England, 1950, although it is now a bit out of date.

A new book just published in France (in an English edition), *Hydrangeas: Species and Cultivars* by Corinne Mallet, Robert Mallet and Harry Van Trier, Centre d'art Florale, 76119 Vareneville s'mer, France, 1993, includes information and color photographs of more than 120 species and cultivars. It presents a fascinating historical and identification guide.

Both are available from the PHS Library.

Where to See Hydrangeas

You can see these fascinating shrubs locally in the extensive collection at the Scott Arboretum of Swarthmore College; phone (215) 328-8025.

Sources of Hydrangeas

Carroll Gardens
444 E. Main Street
Westminster, MD 21157
800-638-6334

Crownsville Nursery
P.O. Box 797
Crownsville, MD 21032
410-923-2212

Forest Farm
990 Tetherow Road
Williams, OR 97544-9599
503-846-7269
lists species

Gossler Farm Nursery
1200 Weaver Road
Springfield, OR 97478-9663
503-746-3922
lists species, including *H. aspera*

Heronswood Nursery
7530 288th Street NE
Kingston, WA 98346
206-297-4172
lists many historic lacecap and hortensia cultivars

Wayside Gardens
1 Garden Lane
Hodges, SC 29695-0001
1-800-845-1124

USDA Hardiness Zone Ratings for Hydrangeas and their Relatives

H. arborescens	Zone 3
H. aspera	Zone 6-7, depends on plant
H. heteromalla	Zone 5
H. involucrata	Zone 6-7
H. macrophylla	Zone 6-7, depends on cultivar
H. paniculata	Zone 3
H. petiolaris	Zone 4
H. quercifolia	Zone 5-6
H. serrata 'Blue Billow'	Zone 5-6
H. sargentiana	Zone 6-7, depends on plant
Schizophragma hydrangeoides	Zone 5
S. integrifolium	Zone 7 (uncertain)
Decumaria barbara	Zone 6

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Charles O. Cresson is the author of two books, *Ornamental Trees* and *Charles Cresson on the American Flower Garden,* both published in 1993 as part of the Burpee Series by Prentice Hall. He lives and gardens at Hedgleigh Spring, in Swarthmore.

Pursuing An Innocent Pleasure

by Christopher Woods

photo by Christopher Woods

The garden, a bridge between humankind and nature, translates the chaos of the natural world into a comprehensible and comfortable language. Essential entertainment, it gives us sensual pleasure while at the same time turning our minds to spiritual matters. A complex creation, it reminds us of a simpler existence.

Chanticleer was created in 1912 when Adolph Rosengarten bought just over seven acres of land that lay about a mile and a half from the St. Davids Station on the Main Line of the Pennsylvania Railroad. Construction of the main house began in the spring of 1913 and the family, Mr. and Mrs. Rosengarten, their son Adolph Jr., and daughter Emily, moved in on August 14, 1913. The house was designed by Louis Borie, a classmate of Adolph Rosengarten's at the University of Pennsylvania.

The seven acres surrounding the house were in poor condition so the then fashionable landscape architect, Thomas Sears, was called in. His plan for the grounds centered on the magnificent American chestnuts, which had so attracted the Rosengarten family. Unfortunately, the trees soon succumbed to the chestnut blight and had to be removed. However, Sears's ideas for the garden surrounding the house soon began to take root. On the south side, a wide slate terrace was installed. On the east side, workmen dug into the hillside and with extensive grading, a level area was made into a garden with flower beds and formal paths. Though since enlarged, walled and terraced, the formal garden at Chanticleer still retains its feel of Edwardian domesticity. The visitor can easily envisage taking tea on the terrace or stepping out of the library to smell the roses.

In the early years the Rosengarten family lived in Philadelphia during the winter and moved back "to the country" in April. Horse transport was still dominant then, and a horse-drawn dogcart was sent daily to St. Davids for the mail, and a "broken down hunter" named Moose pulled the lawnmower.

After World War I the family business, the manufacture of pharmaceuticals, stabilized and then prospered. Additional acreage was bought, the children grew up and married, and houses for the children and their spouses were constructed. Eventually Adolph Rosengarten Jr. and his wife Janet, would consolidate the various parcels of land into a 30-acre estate. Small formal gardens were established around the houses and many acres were cleared of woodland scrub and planted with decidu-

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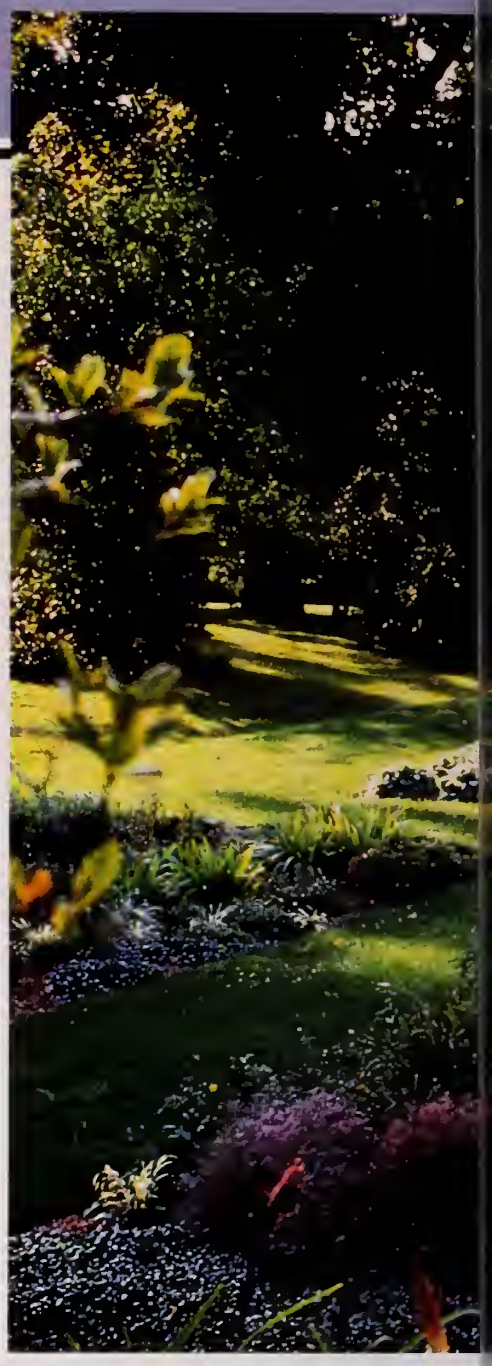
The formal garden at Chanticleer.



ous and coniferous trees.

Over the years bulbs and herbaceous perennials were added, a vegetable and cut-flower garden established, and horticultural experiments with native plants, tender perennials, and ground covers started. Like most of us with our own backyards, the Rosengartens enjoyed developing their garden in their own way and at their own pace.

The beginnings of a public garden

This history must now take a leap into the mid-1970s. With both parents and sister dead, Adolph Rosengarten Jr., then in his late sixties, began to be concerned about the preservation of his property after his death. With astute prompting from Janet Rosengarten, much thought and discussion followed and in the late 1970s legal papers were drawn up and the Chanticleer Charitable Trust and the Chanticleer Foundation were formed. The Chanticleer Charitable Trust exists to preserve the property and to be the recipient of the estate and its endowment. The Chanticleer Foundation is the operating arm of the Trust, instituted to manage and develop the estate as a display garden and educational resource, open to the public.

In February 1990, Adolph Rosengarten Jr. died. The Chanticleer Foundation became fully operative and plans for the development of the property, held back because of Mr. Rosengarten's failing health, sprang into action.

One of the most eccentrically charming but also visually unsettling features of the property is that the garden had been designed in piecemeal fashion. While this, in some gardens, may make a more interesting and personal garden, at Chanticleer the staccato approach hindered efforts toward landscape unity or aesthetic cohesion. While many beautiful trees were planted, some areas were neglected. A small pond was dug but it was left a bare punctuation, there being no plans to plant a water-side garden. Small gardens were developed slowly with an air of caution and restraint.

The demands of opening a garden to the public, however, required a bolder approach. We determined that a pedestrian path weaving throughout the property would not only provide a safe route but create a visually unifying ribbon that would connect the different areas of the garden and turn them into one continually unfolding experience. The path was installed in the summer of 1991.

The next and most obvious area of development was to satisfy the visitor's need for facilities. We already had our path; we now needed a parking lot and public restrooms. Much of 1991 was spent discussing the style of the parking lot. It is important to us that the first experience the visitor has of Chanticleer be a pleasing one. And so, we designed the parking lots to be a parking garden with retaining walls and espaliers, trees providing shade, herbaceous borders and bulbs, and terraces and courtyards in which to sit and smell the flowers. Even the public restrooms will have cut flowers.

The parking lot and bathrooms were constructed through the winter of 1992/93. More than 100 trees, such as Yoshino cryptomeria *(Cryptomeria japonica* 'Yoshino'), yellowwood *(Cladrastis kentuckea)* and dawn redwood *(Metasequoia glyptostroboides),* 800 shrubs including *Callicarpa* sp., *Viburnum* sp. and *Hydrangea* sp., and many perennials and bulbs, have been planted this spring. Although it may take a few years before the plantings are mature, we hope this area will prove to be beautiful as well as functional.

Other areas of the garden continue to undergo considerable improvement. Angling away from the main house, on a north slope, lies a grassy area with a number of large deciduous trees. At one time, 15 apple trees were planted and apples harvested, wrapped in wax paper and stored in an apple house. We removed the old apple trees, planted over 40 flowering trees including a wide range of crabapples including *Malus* 'Donald Wyman' with pink flowers and red berries; 'Harvest Gold' with yellow berries; and 'Sugar Tyme' with white flowers and vibrant red berries. We even planted pink and white native dogwoods *(Cornus florida),* because despite the depredations of anthracnose disease, they are still extraordinarily beautiful trees.

We decided to augment the flowering trees with a large planting of daffodils. Because this area is finest in spring when the chartreuse of the new leaves and the pale tones of the flowering crabapples are at their best, we decided not to plant the common yellow daffodils but to concentrate on those with white, pale yellow or soft pink flowers. Among the favorites are 'Geranium,' a strongly and sweetly scented creamy white; 'Salome' with an apricot-pink cup, and 'Ice Follies' an ivory-white daffodil that seems to bloom for weeks.

Almost 50,000 daffodils pour down the hill in three streams of color, edged with an underlining of blue muscari. At times the white intensity of this planting seems overwhelming, precisely the effect we desired. The daffodils fade, and we allow the grass within the planting to grow long, turning a formal lawn into a meadow until July when we cut the long grass and faded daffodil foliage down, returning the area to a close-cropped lawn studded with trees.

A formal garden

The formal garden behind Chanticleer has not escaped our attention. Although the basic design of the garden has remained the same, we have added less formal plantings to soften the strongly geometrical landscape. A low wall dividing the swimming

photo by Christopher Woods

Once a tennis court, this perennial garden is at its best in mid- to late summer.

pool from the rest of the garden has had its toupee of blue rug junipers removed, and unusual rock plants and dainty specialties now carpet the area. Perennial violets, *Viola cornuta lilacina,* with lilac blue flowers, and *Viola* 'Huntercombe Purple' with deep velvet purple flowers mix with *Dianthus* species and cultivars including 'Beatrix' with clove-scented pink flowers and 'Agatha' with blood-red flowers. The aggressive nature of the diminutive *Potentilla tridentata (Sibbaldiopsis tridentata)* is redeemed by its delicate, fan-shaped leaves and its rose-like white flowers. It looks wonderful with the blue tubular bells of Dalmatian bellflower *(Campanula portenschlagiana)* and the shocking pink of the moss phlox *(Phlox subulata).*

To Visit Chanticleer

Chanticleer will be open to the public from May 12 to October 31 on Wednesday, Thursday and Friday of each week. Open 10 a.m. to noon, and 1:30 p.m. to 3:30 p.m. A suggested donation of $5.00 per adult, $3.00 per child of 16 or under is requested. Guided tours are offered on Wednesday and Thursday only. For further information write to Chanticleer, 786 Church Road, Wayne, PA 19087 or telephone (215) 687-4163.

We're also experimenting with plants that like hot and dry conditions but may not survive our cold and wet winters. The rock wall is home to a number of "ice-plants," a group of South African succulents widely planted in southern California but largely unknown here. *Delosperma cooperi* has been hardy over the last two winters. It has soft and fleshy leaves and bright purple-red flowers in summer. *D. nubigenum* is equally as vivid with orange-red flowers. We take cuttings of the tender perennials we like just in case the parent plant perishes over the winter.

Another plant that has caught our fancy is a kind of germander, *Teucrium cossonii* 'Majoricum,' a mat-forming plant with pineapple-scented, blue-green leaves and

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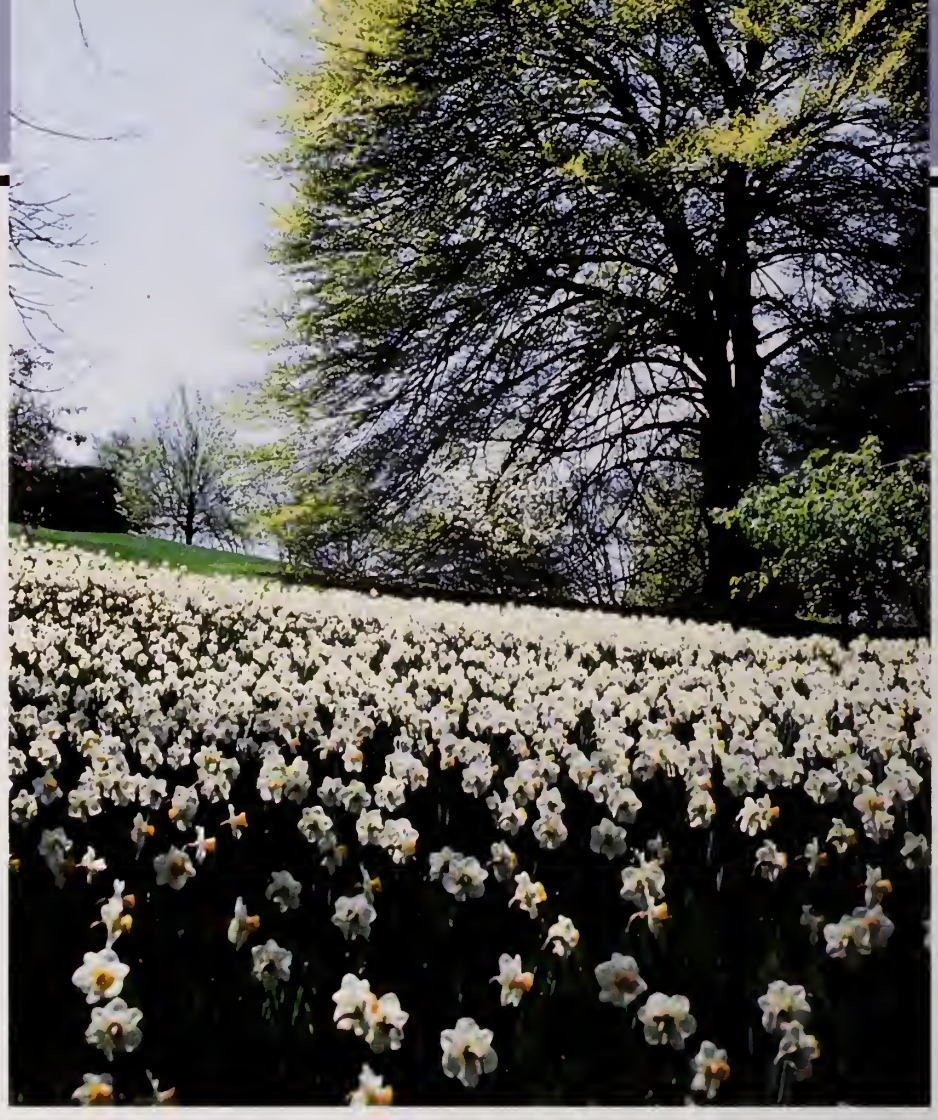

photo by Christopher Woods

More than 50,000 daffodils were planted in the former orchard.

purple-pink flowers. It's reminiscent of woolly thyme only with larger leaves and flowers. This germander associates well with the violet-flowered petunia *(Petunia integrifolia),* an annual with violet to rose-red flowers. Native to Argentina, it is one of the parents of the commonly grown hybrid petunias, but is much more elegant. It flowers so profusely throughout the summer and into fall, it's surprising that it's not more widely used.

We are also improving the formal rose beds in this garden. While we continue to grow hybrid tea roses, we have underplanted the shrubs with herbaceous perennials and bulbs including *Phlomis fruticosa* and *Ballota* 'All Hallow's Green,' two shrubby members of the sage family, the *Phlomis* with gray woolly leaves and the *Ballota* with lime green leaves. Both decorate and disguise the ugly stems of the roses while the summer hyacinth, *Galtonia candicans,* with fragrant white lily-like flowers, remains above the sages and socializes with the roses.

In addition to a plethora of plants, we have also added a flagstone ramp and path to this formal garden, which has opened up yet another area for horticultural expansion and experimentation. A shaded border once planted with an indifferent collection of ferns now dramatically shines with a mass of variegated Hakone grass *(Hakonechloa macra* 'Aureola') interplanted with one of the Japanese snakeroots, *Cimicifuga ramosa* 'Atropurpurea.' The grass reaches a height of about 12 inches and has beautifully striped creamy-white and yellow-green leaves. The snakeroot grows much taller, up to 4 feet, and has purple stems, dark green leaves, and candles of fragrant white flowers in summer. The whole effect is quite exotic, particularly when the afternoon sun glances across the grass and sets it glowing.

Walking away from the Chanticleer formal garden, the visitor passes through the meadow garden, a mixture of native and exotic species of sun-loving flowers and grasses, and into an area of woodland. This woodland affords us the opportunity to grow a number of plants native to Asia. It's not a Japanese garden but rather an American garden with a tree canopy of maples, sycamores and tulip poplars. The shrubs and herbaceous plants are native to Asia and some of them are most unusual. In time, this area will be planted thickly but at the moment specimens of *Magnolia, Trochodendron* and *Camellia* provide a shrub-by structure for rarities such as *Saruma henryi,* a velvet-leaved plant with soft yellow flowers, various oriental gingers *(Asarum* sp.) with heart-shaped marbled leaves, and the aspidistra-like leaves of *Rohdea japonica.*

A small pond, surrounded by summer-flowering sages, daisy-flowered *Silphium* species, the thistle leaves and pink-white flowers of *Morina longifolia,* and the stiff delicacy of the ornamental grass *Stipa gigantea* directs the visitor to a winding creek bordered by native wildflowers, heavy plantings of broad-leaved evergreens, and tall gothic candles of the oriental spruce, *Picea orientalis.* It is a quiet spot, secluded from the sunshine and heat, with cool shades of green to rest the eyes.

There's much more to Chanticleer than I have described. An old tennis court has been turned into a summer garden with a large display of perennials. Two small courtyards behind one house are used to try out new plants and combinations, and it is an experimental area that has convinced us that using the color wheel to design plant combinations is largely useless and considerably less fun.

We have a wonderful vegetable garden (see story on page 13) and marvelous container plantings.* The whole garden continues to evolve at a fast pace with the hard work and creativity of an enthusiastic and passionate staff. We want to do much more. It's our goal that Chanticleer be not only a pleasant walk in the fresh air but a plantperson's paradise, an outdoor classroom, an intimate moment, a place for meditation, a cottage garden, an innocent pleasure. The future of Chanticleer looks bright and we are confident that our goal to make a wonderful garden is being accomplished. Come and see!

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Christopher Woods is executive director of Chanticleer. He is a member of the board of the American Association of Botanical Gardens and Arboreta. Woods is the author of *The Encyclopedia of Perennials,* Facts on File, New York, 1992.

*See March/April 1993 *Green Scene* "Container Gardening at Chanticleer" by Andrew Bunting, page 3.

Get over the

Edible Complex

by Cheryl Lee Monroe

A highly ornamental vegetable garden at Chanticleer to inspire the home gardener. More than a harvest to enjoy; it's great to look at and fun to create.

The garden as it looked in the summer of 1992, with paths woven through groupings of vegetables whose colors and textures were planned to enhance each other.

photo by Christopher Woods

continued

photos by Christopher Woods

A groundwork of diagonal paths with a central axis laid down the structure of Chanticleer's vegetable garden at the outset.

The lawn at Chanticleer in Wayne stretches out and down from the main building at the top of the hill. Peering down through the trees, I can see cold frames, flowers and the softly screened maintenance building. I am drawn down the hill by a glimpse of the most distant garden wrapped in a picket fence and fairly exploding with abundance. Every vegetable shows off: from the onions and garlic bursting up through spinach and lettuce, the corn with its lovely burgundy foliage and the rambunctious red and green and butterhead lettuce that clamors throughout. A designer's eye stands behind this vision, the assets of each vegetable carefully considered, and every inch of space carefully plotted.

In this garden, tomatoes and sunflowers bob over the top of the fence. Peppers crowd in behind the harvested onions and the tomatoes, and beans climbing up poles invite you to look over the fence. Perilla's spectacular deep purple foliage, buckwheat's small white flowers on delicate stems, the silver green leek stems and the red beet foliage dance in each other's company at different times during the season. Squash vines weave their way through ruffled and purple basils; carrots and chinese cabbage are partners as are nasturtiums, dark green italian parsley and swiss chard. The furry grey-green foliage of eggplant complements peppers, and lettuce, enjoying a last fling, bolts to its full height reaching toward burgundy okra and artichokes. Here were new possibilities for my own vegetable garden.

Author/grower Rosalind Creasy writes that we have an "edible complex, a resistance to including edible plants in our landscaping plans."* Creasy encourages gardeners to look at fruits, vegetables and herbs with the same eye to beauty as we do ornamentals. I realized I should seriously rethink my own vegetable garden. I am guilty of separating my vegetables from everything else, and I relish rows and blocks of vegetables, cherishing their order and the food they provide more than the myriad colors and textures they can add to the garden. Chanticleer's vegetable garden enticed me to recreate my own this year; already radical changes blow in the wind. Sunflowers will touch shoulders with pole beans; lettuce and other greens will roam through the beets, onions, garlic and swiss chard. Rows are history.

The mastermind

Doug Randolph masterminded this garden at Chanticleer. He wants to explore the interesting color and foliage combinations vegetables present, not merely to seek out fancy vegetables. Most important, he also wants to enjoy himself, a philosophy that led him to request a spot at Chanticleer where he could be creative. Chris Woods, executive director of Chanticleer, gave Randolph the freedom to experiment with the vegetable garden. He acquired the responsibility for a small garden, 40 x 48 ft., the space traditionally used for row upon row of vegetables for the household. Free to create a vegetable garden for ornament alone, he began by laying out beds with diagonal paths radiating from the center.

Randolph's love of vegetables comes from growing up in the farming community of Oxford, Pennsylvania, and from a background woven through with horticulture. For six years he worked for Jimmy Paolini, a mentor whose fine plantsmanship won him a raft of ribbons at the Philadelphia Flower Show and whose love of plants led Paolini to create Waterloo Gardens, a retail garden center. College added chemistry, biology and horticulture to Randolph's experience and before coming to Chanticleer two years ago, he worked for many years at Tyler Arboretum. His job at Chanticleer gives him a hand in the overall garden from building its structures to developing and maintaining individual gardens. He happily goes where needed, but the vegetable garden is his alone to dream up, create and maintain.

The three cherry trees in the center of the garden will be woven together as they mature to create a gazebo and focal point. In the tapestry of thymes and lavender, *Thymus* 'Green and Gold' planted under the tree steals the show with its golden color in spring and early summer. Thymes, lemon and silver-edged, also spill into this year's new brick paths, and rosemary and purple sage will be joined by chives and comfrey. Flowers, too, woven in with nasturtiums spill over into the walkways; cosmos drift throughout.

The fence, short enough to entice you in, is just tall enough to be a challenge, a challenge Randolph will tackle in the coming season. He wants to make the best use of all the available space, and the fence strikes him as potentially utilitarian. In an experiment he has tied, or espaliered, eggplants and peppers to the fence. Sweet peas clamor along it; purple hyacinth beans wander to the top mingling with sunflowers, and tomatoes twine among picket tops as they reach upward. The fence looks best as a backdrop for brussels sprouts sporting their bounty and sunflowers, of smaller stature, that will this year mix with red and gold broomcorn.

Randolph weaves magic here, magic for all to see, and lest we forget, sustenance. Everything in this garden produced yields similar to those I get with my blocks and rows. Yield is not the intent, however, it's the ornamental opportunities vegetables offer. "Thou shalt not landscape with barren ornamentals" implores Creasy* in her book concluding as Randolph has, that to do so wastes potential.

For information about when Chanticleer is open to the public, see page 11.

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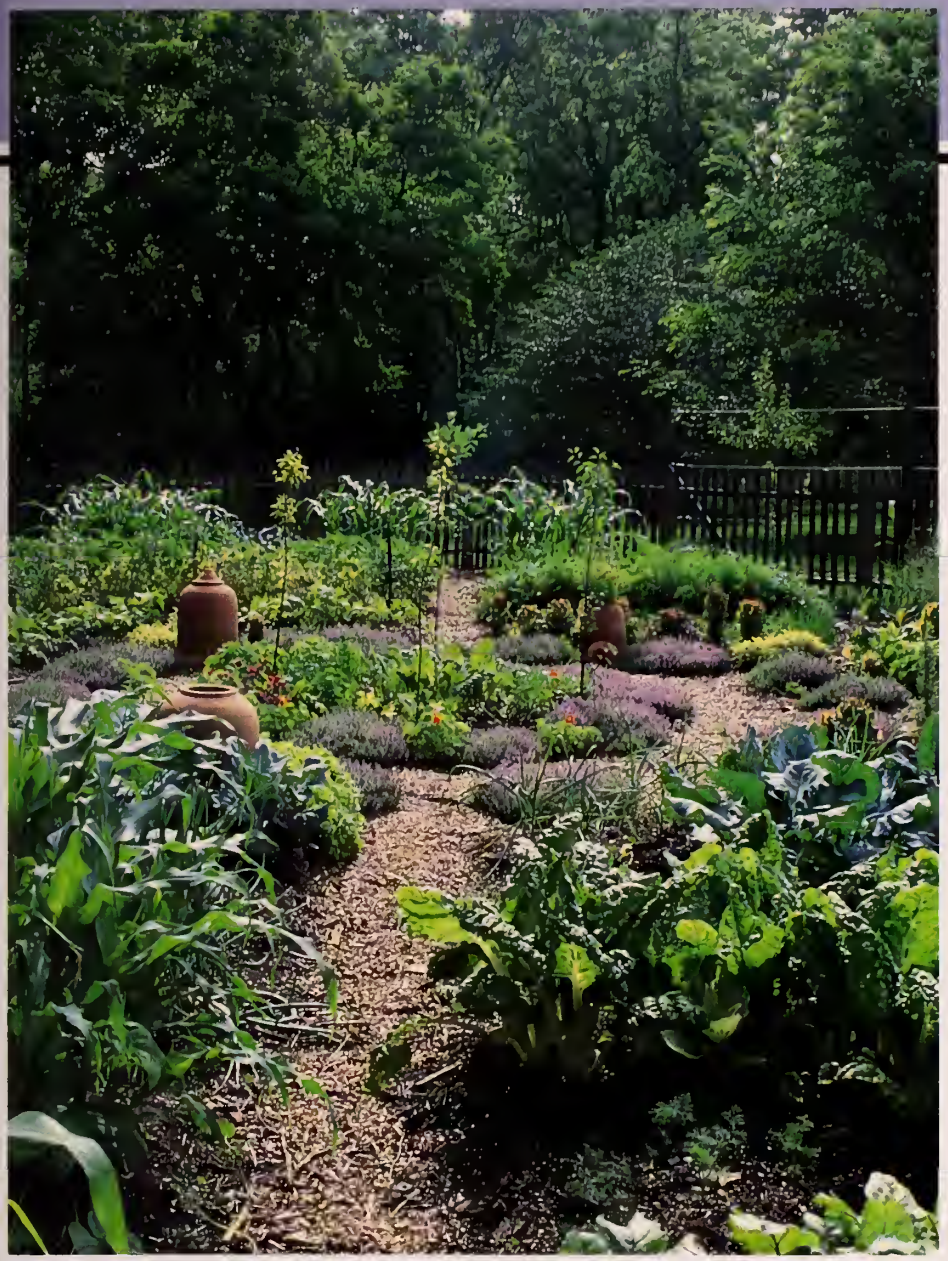
Cheryl Lee Monroe is a staff member of the Pennsylvania Horticultural Society and gardens in West Chester, Pa.

**The Complete Book of Edible Landscaping*, Rosalind Creasy, Sierra Club Books, San Francisco, California, 1982.



The abundant vegetable garden shows off its unusual design.

The garden's bounty is in no way diminished by the purely aesthetic interplanting of vegetables.

A Sample of Randolph's Selections

Purple bush snap bean 'Royalty' *(Phaseolus vulgaris* var. *humilis)*
Yellow bush snap bean 'Gold Mine' (Phaseolus vulgaris var. *humilis)*
Beet 'Sweetheart' *(Beta vulgaris)*
Broccoli 'Minaret' *(Brassica oleracea)*
Carrot 'Scarlet Nates' *(Daucus carota* var. *sativus)*
Chinese cabbage 'Jade Pagoda' *(Brassica rapa)*
Corn 'Burgundy Delight' *(Zea mays)*
Cucumber 'Jazzer' *(Cucumis sativus)*
Kale 'Red Russian' *(Brassica oleracea)*
Leaf lettuce 'Red Sails,' 'Salad Bowl' *(Lactuca sativa)*
Butterhead lettuce 'Pirat' *(Lactuca sativa)*
Okra 'Burgundy,' 'Annie Oakley' *(Abelmoschus esculentus)*
Onion 'Southport White Globe' *(Allium cepa)*
Parsley 'Italian Dark Green' *(Petroselinum crispum* var. *neapolitanum)*
Peas 'Oregon Giant' *(Pisum sativum)*
Radish 'Easter Egg' *(Raphanus sativus)*
Patty pan squash 'Sunburst' *(Cucurbita pepo* var. *melopepo)*
Zucchini squash 'Gold Rush' *(Cucurbita pepo* var. *melopepo)*
Spinach 'Indian Summer' *(Spinacia oleracea)*
Swiss chard 'Rhubarb Chard,' 'White King' *(Beta vulgaris* var. *cicla)*
Watermelon 'Garden Baby' *(Citrullus lanatus)*

Sources

Johnny's Selected Seed
Foss Hill Road
Albion, MA 04910
(207) 437-4357

Piedmont Plant Co.
P.O. Box 424
Albany, GA 31703
(912) 883-7029

Artillery Fungus

by Jacqueline Dilworth

If you've noticed small black spots on the windows and siding of your home, and you've used wood mulch on your landscape beds, chances are you have a battalion of artillery fungus spores *(Sphaerobolus stellatus* Tode) camping in your mulch.

These black spots may also be on your plants. Artillery fungus is often misidentified as scale insects or fly excrement. These mature spores are like sticky tar and not easily removed. Artillery fungus, a relative of the bird's nest fungus, grows on well-rotted wood. Thus the wood chips and tanbark mulches we use to protect our plants and beautify our landscape beds become a giant petri dish for the spores of artillery fungus to mature into fruiting bodies.

These spores range from slightly raised to globular; when mature, the fruiting body splits at the apex exposing the mass of spores produced internally. This global mass sits in liquid at the bottom of the cup. About five hours after the fruiting body splits open, the inner cup violently everts itself expelling the sticky spores as far as 18 to 21 feet. The spores' sticky coating adheres to any surface it comes in contact with. I have heard stories of this fungus being in such high concentrations around some houses that it appeared as though someone sprayed the side of the house with motor oil. Spores also adhere to automobiles parked in driveways.

The fruiting bodies of artillery fungus are highly phototropic, so the spore mass of each mature fruiting body is expelled toward the strongest source of light. This makes light-colored siding, reflective glass and light-colored automobiles prime targets.

How is the spore carried to your uninfected mulch? When I asked Rayanne Lehman of the Pennsylvania Department of Agriculture Entomology Department in Harrisburg, she told me that animal feces such as cow manure or rabbit droppings provide a good medium for artillery fungus to germinate. So unless you have a stray bovine in your neighborhood, chances are the local rabbits who love to visit everyone's yard or garden left you with an exploding pellet. If the rabbit ate grass, etc. with artillery fungus spores in it then came into your yard, well there you have it.

photo by Jacqueline Dilworth

Artillery fungus on a witch hazel leaf.

photo supplied by Penna. Dept. of Agriculture

Artillery fungus (black spots) massed on the side of a house. The downspout (white) and aluminum siding (brown) are spattered with the black spots.

photo supplied by Penna. Dept. of Agriculture

Aluminum siding (light blue) spattered with the fungus on a home near Harrisburg.

Although unsightly on plants, artillery fungus does not grow on them or harm them. Artillery fungus spores that land on masses conducive to its growth (houses, cars, plants, etc.) can stay viable up to 11 years. There is no sure way to remove these spores easily from homes. And at present no fungicides are effective against artillery fungus.

Fruiting bodies of artillery fungus are produced in temperatures below 77°F. So you may notice these spores in late spring and early summer or late summer and early fall. Cases of artillery fungus have been reported from Florida to Maine. In Pennsylvania, occasional calls come into the Pennsylvania Department of Agriculture, and also to the offices of the Penn State Cooperative Extension agencies. Many of the calls are from the southeastern section of Pennsylvania.

Then how do you combat artillery fungus? Use an alternate mulch; i.e. stone chips, cocoa bean pods or southern pine bark. Artillery fungus grows on decaying wood; if you try a bark mulch that only contains tree bark, even the smallest amount of wood attached to the bark will give the fungus spore something to grow on. If you prefer the look of shredded wood mulches in your landscape, then fresh yearly applications of mulch may lessen the problem. Each year you'll be covering any spores growing to maturity. You must completely cover over the old mulch.

We gardeners are seasoned veterans who have long known the garden can be a field of battle. The rewards are great, however, so get out there and give the artillery fungus your best shot.

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Jacqueline Dilworth lives in Pennsylvania where she and her husband Richard operate a nursery specializing in dwarf and unusual conifers and woody ornamentals.

Patchouli

by Lorraine Kiefer

A strongly scented plant for a sunny window.

drawing by Barbara Bruno

Patchouli, a wonderful plant for a warm sunny window, will grow successfully in spots often too warm for many other plants. A member of the mint family *Labiatae (Lamiaceae),* the patchouli, a rather compact little shrub, often resembles a green coleus. The resemblance ends there. Patchouli's essential oil, among the strongest of all plants, yields its exotic fragrance whenever its foliage is brushed or touched.

Patchouli *(Pogostemon patchouli)* is native to tropical Asia, Java, and India, where it is quite warm with ample rainfall. Common sense indicates that indoors, a warm temperature, good sunlight and frequent water would be to the plant's liking.

The plant does well in my sunny dining room bay window where it receives rays from a southwestern direction most of the day. It looks best when kept trimmed to keep it from becoming leggy during the short winter days.

One year when we had too many patchouli plants left over from the nursery season, I tried unsuccessfully to winter them over in my cool greenhouse with the bay and sweet olive. The temperatures were fine for the lush green parsley, the fragrant scented geraniums, the sweet smelling orange and the myrtle, but the poor patchouli turned a pale color and all but shivered as it dropped most of its leaves. I took a few into the house and into the plant loft in the shop where they were trimmed back. After a few weeks, as the March days became sunnier and longer, they started to show signs of new leaves. With a few leaves here, and a few leaves there, however, the plants really never responded until I put them out for the summer to soak up the warmth, humidity, and light. I noticed that with the summer vacation their appetite for both fertilizer and water increased. The plant still looked best when kept cut back.

It's best to propagate this plant in summer. My original cutting was given to me in July several years ago when I was visiting an herb garden. By the time I got it home the wilted cutting looked terrible, but I planted it anyway. After dipping it in rooting hormone, I stuck it in a pot of moist "Pro-Mix" with a handful of extra perlite. After just a few days it perked up, drinking in the steamy July "climate" of my greenhouse. Within a couple of weeks I was rewarded with new growth and soon an increase in size. By the end of the summer I had repotted it three times. In fall I brought the large plant into the dining room window where it was warmer than in the greenhouse. Since it needed to be cut back often, I tried to root some of the cuttings. They survived only when rooted on a heating pad in the greenhouse.

During the dark days of late November and January, with the good light in my window, the plant became just a bit lanky. As the hours of sunlight increased after the first of the year, so did the plant's vigor.

Patchouli isn't for everyone. It's for someone who has a warm home, a good window, and the desire to grow a real conversation piece.

Hippies, moth repellent and prostitutes

Although the plant has been grown in North America since the turn of the century, we know it best as a scent of the 1960s when its fragrance was favored by the "hippies."

Actually that was its second period of popularity in America. The Victorians associated it with cashmere from India, packed in with the cloth to ward off moths. It was also said to be a scent that demure Victorian women did not wear; rather, people associated it with prostitutes in both Paris and the Orient. Adelma Simmons gives humorous accounts about patchouli in her many herb books.

To keep patchouli looking great, pinch or cut it back often and water it well. Don't over-fertilize the plant, it weakens the fragrance. Apply any of the basic plant fertilizers all months except December. In the bright plant room at our nursery, we use Osmocote, a time-release fertilizer, on the plants we keep there.

Hang or place dried pieces of patchouli near a heater vent, wood stove, or hearth if you like the strong, heady scent of this plant. Dried bunches can also be hung from the mirror in a car to act as a natural deodorizer. It will scent the whole car whenever the sun or the heater raises the temperature. (An interesting fragrance occurs when lemon verbena, orange mint, rosemary, or lavender are mixed with the patchouli. I prefer only to sniff the fragrance when I brush the plant as I water or trim it.)

In addition to that warm spot near a sunny window, patchouli can be grown under grow lights. If you enjoy its aroma, add one to your window garden. You'll find it fairly easy to grow and a generous producer of fragrant foliage.

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Lorraine and Ted Kiefer operate Triple Oaks Nursery and Florist in Franklinville, N.J. Both lecture and teach herb and landscape courses through Gloucester County College at the nursery. Lorraine writes a weekly column for three papers and a monthly herb column for *Jersey Women* magazine.

Sources

Logee's Greenhouses
141 North Street
Danielson, CT 06239
(203) 774-8038

Triple Oaks Nursery and Florist
S. Delsea Drive
Franklinville, NJ 08322
(609) 694-4272
(ask for Lorraine)

Well Sweep Herb Farm
317 Mt. Bethel
Port Murray, NJ 07865
(908) 852-5390

REGENERATE YOUR

GARDEN'S LIFE

by Wayne Clifton

photo of Wayne Clifton's property by Air Photo, Inc.

To the serious gardener, a rich compost pile is like gold; enriching the garden soil is as good as money in the bank.

My 50 ft. x 100 ft. garden occupies a corner of my one-acre suburban lot. Feeding the soil, and building the soil structure, pay big dividends in my yearly harvest. From this garden, I harvest more than 200 pounds of potatoes; enough tomatoes to preserve 30-40 quarts; 20-30 bushels of different fruits; over 100 ears of corn; and a large variety of beans, carrots, okra and melons. I collect a large selection of fresh and dried flowers and herbs. I produce all of this bounty using no chemical fertilizer and a limited amount of chemical spray for the fruit trees. With proper composting and soil building, here's how you can enjoy a beautiful and healthy garden, too.

continued

photo by Wayne Clifton

Left: The author's father in California. In Los Angeles, as well as West Chester, Pa., leaf collection and recycling is an important gardening event. **Right**: The author at his West Chester garden. Clifton collects leaves from the neighborhood and beyond. His garden shredder speeds the composting process.

Regeneration of life in any garden requires both an appreciation for the living environment above and below the ground and being able to maintain harmony between both worlds. My father and I both share a love of gardening; he in California, and I in Chester County, Pa.

Our quest for healthful gardens began over 15 years ago. My father started with a victory garden limited to a few vegetables. He spent only a small amount of time tending his garden. I started out in much the same way. We both used a rototiller to dig up a small patch of grass, loaded it up with chemical fertilizer, then planted seed. This technique resulted in good vegetables but did little to improve the garden.

During this period, we both started reading *Organic Gardening Magazine.* We learned early on that a successful garden requires one basic element: continually feeding the critters that live underground. A thriving garden contains active organisms: bacteria, fungi, yeasts, and microorganisms. These living organisms convert compost into nutrients that the plants can use. Providing the organisms with adequate nourishment helps create a natural beauty in the plants above ground.

While chemical fertilizers can provide the nutrients to keep plants growing, they do little to improve the living environment underground. Adding organic material to the ground allows the living critters to convert waste material into usable plant food as well as improve the texture and structure of the garden soil. I have not used any chemical fertilizers in my garden for five years, and I have not seen any deterioration in plant growth. I still haven't been able to convince my father to give up his mix and spray fertilizer.

The simple process of regenerating garden life begins with an active organic waste recycling program. An organic gardener never has enough compost to go around. My father began the recycling process nearly five years ago. He got an 8-horse power Roto-Roe shredder and began grinding his yard waste. His success at composting and using this material on his garden started my composting experience.

Animal waste, yes or no

Both my father and I initially used composted animal waste in our gardens. The results were both good and bad. The positives of using animal waste far exceed the negatives, although a variety of choices exist for selecting, obtaining, and using animal waste.

In Chester County, many farms and horse stables gladly give away the manure. Raw (green) cow manure contains many minerals and nutrients critical for plant growth. As with any manure, it quickly loses its nutrient value when exposed to rain. Horse manure is second on my list of good manures; more available than cow manure it does not contain the same nutrient value. Most horse manure is mixed with large amounts of bedding material such as straw and wood shavings. Pig and chicken manure are also available, but pig manure smells awful, and chicken manure is so hot it can easily burn the roots of most plants.

My father discontinued composting horse manure because he was plagued with fleas in the raw manure. While I still value that resource, my annual leaf compost supplies all my needs. Unless the animal manure is properly composted, it can produce some unwanted results. I still have a viney weed that came courtesy of the horse manure. The vine resists all organic attempts to eradicate it. A wide variety of weed seeds can be a problem, although proper composting techniques can solve the manure weed problem.

Organic gardeners need to find a way to haul compost material; every serious gardener dreams of owning a pickup truck. I finally got my Ford Ranger in 1992. Not having a pickup truck won't limit the collection process. For years, I used an old 1980 hatchback Chevy Citation. Placing large rubber trash cans in the back offered an easy and clean way to haul the manure.

The heart of an organic garden

An active compost pile is the heart of any organic garden. Composting has become an important father-son activity in my home. Each year at Thanksgiving, my parents make the annual pilgrimage from California to Pennsylvania. By the time they arrive, I have a mountain of bagged leaves waiting for my father. A smaller pile of cut grass waits to work magic with the leaves. After a few days of catching up on family stories, we begin to build the compost pile that will feed my garden for the next year.

Successful composting can be achieved by following four simple steps:

1. Gather the raw compost material. Any organic material can be composted; **however, stay away from meat or meat by-products.** While they can be composted successfully, these products tend to attract unwanted animals to the garden. The most successful material includes leaves, spent garden plants, and household food scraps. The kitchen garbage disposal, the greatest curse ever invented, consumes more usable compostable material than any other device.

2. Prepare the compost material. Any material eventually decomposes into usable material, but speeding the process is important to the organic gardener. The secret to speeding the composting process: obtain the optimum carbon to nitrogen (C/N) ratio. Combine high carbon material

continued

photos by Wayne Clifton

Top left: Used wood pallets make an excellent compost pile. They are free and easy to install. **Top right**: Healthy soil can accommodate a mixed planting of luffa sponge, celery, leeks, lettuce, and cauliflower. **Below**: A mixture of flowers, cover crop buckwheat, and vegetables are the sign of a healthy garden.

(leaves) with high nitrogen (grass) in a ratio of 30 to 1: approximately 30 pounds of leaves to every one pound of grass. Add a little water to the mixture and decomposition will begin.

Owning a garden grinder is a plus. The more finely ground the material, the faster the decomposition cycle. For large gardens, a machine like the Troy-Bilt Tomahawk is ideal. When I first started gardening I used a little electric Black and Decker grinder. It took a little longer to finish the job, but the finished results were identical. One of my colleagues still uses my old electric grinder with great results. Grinding a mountain of leaves can be time consuming; the results are worth it. Ground material can reduce the decomposition process from one or two years down to three months. I'm impatient; I want the compost for spring planting.

To begin creating the Thanksgiving compost pile, I grind the leaves, and dad builds the pile. We've had success grinding a sizable portion of the leaves before beginning the process. The leaves and grass are combined loosely to maintain the 30 C/N ratio. We place a water spray nozzle on the pile at all times. You don't want a soggy pile but all the leaves must be wet. As the pile begins to heat up during decomposition, the pile dries out. Mixing the grass with the wet leaves works well. I will often mix household scraps into the pile just to get them out of the kitchen. If you maintain the C/N ratio, you don't need to add compost pile starters such as urea and/or fertilizer.

3. Build the compost container.
A minimum pile will be approximately four feet in all directions.

This size pile insures sufficient material to compost properly. The internal heat of a properly constructed pile will reach approximately 165°F. If not constructed properly, the material will still decompose but at a much slower rate. Much preferred, hot composting kills unwanted weed seeds and fungal diseases.

A variety of materials can be used to construct the compost pile container. Aesthetics usually play the most important part in deciding how to construct the pile. For large gardens with hiding places, standard wood pallets offer a good choice. The pallets can be obtained free at most beverage warehouses and/or lumber yards. I use the wood pallets for composting garden and yard scraps during the growing season. For large jobs such as leaf composting, 4-inch-square concrete wire mesh works best. It's easy to handle and provides ample air space. For my garden, I first use the wire mesh to cage my tomatoes. When the tomatoes are spent, I take the wire from the tomato beds to the large composting area.

4. Speed the composting process
How much work do you want to put into your garden? Microbial action of decomposition uses a considerable amount of air within the pile. As the air is used up, the decomposition rate slows down. If the gardener wants to use the compost within three months, the pile must be turned. You can turn the pile using various methods. I enjoy working in the garden so I use a pitch fork to remove all the material from the pile. I then fork it back into the container. If I see dry spots, I add water. One or two turnings will give great compost within two months. Other methods include installing aeration pipes in the pile or using push sticks to poke holes in the pile to get air into its center.

The next step

Plants' roots need airy, porous soil to grow properly. Humus (compost) increases the air and moisture-containing ability of the soil. In many gardens, only the top six inches of soil are worked. This is true if mechanical rototillers are used. Plant roots can grow down four feet to reach nutrients and moisture.

In my garden, I used the French double digging technique to loosen the soil down to three feet. My Chester County soil was heavily compacted and rocky. This one-time effort loosened the soil, allowing for deep root growth. I like exercise but not straining my back by continually lifting tons of garden soil. I now feed the earthworms who carry out the deep digging process for me; they are an army of workers that improve the soil.

My father and I practice many of the same gardening techniques but the results are not always the same. He couldn't grow a potato if his life depended on it, and my lima beans pale in comparison to his. We attribute the differences to climate, soil, and luck. Root vegetables seem to do better in my garden. I attribute my root crop success to deep digging techniques. Also, Chester County has every insect known to man. It's difficult to control bean beetles organically. My father still sprays insects with Sevin.

* * *

Gardening, like life itself, renews what is good in life. For me it offers a unique opportunity to share quality time with my father while 3,000 miles apart; I can feel his presence while working in my garden.

Gardening is a passion that provides direction in my life. It lessens the pressures of everyday living while providing a bounty of enjoyment. On many levels, gardening allows me to reap what I sow.

●

Wayne Clifton, organic gardener, gardens in West Chester and follows the teachings of the late Robert Rodale. He is a member of the National Arbor Day Society which provides young trees for his friends and neighbors. Clifton's yard and gardens are designed to maintain the balance between suburbia and nature.

photo by Wayne Clifton

A chemical-free garden is a healthy place for children to play "Nick and the Bean Stalk."

The Author Recommends
Additional Readings

All-New Encyclopedia of Organic Gardening, edited by Fern Marshall Bradley and Barbara W. Ellis, Rodale Press, Emmaus, PA, 1992.

Chemical-Free Yard & Garden, Anna Carr, Miranda Smith, Linda Gildeson, Joseph Smillie, & Bill Wolf, Rodale Press, Emmaus, PA, 1991.

High-Yield Gardening, Marjorie Hunt & Brenda Bortz, Rodale Press, Emmaus, PA, 1986.

These books are available through the Pennsylvania Horticultural Society library.

Silver variegated Japanese sedge (*Carex morrowii variegata*): a tough plant, far more tolerant of heat and drought than most of the ornamental sedges. Clump-forming, nonivasive, semi-evergreen in Zone 6, it's useful as a shady groundcover, in rock gardens, as an accent in the front of a perennial border or as a low edging along a path.

photos by Harriet Cramer

ORNAMENTAL SEDGES:
Attractive and Useful in the Garden

by Harriet Cramer

When I mention ornamental sedges, my gardening friends' eyes glaze over. That ornamental sedges inspire this reaction almost universally leads me to conclude that these plants are thought to be dull. That's unfortunate because many of the ornamental sedges are attractive and utilitarian.

It's understandable why until now ornamental sedges have been largely ignored. We're all too familiar with the common sedges whose rampant growth can wreak havoc in a herbaceous border or groundcover planting. Few of us, on the other hand, have seen or read or heard about truly impressive plantings of ornamental sedges, at least not in this country. Garden writers and lecturers mention them infrequently, and then only as a passing reference in a discussion about ornamental

continued

Black blooming sedge (*Carex nigra*), named for its interesting black flower stalks, has dark bluish-gray foliage and is an excellent groundcover under trees. It prefers shade or partial shade.

ORNAMENTAL SEDGES

grasses, which the sedges physically resemble.

I can think of significant reasons to use ornamental sedges: these plants thrive in shade; many are tolerant of wet sites; and they are aesthetically diverse in form, size, and foliage color and texture. Many of the attractive ornamental sedges can be used in a variety of landscape situations, and they require minimal maintenance. Contrary to popular belief, moreover, only some sedges are invasive, and a preponderance of the ornamental sedges are clump-forming by nature and thus not a problem (see sidebar).

Although they look like grasses, sedges are members of the much smaller *Cyperaceae* family. The roughly 80 genera of grasslike or rushlike herbaceous perennials in this family differ from the true grasses reproductively and morphologically.

Of the approximately 2,000 species within the genus *Carex* (Sedge), only a handful have been cultivated for their ornamental value. The sedges tend to grow in wet habitats and can be found throughout the temperate and arctic regions (and occasionally in tropical mountain ranges). *Carex* is, in fact, the largest genus in eastern North America, where more than 260 species of native sedges have been identified. Though many of these are of marginal or no aesthetic importance, several native sedges are appreciated for their garden potential, notably tussock, lurid, Gray's and plaintain-leaved sedges.

All sedges are distinguished by their rhizomatous root systems and three-angled, solid culms (stems). Their flowers are unisexual, i.e. the male and female parts are carried on separate flowers. Each female flower in a sedge is enclosed in a sac (perigyneum), a feature unique to this genus. In some sedges this sac is inflated and clearly visible and thus a useful way to identify it, while in others it is thin and held closely to the flowers. The fruits of sedges are nuts, and most sedges can be propagated either by seed sown in the fall or by division.

Despite the vast garden potential of ornamental sedges, do not expect to find them in any local retail nurseries. These plants must still be ordered, for the most part, from mail-order catalogs.

Where to plant

As indicated by their native habitat, sedges grow best in a shady or partially shady location in moist, slightly acidic soil. Virtually all of the ornamental sedges are thus ideal plants for a woodland or edge of woods planting, either as an accent or as a groundcover. They are especially lovely when interplanted with ferns, primroses, bleeding hearts, green and gold, bergenia, coral bells and other shade-tolerant perennials.

When used as a groundcover under trees, ornamental sedges are a welcome alternative to the ubiquitous ivy, periwinkle, pachysandra and liriope. Black blooming sedges *(Carex nigra),* with powder blue foliage and black flower stalks and seed heads, performs well as a groundcover, as do the other ornamental sedges with relatively vigorous growth habits like palm sedge, drooping sedge and plaintain-leaved sedge.

Ornamental sedges, extremely attractive when planted along a pond or stream, also serve to effectively stabilize slopes. Some sedges, notably the dazzling golden variegated sedge *(Carex elata* 'Bowles Golden'), are quite content, and even thrive, when planted in shallow water. Though this plant can grow to 3 to 4 ft. in England's cool and damp climate, in our area it's likely to reach only about 2 ft. yet is thoroughly impressive.

One of the most engaging ways to use ornamental sedges is as a low hedge along a stone or mulched path. Their elegant and airy forms, especially some of the larger ones like palm sedge *(Carex muskingumensis)* and drooping sedge *(C. pendula),* con-

photos by Harriet Cramer

Variegated Japanese sedge's *(Carex hochijoensis* 'Evergold') pale yellow and green foliage tends to swirl about gracefully. Semi-evergreen in our area, it grows best with at least partial shade, and is an excellent plant to illuminate the dark areas in a woodland or shade rock garden.

trast splendidly with and soften the hard surface of the path. The delicate palm sedge grows approximately 2 ft. tall, with whorled leaves at the tips, tolerates sun and tends to spread aggressively. At the first frost it will turn apricot and then straw-colored. The cultivar 'Wachtposten' is somewhat more upright and drought-tolerant than the straight species. Drooping sedge requires moist shade to grow well. It's semi-evergreen, tends to self-sow, and is noted for its longlasting and gracefully arching flower stalks, making it attractive in arrangements.

A hedge of yellow or variegated sedges dramatically illuminates a shady or semi-shady path and draws one's gaze to the plants beyond the path's edge. When sited in moist soil, ideally with their roots in shade and their foliage in at least partial sun, the bright yellow foliage of *Carex elata* 'Bowles Golden' will seem to glow; when planted with ajugas or blue-leaved hostas, the effect is stunning.

Though lower-growing, the golden variegated Japanese sedge *(Carex morrowii* 'Goldband'), silver variegated Japanese sedge *(C. morrowii variegata)* and variegated Japanese sedge *(C. hachijoensis* 'Evergold'*) will have an equally enlightening effect along a path or under trees. A little-known but excellent variegated sedge, *Carex phyllocephala* 'Sparkler' is hardy only to Zone 7, but its clean, spectacular green and white striped foliage would be worth growing if you could find a protected site. It might overwinter in an enclosed urban garden, for example, and it would surely brighten even the dreariest corner.

**Carex hachijoensis* 'Evergold' is also known as *C. morrowii aureovariegata* or *C. oshimensis* 'Evergold.' There is a great deal of taxonomic confusion about this plant.

Rock garden plants

Several of the smaller ornamental sedges are well-suited as rock garden plants if given adequate shade and moisture. *Carex morrowii temnolepsis,* for example, grows only one ft. tall and has narrow, evergreen foliage. Miniature variegated sedge *(Carex conica marginata),* a diminutive 6-12 in. tall, forms a neat mound of deep green leaves with white margins. The above-mentioned silver variegated Japanese sedge *(Carex morrowii variegata),* one of the toughest of all the ornamental sedges, grows to about one ft. and will withstand poor soil, heat and drought. With its silver margins on slender semi-evergreen foliage, *Carex morrowii variegata* has a distinctly shimmering effect. Although not as tolerant of hot, dry weather, the variegated Japanese sedge *(C. hachijoensis* 'Evergold') would also be lovely in a rock garden setting. Its creamy yellow foliage with bright green, vertical variegation tends to swirl about in a highly pleasing manner, especially when given the afternoon shade it prefers.

Perennial borders

The potential for creatively integrating noninvasive ornamental sedges (see sidebar) into a shady or partly shady perennial border is also great. On a practical level, sedges can be invaluable in a perennial garden because they hide unsightly bulb foliage. On an aesthetic level, ornamental sedges will, when artfully placed as an accent or in small groups, markedly intensify the colors, shapes and textures of the surrounding plants. The unusual leatherleaf sedge *(Carex buchananii)* and orange-colored sedge *(C. flagelifera),* for example, can be extraordinary when planted alongside blue, yellow or variegated hostas. These bronze-colored sedges are also striking when underplanted with yellow- or blue-flowering perennials like solidaster, golden groundsel, corydalis or plumbago.

Because their foliage color is so similar, leather leaf sedge and orange-colored sedge are often confused. They can be reliably distinguished by their form, however, as the leatherleaf grows erect and upright while the orange-colored grows as an arching mound. Though the unusual color of these two sedges does require some getting used to (be prepared to explain that they are not, in fact, dead), once you have seen them

continued

Carex phyllocephala 'Sparkler,' hardy only to Zone 7, could perhaps overwinter if given a highly protected site. This plant requires a moist soil and will grow 2-3 ft. tall. Lovely as a houseplant, its foliage is also striking in arrangements.

photo by Harriet Cramer

Golden variegated sedge *(Carex elata* 'Bowles Golden') has the most vibrant yellow foliage of all the ornamental sedges. It does best is moist soil, ideally with its roots in shade and its foliage in sun.

used effectively you will be converted.

Ornamental sedges, not only attractive when used in a perennial border, along a path, in a rock garden, as a groundcover under trees or in a woodland setting, are remarkably carefree as well. While container-grown plants can in theory be planted any time of year, it is most prudent to plant in spring. Sedges should be planted as far apart as they will ultimately grow tall, though if used as a groundcover a shorter planting distance is certainly acceptable. It should not be necessary to fertilize these sedges; if they look sickly it's likely they have not been properly sited. Cut ornamental sedges back if and when they are no longer attractive; be sure to do that before the new growth begins in early spring.

Where to find sedges

Despite the vast garden potential of ornamental sedges, do not expect to find them in any local retail nurseries. These plants must still be ordered, for the most part, from mail-order catalogs (see Sources). Area arboretums may also sometimes have a selection of sedges at their annual plant sales.

There are, moreover, only limited opportunities to study how experienced gardeners have used these plants in gardens open to the public. Some ornamental sedges can be seen at Longwood Gardens (Kennett Square, Pa.), and a few species have been integrated into the eclectic and always interesting landscape of Wave Hill (Bronx, N.Y.). Surely additional examples of how effective ornamental sedges can be will be forthcoming as these plants become more widely known and available. In the meantime, perhaps the home gardener will take the lead and begin to experiment boldly with these engaging and versatile plants.

Ornamental Sedges Discussed In This Article

(N=Non-invasive / I=Can be invasive)

Botanical Names	Common Names
Carex buchananii	Leather leaf sedge (N)
C. conica marginata	Miniature variegated sedge (N)
C. elata 'Bowles Golden'	Golden variegated sedge (N)
C. flagelifera	Orange-colored sedge (N)
C. grayi	Gray's sedge (N)
C. hachijoensis 'Evergold'	Variegated Japanese sedge (N)
C. lurida	Lurid sedge (N)
C. morrowii 'Goldband'	Golden variegated Japanese sedge (N)
C. morrowii temnolepsis	N.A.
C. morrowii variegata	Silver variegated Japanese sedge (N)
C. muskingumensis	Palm sedge (I)
C. nigra	Black blooming sedge (I)
C. pendula	Drooping sedge (I)
C. phyllocephala 'Sparkler'	N.A.
C. plantaginea	Plaintain-leaved sedge (I)
C. stricta	Tussock sedge (N)

Sources

Kurt Bluemel, Inc.
2740 Greene Lane
Baldwin, MD 21013-9525
(410) 557-7229
Catalog $2

Holbrook Farm and Nursery
Route 2, Box 223B
Fletcher, NC 28732
(704) 891-7790

Limerock Ornamental Grasses, Inc.
RD 1, Box 111-C
Port Matilda, PA 16870
(814) 692-2272

Montrose Nursery
P.O. 957
Hillsborough, NC 27278
(919) 732-7787

Woodlanders, Inc.
1128 Colleton Avenue
Aiken, SC 29801
(803) 648-7522

Books

**Grasses, An Identification Guide,* Lauren Brown, Houghton Mifflin Co., New York, NY, 1979.

Ornamental Grasses, Brooklyn Botanic Garden, Brooklyn Botanic Garden, Inc., Brooklyn, NY, 1989.

**Ornamental Grasses,* Roger Grounds, Van Nostrand Reinhold, New York, NY, 1981.

**Ornamental Grasses; The Amber Wave,* Carole Ottesen, McGraw Hill, New York, NY, 1989.

**Ornamental Grasses and Grass-like Plants,* A.J. Oakes, Von Nostrand Reinhold, New York, NY, 1990.

*These books are available in the PHS Library.

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Harriet Cramer writes and lectures about varied gardening subjects. She has also designed, along with five other volunteers, a large experimental garden using unusual annuals, perennials and ornamental grasses at the Morris Arboretum of the University of Pennsylvania.

Longwood Gardens Trains Professional Gardeners

by Pam Carter

Dave Foreman (right), Student Program coordinator, gets a progress report from Marty White on her student garden project. Students are required to grow eight different types of vegetables, including root, vine, leaf and solanaceus crops, corn, brassicas, and legumes.

photo courtesy of Longwood Gardens

A free two-year course for students who live at Longwood Gardens while they learn the theory and practice of gardening.

Bob Hayes, a floor reporter who recorded sales transactions at the New York Stock Exchange, found gardening to be an antidote for the daily pressures at the Exchange. "In my spare time, I volunteered with a community garden group, planted a garden in my backyard in Brooklyn, put pots on my steps, grew things wherever I could. At some point, I realized horticulture was the career for me."

Through his volunteer activities, Hayes learned about the Professional Gardener Training at Longwood Gardens. He applied in the summer of '91 and was selected.

The two year, 42-course program is offered tuition-free to 14 aspiring horticulturists every other year. While enrolled, students receive a stipend to defray living expenses, and live rent-free at the former estate of industrialist Pierre S. du Pont, spending 24 hours a day surrounded by world-class plants and expert plantspeople. In an era of astronomical tuitions, it would be hard to duplicate the program at any price.

The program is styled after the apprenticeship programs common to the great gardens of Europe, where students learn from a master gardener. The Longwood experience is similar to that found at those British horticultural meccas, the Royal Botanic Gardens, Kew, and the Royal Horticultural Society's Garden, Wisley.

During residency at the Gardens, students work in each of eight major areas for periods of one month or more. Under the watchful eye of the staff, they perform daily horticultural tasks and master basic skills: greenhouse crop production, plant propagation, lawn maintenance, arboriculture, pruning, equipment operation, and interaction with the visiting public. Depending on the season, two to four days per week are scheduled for on-the-job training. They also rotate as supervisor of the student crew, learning how to manage people as well as plants.

continued

In addition, trainees devote one to three days per week to classroom instruction and special projects. The 42 courses are taught by Longwood staff and area horticulturists. The students study botany, floriculture, plant identification, landscape design and construction, vegetable and fruit culture, and plant pest management. Longwood's 20,000-volume library provides extensive resource material.

Field trips give students a behind-the-scenes look at nurseries, garden centers, and greenhouses as well as public display gardens and private estates.

Dave Foresman, coordinator of Longwood's program, explains the focus. "Our students are trained in all facets of gardening, while they are shown the spectrum of skills necessary in the garden industry. They are becoming professional gardeners of the highest calibre. Programs like this are scarce, and trained horticulturists are in demand. More than 100 Longwood students have made gardening their career."

Where they go from LGPGT

After Linda Langelo completed the program in 1986, she managed the gardens at a 300-acre estate in Chester County, overseeing the maintenance of woodland and meadow trails, caring for an old English perennial garden, and helping to develop a nature walkway and pond area.

Subsequently, she was recruited by another Longwood graduate, Les Lutz, to serve as assistant director of horticulture at Salisbury Community College in Salisbury, Maryland. Responsible for interiorscapes in five campus buildings, she runs a greenhouse that produces 85% of the flowers used at the college each year; she delegates work to 19 student workers.

Mike Owen, now responsible for the 6,500 orchids in Longwood's collection, joined the training program after graduating from nearby Unionville High School in 1975. It was a logical continuation of the part-time job he had growing holiday flowers for a commercial nursery.

Midway into the work-intensive student program, feeling pressured by the academic coursework, tired of the responsibility of his own gardens and the endless weeding and maintenance in Longwood's public areas, Owen considered giving up; he didn't. Now, in addition to growing the orchids at Longwood Gardens, he helps select and teach the students, which he finds immensely satisfying.

At a recent reunion of graduates, landscaper Mike Morgan told how the Longwood program helped him to focus on what he really wanted to do. "I'd been working as a landscape contractor on desolate timbered-out pine sites, replanting the area where the trees had been cut, the rubble burned, and debris bulldozed. On that blazing hot day I found a little oasis of shade trees that had not been touched. In the middle of that barren waste stood a miraculous patch of green where native trillium plants were blooming everywhere. I decided then that I wanted to try to save the trillium and work with native plants."

The courses continue straight through the two years, without summer breaks. You're pushed to your limit, but you know you can do it. With all of Longwood's horticulturists, there's a great suport system in place.

Morgan admits the training wasn't always easy. "I wasn't academically inclined; I learned best by doing things by hand. But I wanted to learn the right way to do things, and I hadn't found anyone who could teach that before. The courses continue straight through the two years, without summer breaks. You're pushed to your limit, but you know you can do it. With all of Longwood's horticulturists, there's a great support system in place."

After graduation in 1988, Morgan resumed his landscape and tree service business with clients in Pennsylvania, Maryland, and Delaware. He reports that 1992 was his best business year so far. He plans to send his two employees to Longwood's continuing education courses this spring.

In all, 125 students have completed the program, which began in 1970. Ninety percent are employed in horticulture, and of these half are in commercial business and the other half work for public gardens and arboretums. Numerous graduates are self-employed in landscaping, nursery, or floral businesses. Several individuals manage the grounds of private estates and some have jobs in private gardens. A wide diversity of employment is available to these trained professional gardeners, and an active alumni association keeps the graduates in touch with job opportunities through a horticultural network.

Bill Thomas, Longwood's Education manager, says employment prospects in this field are very good. "All our recent graduates have been hired. Their flexibility, talent, and willingness to work hard are qualities that enhance hiring prospects.

"Our recent graduates are being offered salaries ranging between $22,000 and $25,000. Most have been able to find jobs in the geographic area they desire. Even in our current economic climate, there seem to be many positions available in the Delaware Valley."

A recent survey taken by the American Association of Botanical Gardens and Arboreta reveals that 109 institutions employ gardeners, 65 employ foremen, and 63 employ horticulture supervisors.

Bob Zahra, general manager of Florapersonnel, Inc., the largest horticultural search firm based in Florida, says his company has seen some changes in trends. "After a boom in the '80s, the demand for estate gardening positions flattened out in the '90s. However, there's a growing demand for people to work in the landscape and nursery business, with activity steadily increasing at resorts, big complexes, and corporate headquarters in the U.S. and abroad."

Longwood's director, Fred Roberts, says the program's goal is "to produce professional gardeners who will take an idea and develop it into an art form. The graduates are the link between academia and the real world. They understand research and apply it in a practical way. These gardeners are the catalysts for blending science and art."

Students have their own showcase at Longwood in garden spaces where they demonstrate their knowledge of plants, design, and growing techniques. Adjacent to their living quarters, the students' flower and vegetable gardens provide an on-the-spot opportunity to refine techniques and to grow food and flowers for their own use.

Bob Hayes, the former Stock Exchange worker, finds the most satisfaction working on his own garden. While it represents only a portion of his grade, it's a challenge to create garden color or textural interest between the months of March and November. "I'm always experimenting since sometimes the design doesn't look the way I had imagined it would." When his vegetables reach their peak, they go on the table for his dinner, while he delivers the weekly surplus to a local day care center.

Hayes enthusiastically explains his career change from the Stock Exchange to Longwood student. "I've been planning for this for a long time; it's something I really wanted to do. Where else can you get training from talented horticulturists, working side by side with seasoned gardeners at one of the world's most important gardens? What's even better: it's a free once-in-a-lifetime opportunity."

Pam Carter, publicity and functions coordinator at Longwood Gardens, often visits the student gardens for a source of inspiration and advice.

photos courtesy of Longwood Gardens

Top: Student Bob Hayes repairs a babys' tears border around the lawn of Longwood's main conservatory. **Bottom**: Students study plants under microscopes in the botany course that curator Rick Darke teaches. One of 42 required courses, the botany course stresses structure, function, and growth of plants, taxonomy of ornamental plant families and genetics.

This old 70 ft. high London plane tree is a favorite place for students to learn aboriculture. The students learn safety procedures, and how to climb, prune and cut limbs.

How to Apply for a Training Spot in The Professional Gardener Training Program at Longwood Gardens

Applicants must have a high school diploma, have been in the upper half of their graduating class, and have one year of horticultural experience. A background of English, math, biology, and chemistry courses is helpful. The prerequisite practical experience could include work at a garden center, nursery, greenhouse, or with landscape and garden maintenance. Previous horticulture experience prepares individuals to take complete advantage of the opportunities within the program. **Individuals with a horticultural degree are not encouraged to apply.**

Applications are accepted from June 1 to September 30 of odd-numbered years and Open House programs for prospective applicants are held during this time period. The next class will begin March 1994.

References, a statement of purpose, a grade transcript, and a nominal fee are required in addition to a formal application. Interviews are held in November.

Those persons wishing to apply may obtain an application after June 1 of odd-numbered years. For more information, contact:

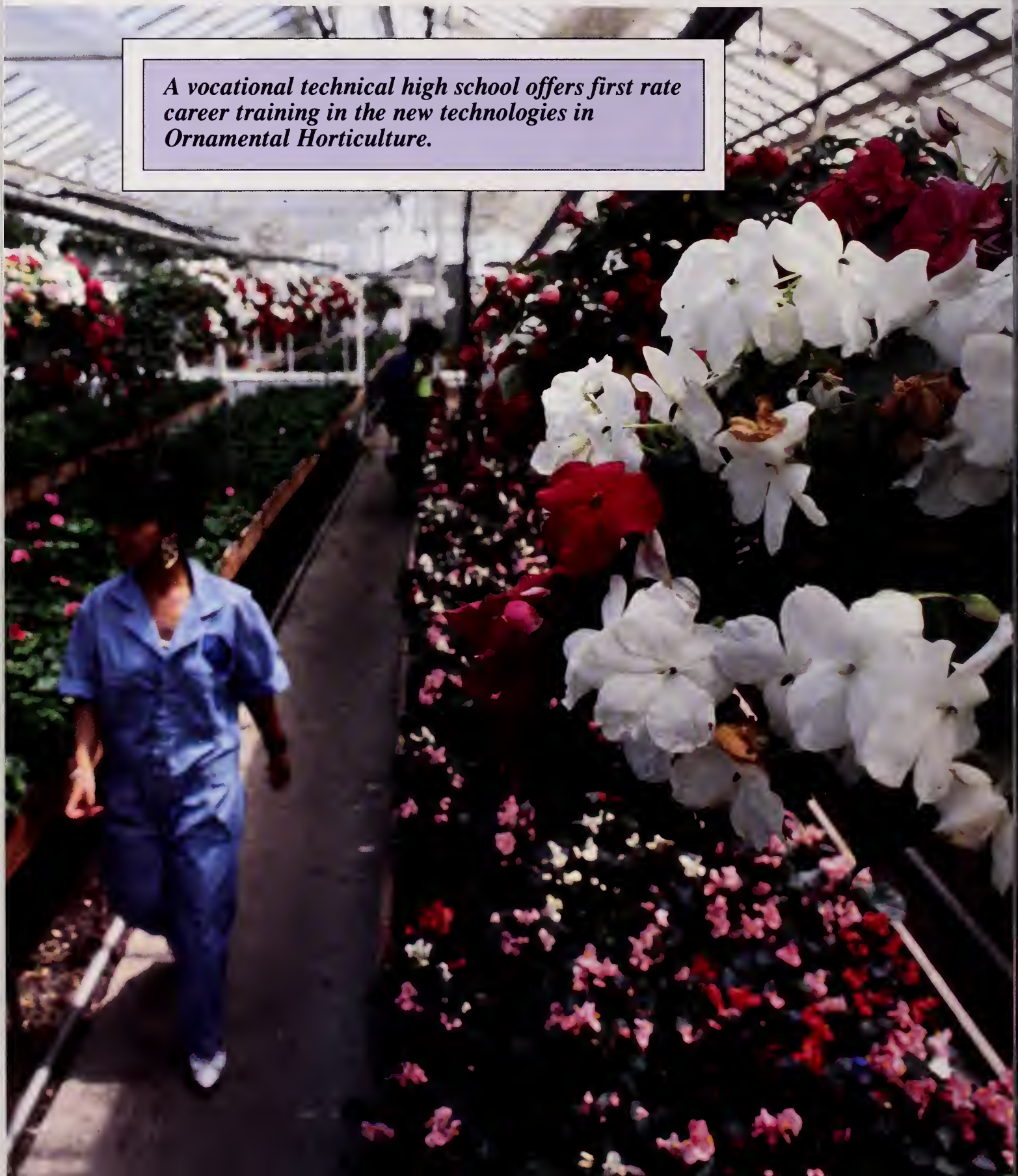
Coordinator
Professional Gardener Training Program
Longwood Gardens, Inc.
P.O. Box 501
Kennett Square, PA 19348
Telephone: (215) 388-6741, ext. 501

●

High School Students Learn

by Ed Lindemann

A vocational technical high school offers first rate career training in the new technologies in Ornamental Horticulture.



by Doing

By the time students graduate from Camden County Vocational Technical School's Ornamental Horticulture Program in Pennsauken, New Jersey, they will have operated a florist shop, a landscape nursery, or a commercial greenhouse. And they will have designed and built an exhibit at the 1993 Philadelphia Flower Show.

These students, who range in age from 13 to 18 (grades 9 through 12), learn in the classroom how to manage a greenhouse, control inventory, estimate costs and make purchases along with advanced computer skills in design and record keeping. Hands-on experience includes producing greenhouse crops of poinsettias, vegetables, annuals, perennials and hanging baskets.

The students are responsible for running the greenhouse in the black; welcome to the world of the bottom line. The floral students create arrangements for weddings, banquets and holiday displays.

Landscape students not only learn plant varieties, they're out in the field digging, planting and maintaining those varieties. They have a crack at the latest computer drafting and design programs. They design and construct the gardens in an exhibition area on the campus. They change many of these display gardens throughout the year, while other gardens are left to mature, giving students the chance to work with established plants and gardens.

In the retail shop, students initially watch how faculty members handle customers and make decisions; in the second half of the program the students themselves decide which materials to order, and how much, as well as determining retail prices based on wholesale cost. By senior year, each student runs a "mock store" on paper for six weeks. They conceive of the business from start to finish. They develop the shop layout; after they review the market costs, they make up orders for materials, overhead and rent, and they prepare a marketing plan. The students must make a profit, or they don't pass.

Teachers Brian Burns and Shawn McKay have created an environment at the high school that supports mutual respect spiced with a sense of humor. And their special brand of caring goes beyond the classroom. Shawn McKay tells about one of his current senior class students: a young woman from a single parent home whose mother had given up trying to control her and her sister's behavior and attitudes. Through guidance from the instructors and fellow students, the young woman has become a straight A student and plans to enter a four-year college program after graduation. Proud of her daughter's achievements, the mother is grateful for the interest the instructors extend to the students.

Philadelphia Flower Show exhibitors

I first became aware of the Ornamental Horticulture program at CCVTS when Shawn McKay asked about the possibility of the school exhibiting in the Philadelphia Flower Show. After a visit to the campus, I was sold. The 1993 Show is their third. The first year (1991) the students designed and built an exhibit that showed how people's actions affect the environment: we can choose pollution and its effects or opt for clear skies and landscapes (From Silent Spring to Everlasting Spring). In 1992 the students showed visitors how to turn their garden into an inviting wildlife habitat. The 1993 exhibit showed how horticultural education has progressed from the old classroom style to a state-of-the-art greenhouse teaching facility with all the modern technologies.

Not only has CCVTS won recognition at the Flower Show; recently at the South Jersey floral competition all 26 of their entries placed, taking 16 blue ribbons. They placed third among all of the schools entered in the New Jersey State Horticulture Expo. Shawn McKay says his students "won't accept second best. Before any competition they're told that losing is O.K. But if you want to win, and don't give it your best shot, win or lose, you've wasted it." In a recent competition, his students won 21 first places out of a possible 22.

McKay says the fact that the students aren't just working for grades is important. "Our shop is unique because students receive a direct response from the world

continued

Far left: A few days before the school's annual plant sale the production greenhouses burst with the students' carefully grown plants. Yolanda Nunez keeps a careful check on the temperature, ventilation and watering of the soon-to-be-sold plants. Students are aware that their hard work will bring both personal satisfaction and financial gain. **Top**: Classroom sessions in the floral design curriculum often resemble the back workroom of any florist shop. Shown here from left to right, Holly Orsini, Yolanda Nunez and Maria Ortez busily prep freshly delivered cut flowers from the wholesale house. These properly conditioned flowers will then be created into various designs by other students. **Bottom**: Student Nesmaida Reyes carefully puts the finishing touches on a table arrangement to be used at a banquet. The student-operated floral shop serves the needs of the school, as well as wedding and funeral work and special events for local residents and civic organizations. photos by John C. Gouker

photos by John Gouker

outside of school." The response comes from their clients at the Pennsauken campus and from visitors to the Flower Show.

The students learn much more than how to draw a plan, propagate a plant or create a floral design. They learn to achieve by using their talents, working hard and measuring their productivity.

After graduation

Graduates are skilled for entry level positions in general landscaping and landscape maintenance, interior plantscaping, turf management, nursery production and garden center and floral shop management. Some students go on to study horticulture at college level. Approximately one-third of the students go on to successful careers in landscaping or floral design.

Students receive job placement assistance and career counseling free of charge as often as they need it. For example, one student who graduated in 1986 went to work for a local florist shop chain and now manages one of the stores; a couple who attended evening sessions have been operating their own garden center in Laurel Springs, New Jersey, for the past three years.

In a field where we often achieve or measure success by whatever tiny advantage we can create, these students definitely go into the world with skills many of their older, more experienced colleagues will not have. They know what today's computers can do — e.g. give an instant visual landscape design with a few keystrokes, estimate a job or control inventory — giving many young people career opportunities they might never have dreamed of just a few years ago.

Camden County
Vocational Technical School
6008 Browning Road
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Phone: (609) 663-1040, ext. 220
Shawn McKay or Brian Burns

Full-time four-year Ornamental Horticulture program for grades 9 through 12.

A 10-month post-secondary evening program for older students. The course is college-accredited on the county level through Camden County Community College. Students who wish to further their horticultural education at other colleges can return to CCVTS after graduation to earn any additional credits needed for admission to these schools.

Tuition: Free to Camden County residents; financial assistance available to nonresidents.

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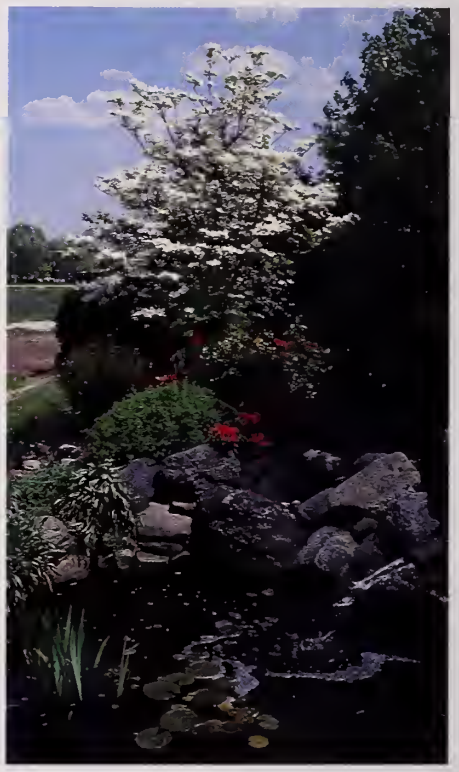
Ed Lindemann, senior horticulturist at the Pennsylvania Horticultural Society, designs the Philadelphia Flower Show.



Top: Teacher Shawn McKay and student Ed Schenck check out a newly opened water lily in the nursery tank where aquatic plants are grown for use in the display gardens and for sale. **Bottom**: This outdoor display garden has been left for several seasons to act as a teaching aid for students to study plants throughout the seasons.

Labels: How To Choose the Best for Your Garden

I was pleased to see Garden Fonts plant markers mentioned in your article on "Labels: How To Choose the Best for Your Garden" by Betty Barr Mackey in the January, 1993 *Green Scene*. There is some information in the article, however, which I feel needs some clarification. Ms. Mackey distinguishes between three types of metal labels: the "ankle-attacking rose markers," the "zinc . . . upright rectangle" used by Dr. Sweetman, and those labels made by "some makers . . . (who) carefully . . . fold edges around the legs of zinc rose markers." Actually, all three of these label types are available from the Paw Paw Everlast Label Company*, which in the article is mentioned only in connection with Dr. Sweetman's favorite label design.

At Garden Fonts, we use two of the Paw Paw markers, the horizontal rectangular type, with a zinc nameplate measuring 1¼" x 3½"; and the "folded edge" type, with a ⅞" x 2½" nameplate. These are sturdy, serviceable markers. We sell them only as a "package": with our custom printed labels attached.

We also offer our custom printed labels without the metal markers. The labels are coated with a peel-and-stick weatherproof adhesive, ready to be attached to whatever marker is used by the gardener. Our products, we believe, offer convenience and elegant, professional quality labelling at relatively low cost. We welcome inquiries from *Green Scene* readers.

Bruce Cormier
Garden Fonts
RFD 1, Box 54
Barnstead, NH 03218

* Paw Paw Everlast Label Company
P.O. Box 93-WR
Paw Paw, MI 49079-0093

Squirrels at the Feeder

The reason for this letter is to suggest that when it comes to squirrel-proof bird feeders you not overlook those conceived and made by, probably history's most creative bird feeder inventor, the late Peter Kilham. His Droll Yankees, Inc. is still going strong, and their catalog and products can be had at:

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Fax: (401) 647-7620.

Robert W. Merriam
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Camden County Vocational Tech instructor Brian Burns (blue shirt) shows high school student Ed Schenck how to safely operate a front-end loader.

photo by John Gouker

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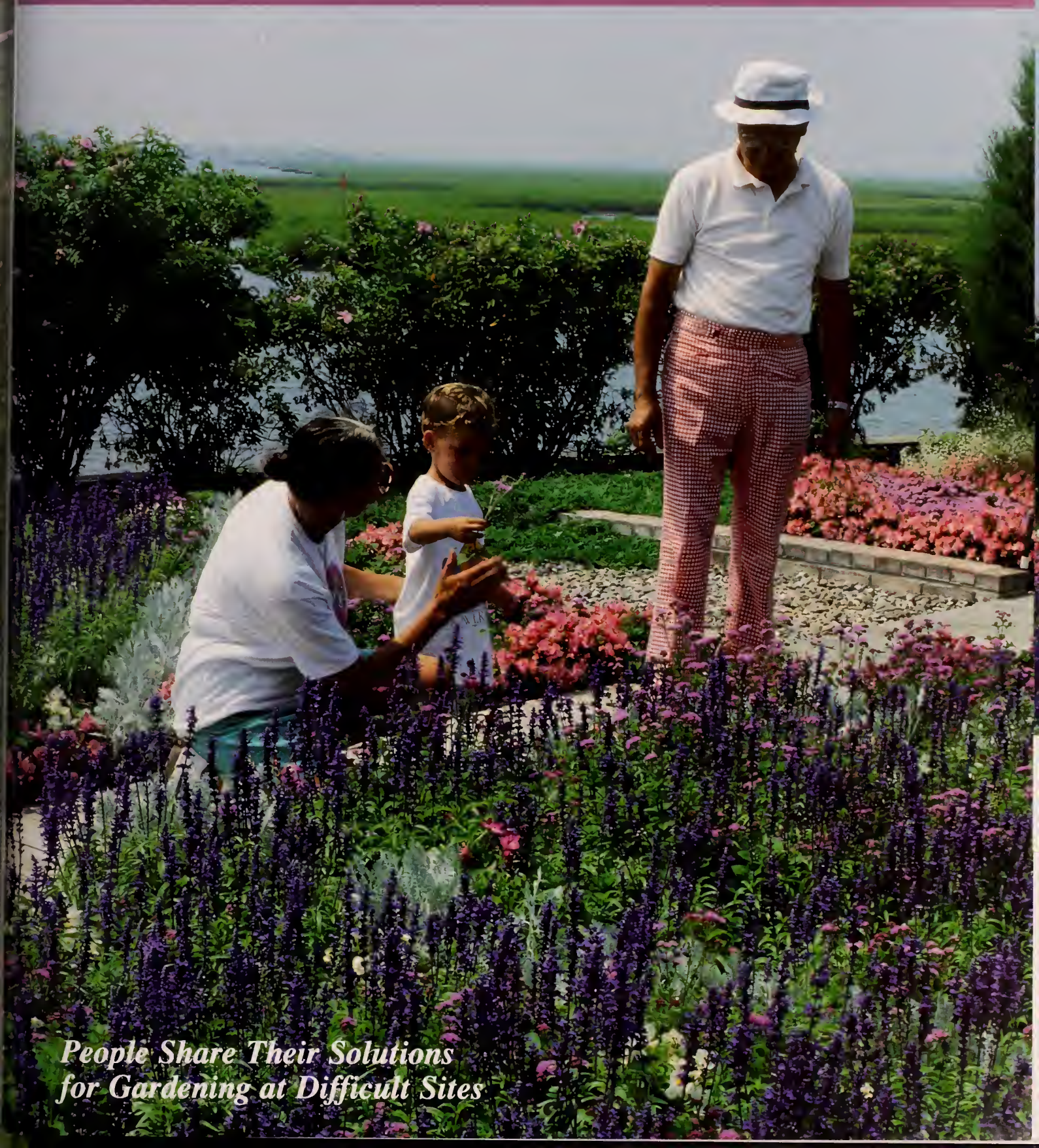
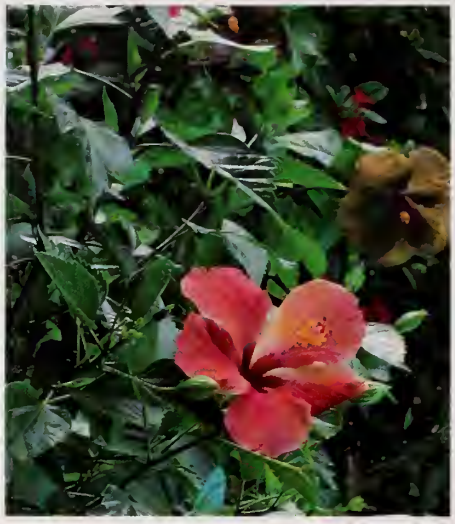


People Share Their Solutions for Gardening at Difficult Sites



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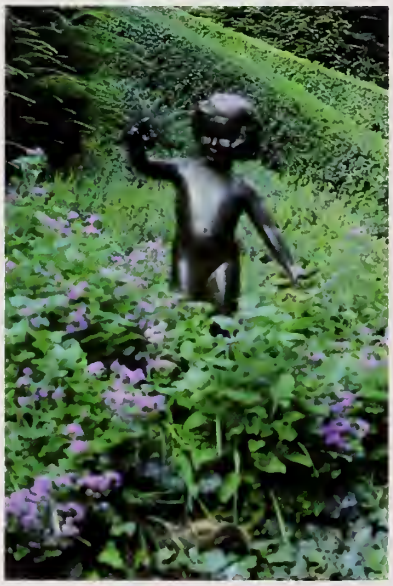

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Front cover: Sylvia and Paul Lin, along with grandson Dylan, enjoy the garden at their bayfront summer home in Avalon. See story on page 3 for pros and cons of gardening at the Jersey Shore.

Front cover: photo by Barbara Bruno

in this issue

Volume 21, Number 6 July/August 1993

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A Tough Proposition: Gardening at the Jersey Shore

by Barbara Bruno

What compels people to garden in an unreasonable setting?

The Lins' parterre of annual flowers benefits from the rose hedges' protection, which in turn enjoys constant air circulation from the bay.

photo by Barbara Bruno

If there was one thing that impressed me about the gardeners I met at the Jersey Shore, it was their undiminished zest for gardening on what can fairly be called one of the most difficult sites in the Delaware Valley. These garden nurturers surely have to be among the world's most determined optimists. Who else would commit their seedlings to soil hardly distinguishable from dune sand, as water-retentive as a sieve? Many locations are subjected to salt spray and a steady breeze that escalates to wind shear with any weather front. And how many other flower lovers would view a storm's tidal surge and sand drift as just "another setback"?

A pragmatic creativity unites the keepers of shore gardens. It struck me that when these gardeners choose regional wild plants to meet their toughest needs, they might be managing, at once, to satisfy both an ecological consciousness and their passion for gardening. And then there were the old-time perennials that I saw again and again, and each time, the gardener, recognizing their beauty and dependability, had used them with originality and invention.

WATERFRONT GARDENS

Sylvia Lin

Sylvia Lin had roses in mind — roses in Nantucket-like profusion — and so roses in plenty were included in the design of her Avalon bayside garden. A rugosa rose hedge edging the raised terrace provides a first line of wind and weather defense as well as summer-long bloom. No strangers to salt spray, these fragrant, abundantly blooming plants prosper despite their exposure, as do the pergola's climbing roses close by. Hybrid tea roses in beds flanking the house haven't taken so readily to their surroundings, even with the encouragement of an automated watering system and the best care.

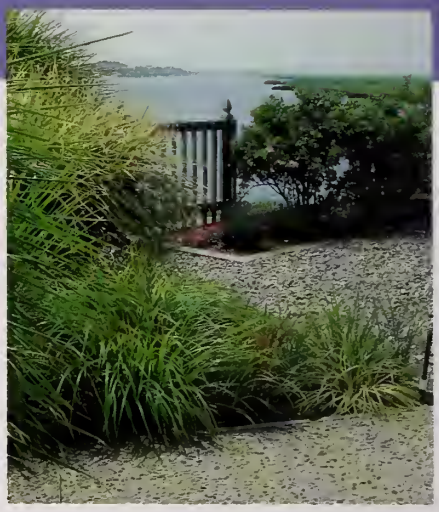
The very charms that drew Paul and Sylvia Lin to this site, the grand breadth of sky, the marshscape threaded with silver channels, have increased the gardening challenges. Wind, without restraint here, is constant and often salt-laced.

A savvy choice of protective shrubs and trees was essential for the garden's de-

continued

signer, Ed Lindemann. Only a buffer of such dependables as black pine, red cedar, juniper, autumn olive and bayberry would allow a traditional perennial border to exist around the entrance drive. The Lins' appreciation of these plants' simple beauty, endurance, and health has grown in the five years they've been developing the garden. Now, as they think about culling some less successful favorites, like astilbe and lilacs, they are considering as replacements other native shrubs and perennials.

Their taste has also grown for garden grasses such as the *Miscanthus* varieties that they find prosper even at bayside, and there have been other rewards. A fig on the south wall, responding to reflected light, is a tree-sized specimen now. Terrace *Agapanthus* have successfully acclimatized, and a fern garden seems content in a north corner. Another success, a patterned parterre garden of pink and blue annuals, profits from the rose hedge's wind shadow. Willing bloomers like ageratum, blue sage, and begonias respond with added brilliance to the seashore's double dose of sunshine.



photos by Barbara Bruno

The young rugosa rose hedge flowers lightly after its grand June show.

Joan Narrigan

"No gardening" was emphatically the plan for the beachfront getaway. But watching the sparse and hard-pressed dune growth, Joan Narrigan couldn't help assisting. Bayberry and autumn olive were her first contributions. Then, the wildflower seeds scattered on the wind. Season by season, Joan aided and abetted the seaside goldenrods and other dune flowers that appeared. One by one, she introduced more dry country plants that seemed naturals for the site, like the hardy cactus, *Opuntia humifusa,* and rugosa roses.

Thirteen years later, Narrigan's shrubs seed into the municipal dunes beyond, and those dunes reciprocate by returning dry country wildflowers like camphorweed *(Heterotheca subaxillaris),* a free-blooming golden daisy. The wild and the tame mingle along the driveway. Meadow and border daisies, chicory, abundant sedums to encourage the monarch butterflies, have even edged beyond the drive, to the beach access path. And now a small, traditional, perennial border gamely blooms in the most sheltered corner of this wind-whipped site. Lavender does especially well here in the dry, light-laden atmosphere. The maturing shrubby windbreak has made this garden of coddled annuals and cultivated perennials possible, but wind can still be awesome along this stretch of Stone Harbor beach. Narrigan has witnessed a northeastern gale strip the leaves from an exposed vitex in a morning. Still, she sounds not altogether displeased when she explains that the property still offers locations tough enough to challenge a gardener's ingenuity.

Narrigan's Stone Harbor garden spills over to the beach access path and covers her dunes as well as the municipal dunes beyond.

WATERFRONT GARDENS

Joan Brenner

Joan Brenner gardens, literally, on the beach, where spring chores include shoveling as much as 18 inches of winter-drifted sand from the flower beds, and salt mists every morning "make it hard to grow anything." Still, behind the house a tight little garden thrives because Brenner has, in 20 years, perfected the art of using the ruggedly able to protect the merely hardy. Black pines and junipers act as buffers against the hostile weather forces, allowing a lush daylily and wildflower garden to prosper just feet from the surf. Quite an accomplishment; yet, it is the leathery blades of green at seafront that Joan and her husband, Ralph, are rightly proudest of.

The Brenners' home, along the greedy stretch of water called Townsend's Inlet, stands a foot or two above the highest tides. It faces surf where four Avalon streets once ran. As a hedge against nature's capriciousness, three years into their ownership Ralph built a dune snug against the front deck. Ten years later, after the dune barely survived a severe storm, the Brenners responded with a more ambitious plan.

Twelve-foot pilings were pounded seven feet into the ground. Many truckloads of gravel and clay were wheelbarrowed to the beachfront to create a mound cosmetically topped with beach sand. As the Brenners plugged in hundreds of rhizomes of American beach grass, they hoped for a season of clement weather for the plants to take hold. Not easy, inexpensive, or a sure bet, yet the Brenners still agree, "it was the most important thing we did." Now some neighbors are following suit.

Not one to ignore the glimmer of possibility, Joan has claimed the dune face as a potential garden. *Artemisia ludoviciana* leans prettily this summer across the bulkhead, deceptively growing through beach sand from the gravel soil below. and Ralph plans to give ornamental grasses a try here. A new rugosa rose and a long-shot vitex test their mettle this season at beachfront, planted in enriched soil pockets in the dune's wind shadow.

continued

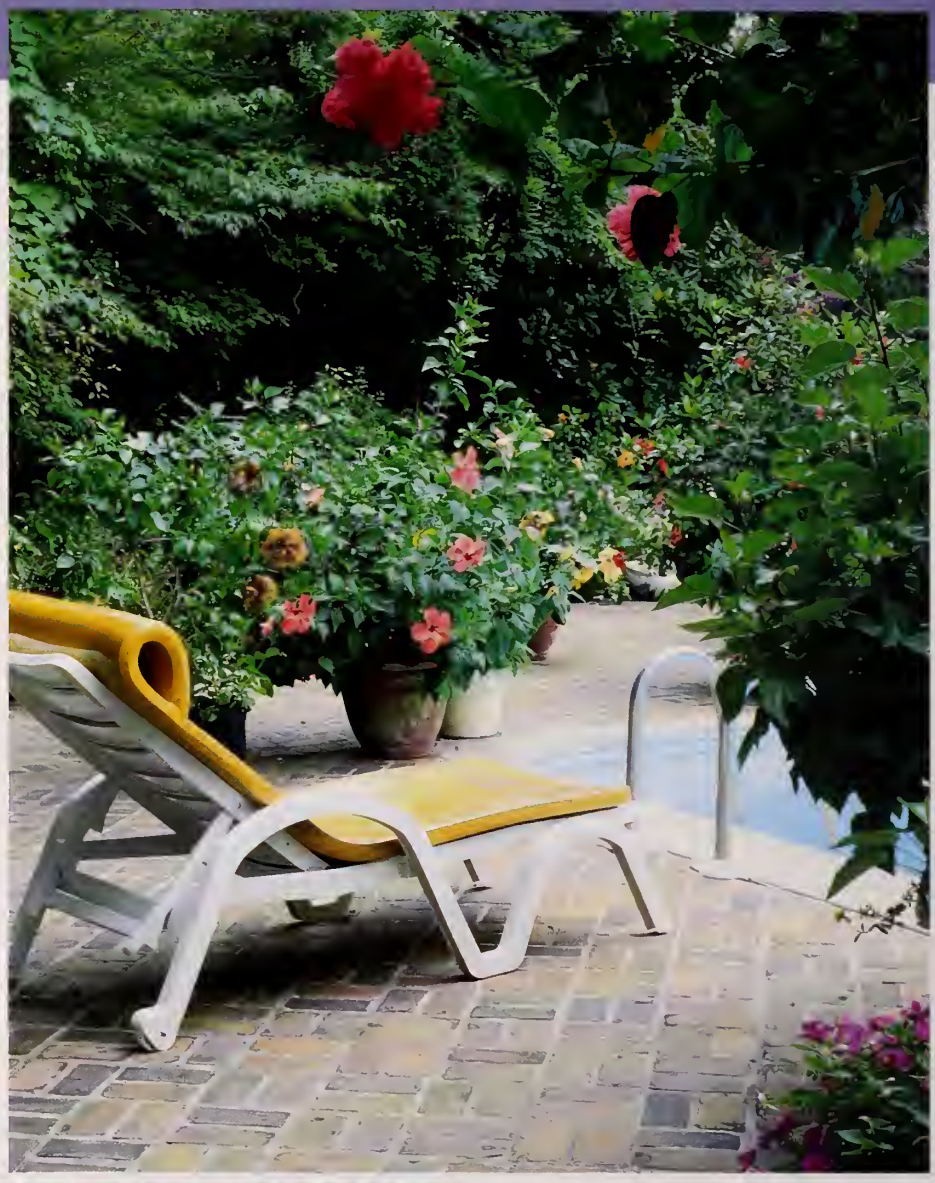
Top: The Brenners say their dune building at their Avalon home along Townsend's Inlet "is the most important thing we did." Selecting plants for this vulnerable site means picking "the ruggedly able to protect the merely hardy." **Bottom:** Colorful annuals take over after the main vitex and daylily show.

WATERFRONT GARDENS

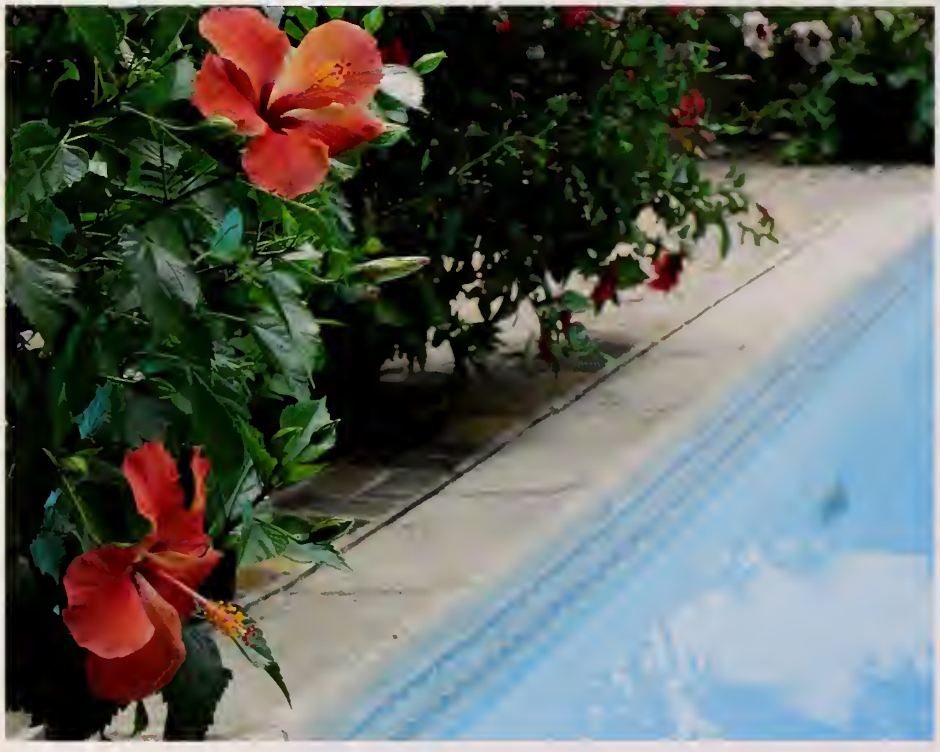
Fury Feracho

Charmed by the primeval beauty of the dune forest site of his new home, Fury Feracho preserved every possible tree. And so for the 25 years he's lived on the lower Delaware Bay, he has been spared the garden-wide wind buffeting that most shorefront owners experience. He solved the Jersey shore's other challenge, droughty soil, by what is called in football terms, a wide end run.

Under the canopy of time-twisted red cedars, gnarled hickories, oaks, and hollies, the visitor's first impression is of sylvan serenity. Following a series of shady, naturalistic pool gardens tiering down from the house, one arrives, quite unprepared, at a secluded swimming pool. The sensation is of stepping into a Gauguin painting: the blue pool ringed with potted exotics hung with huge flowers, astonishing in their tropical excess. A gathering of hibiscus flaunts their audacious forms and unthinkably gorgeous color mixes. This long-blooming container garden, although hardly low maintenance, is far more miserly with water and fertilizer than most other equally showy gardenscapes. Feracho, by using water itself as a gardening medium and by using the controlled environment of a potted garden, has bypassed entirely the knotty problem of sandy soil in the most important of his gardening areas.



photos by Barbara Bruno



Top: Here the summer-long bloomers have yet to reach their late September climax in the Fishing Creek, N.J., garden. The tropical excess of the potted plants around the secluded pool garden reminds one of a Gauguin painting. **Bottom**: Behind the comparatively delicate blooms of bright carmine *Hibiscus* 'President,' a 6-ft. shrub of an older variety opens its smaller, but plentiful blooms.

Books*

Selected by Janet Evans

Gardening on the Eastern Seashore, R. Marilyn Schmidt, Barnegat Light Press, N.J., 1983.

How to Hold Up a Bank; a New Way to Control Shore Erosion, Giorgina Reid, A.S. Barnes, N.Y., 1969.

Seaside Gardening; Plantings, Procedures, and Design Principles, Susan S.H. Littlefield, Simon and Schuster, N.Y., 1986.

*All of these books are available to members through the Pennsylvania Horticultural Society Library where Janet Evans is librarian.

TOWN GARDENS

Esta Cassway

Esta Cassway's description of her garden as "very full, very lush" seems conservative understatement when you scan her 55 variety plant list comprising "about 900 plants"; then you realize that her garden flanking two sides of a tiny church-meeting cottage is not even the square-foot equivalent of a smallish swimming pool. Esta relies on one of Cape May Point's enormous dunes a half block away to make this implausible abundance possible. And despite the dune sand underfoot, "everything does well here," she explains, "if you constantly enrich the soil and keep up with the watering." She also credits the mild maritime climate of New Jersey's southernmost tip where dahlias are perennial and lisianthus and roses bloom "until after Christmas."

For 11 years, Cassway has worked toward making her garden "a testament of what will grow at the seashore," and recently she turned her attention to "a new challenge: a fragrant, summer-blooming, disease-resistant rose garden." She calls the shrubby 'Carefree Beauty' "the best rose in the world" and also heaps praise on the climber 'Tiffany,' "ten feet in one year . . . and fragrant!"

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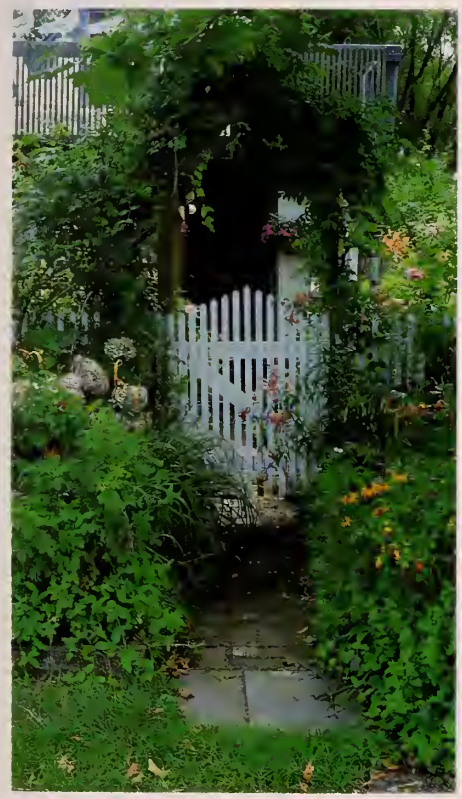


Above: A high-summer view through a Cape May Point garden gate. **At left**: The garden entrance invites a peek over the gate. The seemingly random color is carefully orchestrated by artist Cassway.

TOWN GARDENS

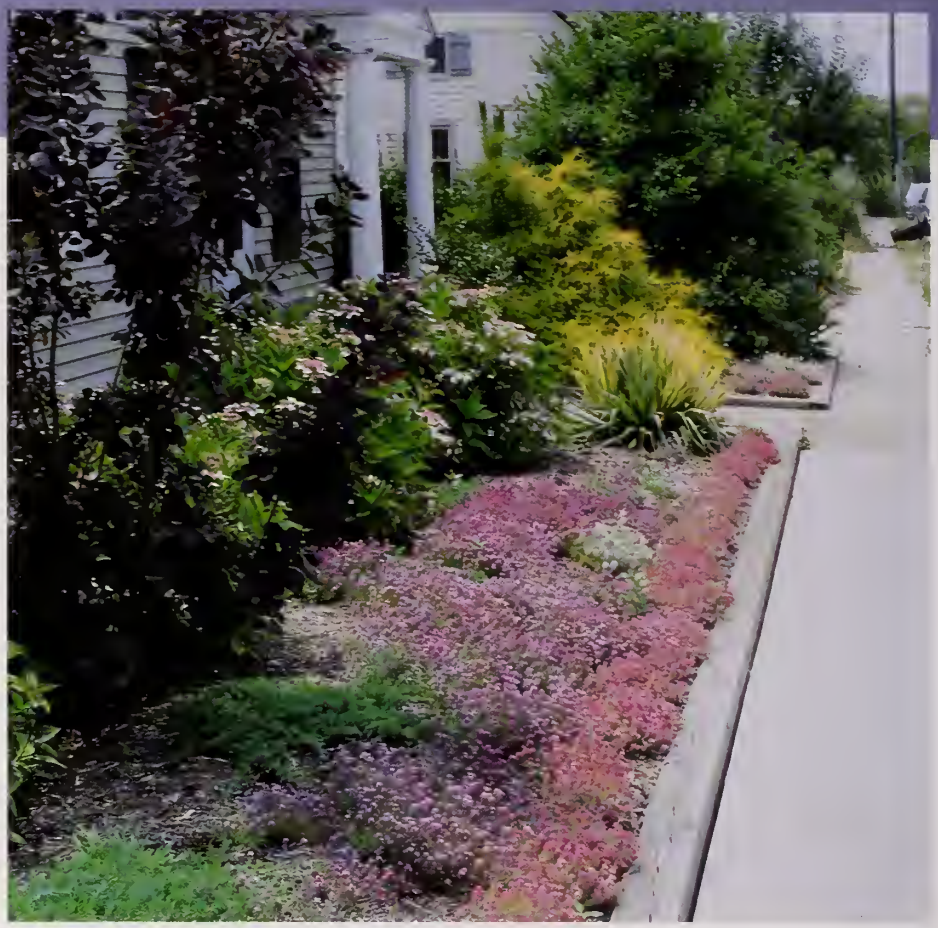
Elisabeth Parsons

A couple of blocks from Cassway, garden designer Elisabeth Parsons does battle with wind and dry soil. To attain the formal effect she desired took "a good deal of trial and error." In three years, Parsons has arrived at an attractive combination of plants that look good all season and that "can take care of themselves." Her door-yard garden contains some of the toughest evergreens: carpeting junipers; the substantial sheltering presence of a native holly; and the golden *Chamaecyparis* that came with the property and inspired the color scheme that a variegated *Yucca filamentosa* so nicely continues. She plans for a long season of bloom, starting with masses of tulips, replaced with that maritime native, sweet alyssum, as a self-sowing, perpetual flowering lawn substitute. Parsons uses buddleias and tough summer perennials for color elsewhere, and this year she's testing *Hippophae rhamnoides,* a silvery-leaved European seashore shrub, for its late-season orange berries.

Parsons treats drought tolerance as essential, but she relaxed this requirement for the lacecap hydrangeas, *H. macrophylla,* that neatly rounded out her color scheme. These plants need regular watering. She's still experimenting with methods and has found soaker hoses of little use, since water doesn't spread through sandy soil to nearby plants or even to encompass the root area of a single target shrub.

Elizabeth Flershem

When Elizabeth Flershem laid out her West Cape May garden 10 years ago, she "thought of having roses, but they'd have been a headache," given the soil and the damp nights. She opted instead for that old seashore dependable rose of sharon *(Hibiscus syriacus)* trained to rose standard form. She kept a small native cedar, the only bit of greenery the house came with, controlling its growth by training it to topiary form. She chose other drought tolerators like *Santolina,* clipped to corner ball shapes, and succulent ground covers that thrive in the sandy soil, yet remain in scale to the planting. Only an important fern clump and summer annuals require frequent watering.



photos by Barbara Bruno

Parsons's carefully organized garden belies its windswept site at Cape May Point by using tough but unusual plants like the golden variegated yucca.

The backbone of Flershem's tiny West Cape May garden is drought tolerant, evergreen shrubs and perennials.

Top: A lush, fencerow flower border, with tall clumps of *Miscanthus* varieties to break the formal fence line, literally stops traffic in Stone Harbor. **Bottom**: This border is planned to be colorful from late spring to frost.

TOWN GARDENS

A. V. Shoemaker

A. V. Shoemaker's sidewalk flower border in Stone Harbor stops traffic with its arresting blend of tender exotics, and "the old-fashioned and the natural" perennials and annuals. It was planned by Garden Greenhouse and Nursery of Wildwood to provide "a bit of nostalgia." On this wind-sheltered site with optimum water, fertilizer, and seashore light, annuals such as zinnias and marigolds, and the hardiest of old-fashioned perennial standbys like yarrow, *Echinacea,* and chrysanthemum combine with tussled grass clumps *(Miscanthus sinensis* 'Gracillimus' and *Pennisetum alopecuroides* 'Hameln') in an appealingly contemporary interpretation of old fashioned. The luxuriant grasses are repeated along the border, effectively loosening the horizontal fence line. The border's informality belies its careful planning for texture, color balance, and a long bloom season. Its attractiveness depends on contant deadheading and trimming.

continued

MARSHSIDE GARDENS

Pat Bowman

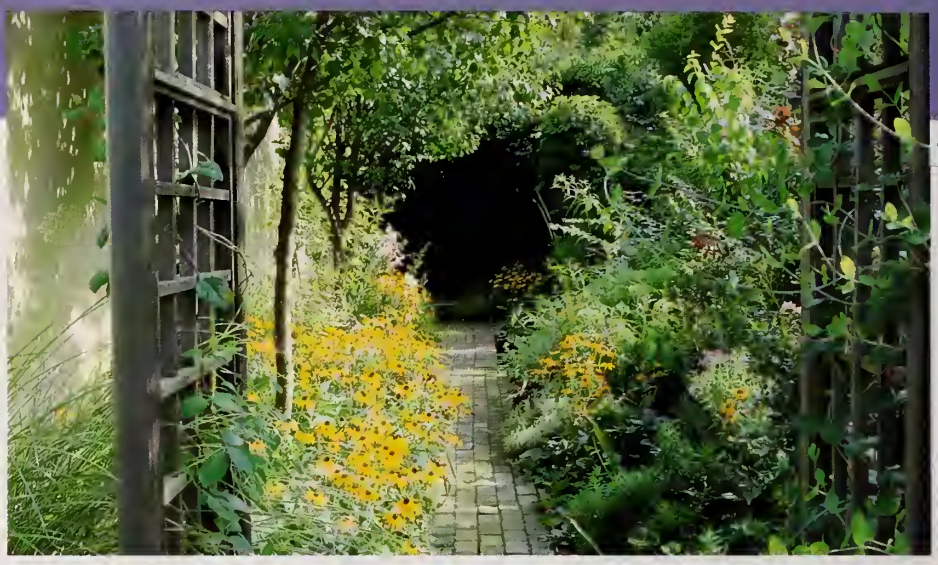
The first perennial Pat Bowman ever planted was loosestrife *(Lythrum).* She didn't consider the act's momentous implications; the plant was just a bloomy offering to her bees, a supplement to nature's spring and fall honey flow. But, "who can plant *Lythrum* and not become a gardener?" asks Bowman as she gestures toward that first border, now in high season with the nectaries of phlox, daisy, and the intense blaze of massed *Lythrum* quivering with bees.

In 1980, Pat and Jack Bowman built their house on a wildly overgrown three-acre knoll jutting into a West Cape May marsh. The planned to preserve this rich wildlife habitat, the dwarfed forest of oak, wild cherry, persimmon, holly, and red cedar overgorn with smilax, honeysuckle, and woodbine. They would open only a few paths to better enjoy the birds and mammals sequestered there, and to facilitate Pat's lifelong study of insects.

The addition of a tiny pool near the house was, in retrospect, a red letter day. This dimple of sweet water in a great brackish beyond attracted a splendid gathering of amphibians: snakes, lizards, and frogs, and dragonflies that flashed iridescently past the back door. Such wonder from half-a-bath's worth of water set Pat thinking of a proper pond. The raw material lay within tantalizing view: an imperfect haven, half marsh, subject to drought or tidal inundation that destroyed any tenuously established fresh water life. After three years of planning, the failed pond was shaped and deepened toward a stable fresh water ecosystem.

Sanctuary became garden with the landscaping of the new pond's raw edges. Bowman's plant palette expanded, but always in keeping with site suitability and wildlife attraction. Now, a butterfly garden features sedums, buddleia, milkweed, ironweed, and joe-pye weed, and birdfood plantings of bayberry, autumn olive and sunflowers for the Cape's famous fall migratory flocks.

Bowman likes the idea of the garden being as self-sustaining as possible. The near-wild and the tough garden species she favors for her informal borders, like goldenrod, wild asters, sedum, rudbeckia, and phlox, get along on modest waterings. Vitex and buddleias in semi-wild spots, and native perennials encouraged or added along the paths and in clearings, flower freely without supplemental water in this ecologically conscious shore garden.



photos by Barbara Bruno

Top: Built on a three-acre knoll jutting into a West Cape May marsh, this house-side path, bright with rudbeckia daisies, ends at a small pool. **Bottom**: A pond-side soil berm, the only elevation in the garden, gives a long view toward the house (not shown here).

Top: The Wetlands Institute observation tower offers visitors a bird's eye view of the gardens and Stone Harbor marshlands beyond. **Bottom**: Marion Glaspey gathers mature *Calliopsis* seed to scatter where more bloom is required.

MARSHSIDE GARDENS

Marion Glaspey

"I don't decide to do things. They just happen," says Marion Glaspey about her garden's evolution at the Wetlands Institute. At first it wasn't even so much gardening as a desire to reconcile the new museum and nature center to its Stone Harbor marshland setting. She planted native shrubs around the property's perimeter to block the wind and to attract wildlife. The annuals she set out the first few summers didn't prosper on the lot's subsoil fill. Marion observes that it took, "years of struggling to get started." Only after lavish additions of mushroom soil did things perk up. By then, the windbreak was in service, and Glaspey had begun introducing wildflowers among the annuals and perennials of the expanding beds and borders.

A bronze plaque in the garden proclaims, "These gardens are named Marion's Gardens in honor of charter trustee and former chairman of the board, Marion Glaspey." This, in recognition of the rambling plantings that Glaspey developed and virtually single-handedly maintained since 1972, the year the Wetlands Institute was built on the weed-covered leavings of an aborted real estate scheme.

Native flowers and shrubs give Marion's garden a pleasant informality in keeping with the undisturbed marshscape on view through scenic openings left in the windbreak. Berried trees and shrubs like red cedar, beach plum, persimmon, holly, shadblow, crabapple, autumn olive, and bayberry are the native backbone of the garden. They are interspersed with butterfly-attracting vitex and buddleia. This garden blooms from early spring to late fall, but the main show is in high summer through September when the waves of wild bloom mingle with garden perennials. Wildflowers such as joe-pye weed, wild carrot, hawkweed, butterfly weed, yarrow, and many kinds of goldenrod, wild aster, and meadow daisy rival the border beauties with their vigor and presence in the enriched border soils. Other wild plants more than hold their own in unwatered or shaded outposts. Here, as in many shore gardens, tiger lilies *(Lilium tigrinum)* do especially well. Many of the garden's plants are allowed to seed, then Glaspey sprinkles the seed where she'd like more bloom or leaves the seed-laden stems as winter birdfood.

Last year, an automatic sprinkler system brought problems as well as benefits to the main borders. Stout plants blocked the spray, causing dry spots. In other areas the newly dependable water supply brought undreamed of growth. One *Kniphofia* specimen more than doubled its former dimensions, its bloom scapes telescoping to six feet. The many unwatered areas calling for some color have been a zestful challenge to Glaspey's ingenuity. Through long observation, she's noted every slight depression where water holds longer, noon shade lingers, or roof runoff collects. She's used these small ecological advantages to establish moisture lovers such as joe-pye weed and ironweed. In particularly dry, poor soil spots, she seeds old-fashioned biennials like silver dollar *(Lunaria annua)* and sweet rocket *(Hesperis matronalis)* or early-blooming annual poppies that use spring moisture before summer drought arrives.

In 20 years, the garden has expanded to fill its firm soiled plain to its marsh edge limits. Glaspey notes that "a good part of my gardening now is moving things from place to place . . . and fighting the *Phragmites,*" the tall alien reeds that threaten Marion's Gardens, as well as all wetland habitat.

Wetlands Institute
Stone Harbor Boulevard
Cape May County, New Jersey
(Exit 10 off the Garden State Parkway)
(609) 368-1211

Hours:
May 15 - October 15
Mon.-Sat.: 9:30-4:30
Sun.: 10-4

October 15 - May 15
Closed Sunday and Monday

Garden Shrubs

Vitex: *Vitex agnus-castus*
Buddleia: *Buddleia alternifolia*

Wild Plant List

Shrubs and Trees
Red cedar: *Juniperus virginiana*
Black pine: *Pinus thunbergiana*
Bayberry: *Myrica pensylvanica*
Pepper bush: *Clethra alnifolia*
Autumn olive: *Elaeagnus umbellata*
Shadblow: *Amelanchier canadensis*
Beach plum: *Prunus maritima*

Wildflowers
Joe-pye weed: *Eupatorium purpureum*
Ironweed: *Vernonia noveboracensis*
Wild carrot: *Daucus carota*
Hawkweed: *Hieracium pratense*
Butterfly weed: *Asclepias tuberosa*
Yarrow: *Achillea millefolium*
Loosestrife: *Lythrum salicaria*

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Barbara Bruno felt like a horticultural Sherlock Holmes as, following leads and hunches, she tracked down the diverse and engaging gardens described and pictured in this article.

STEEP SLOPES

by Mary Lou Wolfe

Ingenuity, hard work and persistence meet the challenge of slopes to create these two beautiful gardens in Media and Gulph Mills.

The Berd Garden
Media, Pa.

Man o' War, famed race horse of the 1940s, vacationed here before Morris and DeEtta Berd purchased the champion's country hideaway in 1950. These 40 acres in Middletown Township near Philadelphia were a perfect place for Man o' War's owner, Sam Riddle, to secrete his valuable stallion between Kentucky races, to avoid possible injury or drugging. The hilly acres sloped to a ravine traversed by Chrome Run, the last creek ford in Delaware County.

The Berds' purchase included a pre-Revolutionary War stone "bank" house, a two-story house built into a hill bank so each floor was accessible from the outside without using stairs. It lacked plumbing and electricity and had been misused by a long series of itinerant workers. There was a hand pump, an outhouse, chicken houses, a spring house, and a good sized barn in good shape, thanks to Man o' War. The only trees on this steeply sloping pasture-land were a large white pine, a juniper, locusts holding up the stream banks and the largest *Ailanthus* tree in Delaware County, a tree whose trunk looked like an elephant's foot.

When city apartment dwellers Morris and DeEtta, with five-month-old Jared saw the property, it whispered possibilities. To reach it they had driven past a whole acre of trailing arbutus on nearby Alverno Road. They could sell part of the acreage to help with the financing. They fell in love with the property, camped on the tiny lawn, cooked on a campfire and took the plunge.

Morris, a painter, was teaching at what was then the School of Industrial Arts (now University of the Arts) in Philadelphia. It took five years of vacations, weekends, and the help of an old German carpenter to make the house livable for the family that had grown to four with the birth of Caleb in 1955. Berd dug the 7-ft.-deep septic system and, early on, bulldozed a terrace in the hillside above the house to control the water that poured down the steep slopes when it rained.

The slope between the house and the road was where Berd learned the hard way to build walls. He gathered stone from Chrome Run, trundled it in a wheelbarrow up the 100-ft. hill and proceeded to build his wall on two levels, one 7 ft. high and then, set back slightly, another 3 ft. high.

The truck driver, attempting to back up into the curving cobblestone driveway, misjudged the turn and demolished the newly rebuilt wall. Berd said he was speechless and apoplectic. He spent the rest of the day and evening rebuilding and rescuing his carefully chosen plants.

Part of the wall crumbled and had to be rebuilt because he had not mastered drainage; on the second attempt he backed the wall with rubble and larger rocks so water would not collect, freeze, and force out the stones.

With the necessities coming under control, Berd started acquiring plants and trees to help hold the slope and provide shade. The old Hildemere Nursery (long gone) on Rt. 1 near Lima was a great source of perennials, but it was from Doretta Klaber in Quakertown in 1952 that he bought his first rock plant, *Thalictrum kiusianum.* It was a 6-in. specimen from Japan with tiny purple flowers and fernlike foliage. An American Rock Garden Society exhibit at the Philadelphia Flower Show where a rock wall garden had been planted with tiny alpine farinose-type *Primula, Androsace,* and *Saxifraga* inspired Berd to build what would become a long series of rock walls.

Since the property had been used by cows and horses for centuries, there were fairly logical, well-defined cow paths leading to pasturage on the top of the hill. Deciding to develop these paths for planting, Berd gathered local granite stones from the property, arranging them in wide, casually spaced stepped areas above the paths. His construction allowed space for generous plantings of columbines, campanulas, sempervivums, phloxes and other native woodland plants. These developing walls were based more on logic than master plan and were built and planted one section at a time as summer vacations and weekends permitted.

Berd was and is a great reader of plant books and journals. He had read an article in *Horticulture* Magazine about Henry Hohman, proprietor of Kingsville Nursery in Kingsville, Md. Berd visited often and found Hohman to be a slightly cranky but very honest and accurate nurseryman who appreciated and encouraged Berd's interest and growing knowledge of obscure plants. Hohman sold him small rooted cuttings of *Buxus microphylla* 'Kingsville,' Japanese Gumpo azaleas, and dwarf conifers that have grown into handsome specimens backing the stepped stone wall plantings. One of the walls built in the 1970s is a curving sitting bench topped with flagstone and backed with flat stone, much appreciated by visitors who pause on the long, interesting climb to look out over the valley.

Building a wall

When Berd plants a vertical wall he pays strict attention to the plants' soil, sun, and drainage requirements. He plants as he builds, covering each course with a mix of loam, coarse sand, and peat or leaf mold. He can modify this mix to suit the needs of individual plants by adding lime or peat. The roots of plants are spread out on this soil and another layer of mix sprinkled over them before the next course of rock is laid. To add plants to a finished wall, Berd rams the soil back into the recess using a 3/8-in.

continued

photo by Morris Berd

photo by Morris Berd

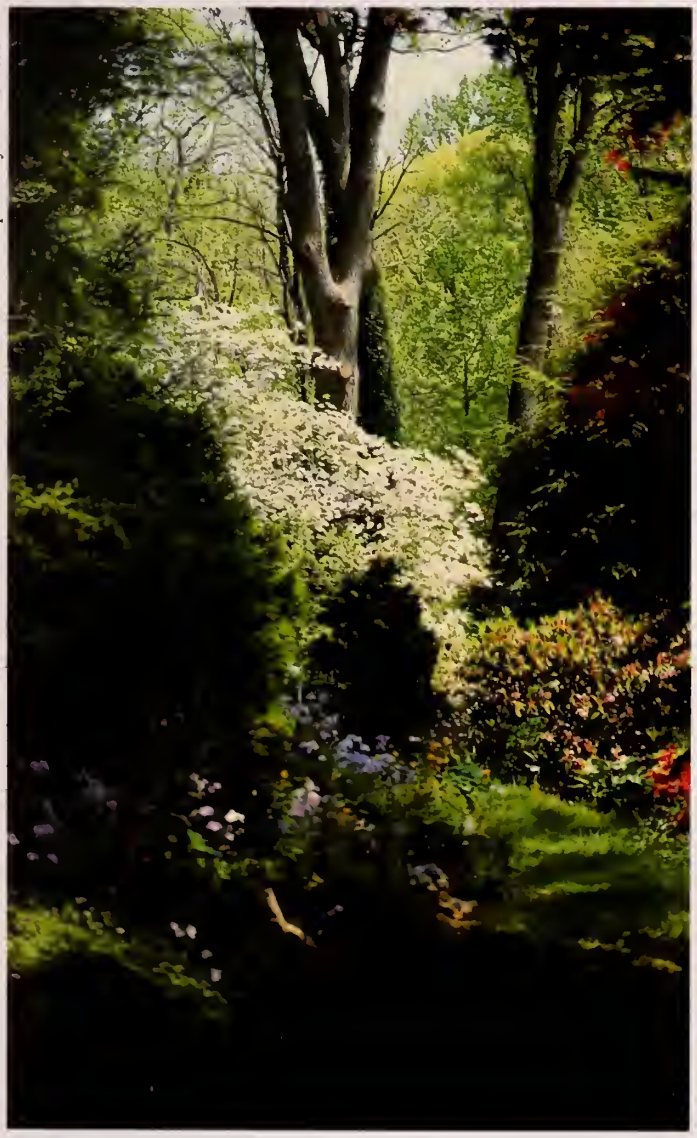


photo by Morris Berd

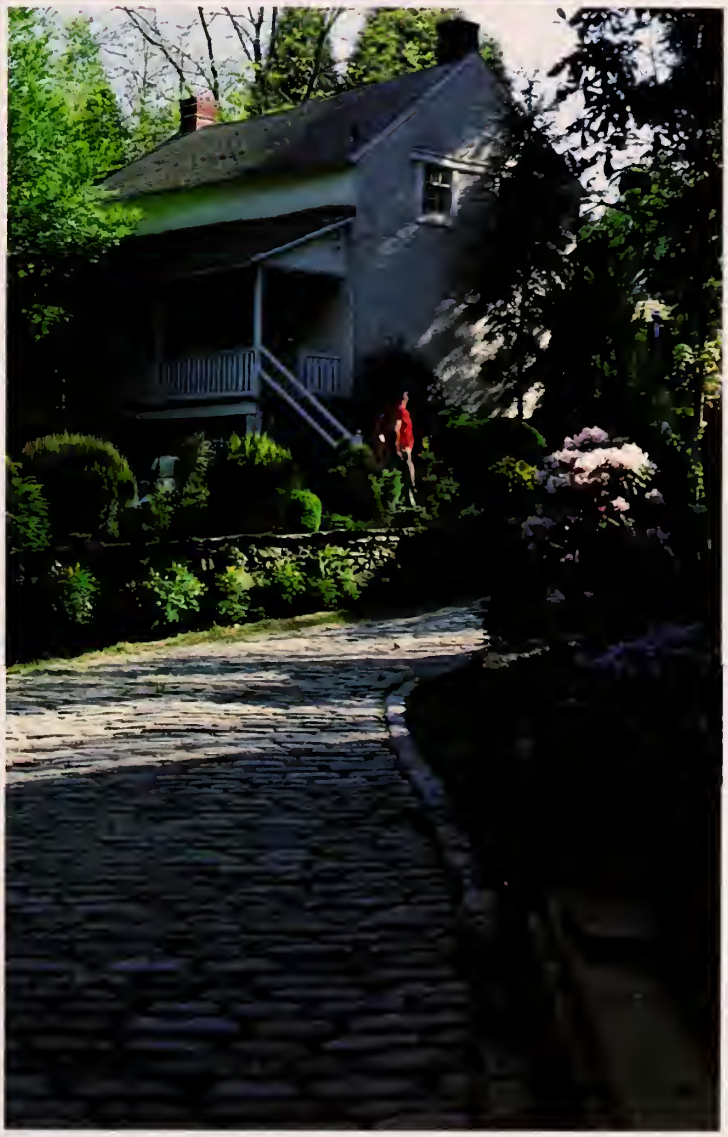


photo by Mary Lou Wolfe

Top left: A stepped cowpath leading to the top of the hill was planted as a rock garden. Note how Berd left spaces for plants to grow and spread. **Top right**: Eighteen years later. The rock garden and conifers have grown on the stepped cowpath. **Bottom left**: Looking downhill, a May view of rock plants (left) and dogwood (center). **Bottom right**: The cobblestone driveway, ending at a 15-ft. circle at the summit, required excavating soil 2 ft. deep from its entire 75 ft. length and laying 4,000 cobblestones in a bed of sand. Berd dubbed the project "The Battle of Dunkirk."

dowel. He knocks a young plant out of its pot, compresses the root mass into an elongated shape and carefully maneuvers it into an opening. He presses more soil around the roots until the opening is filled. He says in the ARGS *Bulletin* of spring '82: "It is crucial in wall planting that the plant should never become dry while the roots are becoming established. Individual plants may be watered directly with a fine gentle spray, but better still is to give the top of the wall a long, thorough, slow soaking to permit the water to percolate down to the plant roots."

Unfortunately, Berd had to do this painstaking building and planting of a wall under great pressure in 1986. Morris and DeEtta opened their garden for an American Rock Garden Society May tour. A few weeks before the scheduled tour, two old sugar maples had crashed destroying a crucial wall next to the driveway. Berd rebuilt it, carefully replanting niches with alpines chosen for the wall's northeast exposure and good drainage. The day before the tour a portable toilet was to be delivered to accommodate ARGS members invited to picnic here as the tour finale. The truck driver, attempting to back up into the curving cobblestone driveway, misjudged the turn and demolished the newly rebuilt wall. Berd said he was speechless and apoplectic. He spent the rest of the day and evening rebuilding and rescuing his carefully chosen plants. We visitors thought the wall looked wonderful.

Creating a driveway at the summit

The first thing one notices these days approaching the Berds' property is the handsome Y-shaped Belgian block driveway whose curve evaded the deliveryman's backing capabilities. Getting to the house or barn, both perched high above the road, had been a scrabbly, muddy challenge since they acquired the property. In the summer of 1959 Berd tackled the steep dirt access road in what DeEtta dubbed "The Battle of Dunkirk." After a lot of scrounging, Berd bought 4,000 granite cobblestones from a coal yard at 25th and Pine in Philadelphia, a steal at 7 cents each. The delivery truck dumped them on the front lawn. As Berd began his excavations, cars had to be parked down on the main road, groceries carted up the hill and battleground conditions coped with all summer.

Berd removed 2 ft. of soil from the whole 75 ft. of driveway, replacing it with nut-sized ballast, then covered it with 2 in. of sand. He placed the 4,000 cobblestones in the bed of sand, angling them slightly upward to provide traction. Then he laid sand and mortar over them, brush drying the surface. A 15-ft. cobblestone circle at the driveway's summit provides a backing and turning space. It's a work of art.

A special tour for special gardeners

The Berds have shaped this steep hillside into a plant person's discovery tour. We see native northeastern plants, western alpines, dwarf conifers now 30-40 years old, stands of unusual rhododendron, all planted with an artist's sensibilities and the energy of an ox, that seems to have no end.

We follow the now shady cow paths up three levels, rest on the stone wall seat, poke into the barnyard with its protected propagation areas and fern planted north wall. We admire the boggy area planted with primula and hart's tongue fern uphill from the barn studio where Berd paints. His son Jared uses the area on top of the hill for plants he sells in his rare plant nursery (wholesale) and design business named Chrome Run Nursery.

He is fascinated with the fall of white cherry tree petals on the dark green of Andorra junipers, with the winter glisten of* Acer griseum *bark and the apricot glow of all* Stewartia *leaves.

Should the ghost of Man o' War pay a visit, he could still drink from Chrome Run creek, follow paths that would seem familiar and rest in the shade of the ancient *Ailanthus* with the elephant foot trunk that now measures 11½ ft. around at the base. The pasturage would definitely be different but the barn would be as sheltering as ever.

The Schumacher Garden
Gulph Mills, Pa.

When a small stream appeared in the laundry room oozing through the wall and flowing out through the garage, Liz and Ralph Schumacher knew their newly acquired split-level home had a problem. They bought it in 1967 because they could afford it and because they liked the lot's pleasant south sloping site in the new Gulph Mills area development. On their one-acre site, the tract house was at the bottom of a steep hill, once meadow, sparsely covered with weeds and rocks. Water rushed down after every rain, finding its outlet through the house and eroding the driveway.

The Schumachers had neither experience nor interest in gardening but knew they hadn't bargained for living in a springhouse. The water had to be controlled. The previous owner had built a low stone wall to separate hillside from backyard and had installed a severe wooden staircase that led uphill to a semi-level area scooped out during installation of the development's sewer system. These features and one martin birdhouse were the only hillside "improvements."

The mistake

Both Schumachers delight in sharing their early mistakes, and the tale begins with groundcovers. Realizing they should plant something to absorb the flow of water, they followed a nurseryman's well-intentioned advice to plant as groundcovers *Rosa wichuraiana* and a brand new "highway" plant, crown vetch. Although these plants did help hold the slope, they were unruly, invasive, and unattractive. Ralph describes them as "10 times easier to put in that to dig out."

The overall plan

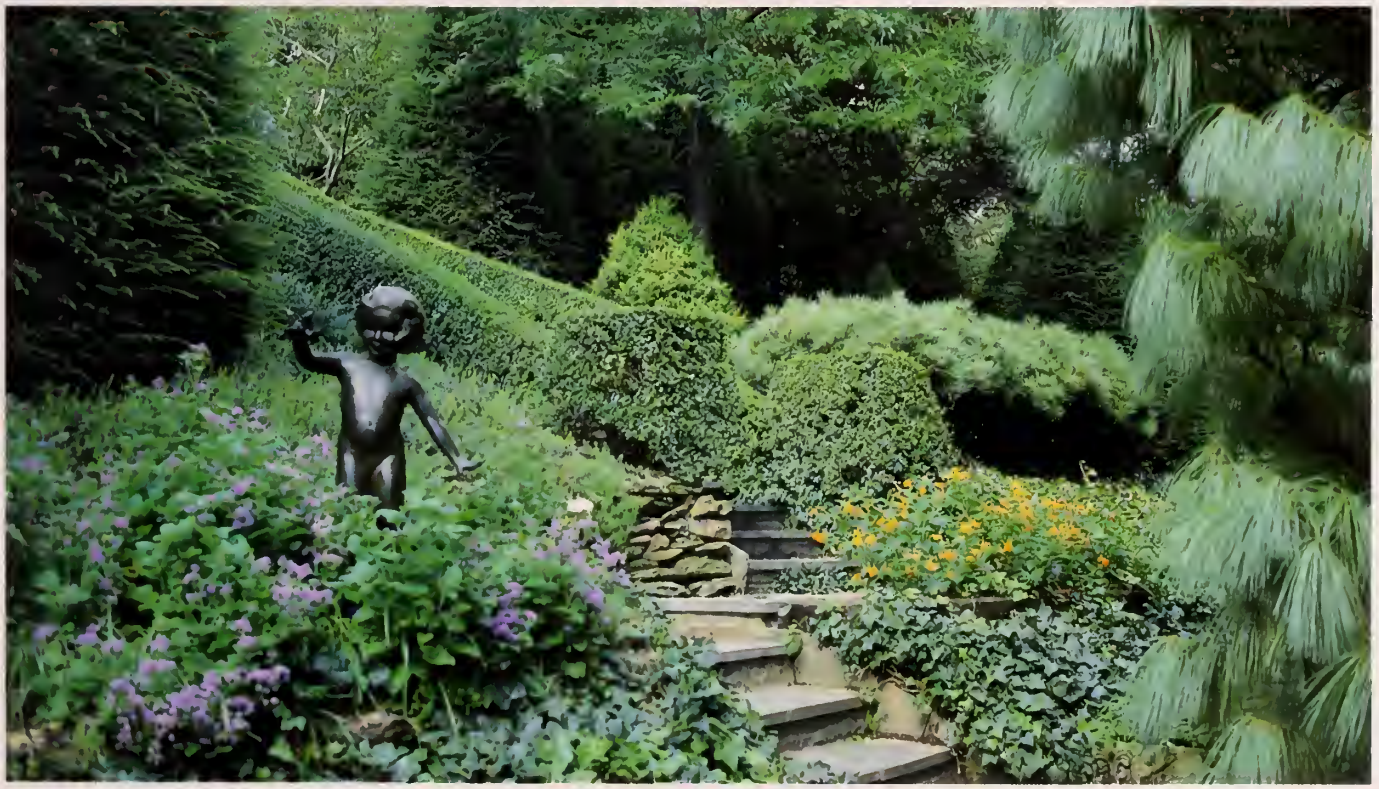
An overall plan was late in coming, developing slowly year by year until accelerated by Liz's 1974 enrollment in the Arboretum of the Barnes Foundation classes. In the best of all worlds, the plan would have been undertaken the first year after they discovered the water in the laundry room. The plan would have made drainage control a priority and then would have plotted access paths, special use areas like children's play space and adult sitting areas, provided for shade, and privacy plantings.

The Schumacher team had accomplished all these objectives but in "real life" learning-by-doing rather than in the disciplined sequence of a professional landscape designer. During those early years babies were born, a medical practice established, and, along the way, a strong interest in gardening steadily grew.

As Liz learned about trees and shrubs under Dr. John Fogg's expert guidance at the Barnes Arboretum, the Schumachers began to choose specimens whose bark, bloom, foliage and fruits offered multi-season interest. Gordon Eadie, a nurseryman then working for Hansen Nurseries (Sassamansville, Pa.), was a great help in finding these special trees. Ralph not only provided a strong back and powerful shovel but delighted in photographing in all sea-

continued

photos by Ralph Schumacher



Top left: 1967. The Schumachers' new house on one-acre site. At the bottom of a steep hill, the house and surrounding area hosted water rushing downhill after every rain. **Middle left**: 1992. A learn-by-doing pragmatic plan included erosion and drainage control as well as carefully selected plants, satisfying for their aesthetic values as well as practical uses. **Top right**: Fall view from the Schumachers' Japanese teak tea house at the summit. Liz and Ralph often take their summer breakfasts there. **Bottom**: Staged along the hillside: Rachel Hawkes's sculpture 'Butterfly Girl' surrounded by ageratum and lantana in August.

STEEP SLOPES

photos by Mary Lou Wolfe

Morris Berd, takes a well deserved moment of repose, seated in front of the earliest garden he and De Etta created behind their house.

Ralph and Liz Schumacher: Is the greatest part of their work behind them?

sons, the shrubs and trees they were planting. He is fascinated with the fall of white cherry tree petals on the dark green of Andorra junipers, with the winter glisten of *Acer griseum* bark and the apricot glow of fall *Stewartia* leaves.

They accomplished drainage control by installing french drains on the flat area behind the house and by a series of stone retaining walls on the hillside. The rowdy groundcovers have been replaced with Andorra junipers, *Euonymus fortunei,* cotoneaster, ivy, periwinkle, Russian arborvitae *(Microbiota decussata),* and other dwarf conifers.

The considerable effort involved in all of this is what Ralph calls "good exercise, great for the quadriceps and cardiovascular system." More "great exercise" is provided for Ralph by the occasional thoughtful Christmas present of a truckload of wood chips dumped in the driveway topped with a red ribbon and "Merry Christmas to Ralph" label. Moving mulch uphill in a wheeled trash can or wheelbarrow is a strenuous job. Mulch is the gift that keeps on giving (exercise, that is) because with every major rain, some of it washes downhill again.

The accomplishments

As I walked through the garden I was struck by the accomplishments of these very energetic gardeners. The hillside, though heavily planted, has airy vistas up and down. In the use of space you sense an Oriental understatement that may have germinated in Liz's childhood experiences. She celebrated her ninth birthday on a ship bound for Tokyo where her dad served in the Army for four years. She remembers vividly climbing with her younger sister over the forbidden wall of the Meiji shrine when the city of Tokyo was closed down after a huge snowfall. It was very quiet; the stone figures dusted with snow, the elegant trees bowed and beautiful. She says, "It's one of those times that stick in your head."

Those years in Japan and later travels with Ralph in Korea, Vietnam, Malaysia and China developed Liz's appreciation for far eastern art and for garden ornaments in particular. When developing her own garden, she couldn't find the kinds of beautiful things she had seen in the orient, and began, in 1979, to import them herself. This has become her now flourishing business called "Garden Accents."* Though oriental objects were a first love, she offers a multinational collection.

The Schumacher hillside acts as a stage for some of these beautiful pieces. Sited perfectly at the turn of a stair, we see Butterfly Girl, a small bronze by Rachael Hawkes. It's backed by a well-pruned butterfly bush *(Buddleia davidii)* whose fragrant blooms from July to late autumn do attract butterflies. A small granite figure of Tuti Kung, god of the earth, was chosen to guard a vegetable garden that failed to flourish. Ralph says they discovered that Tuti Kung's domain also includes care of minor children and airplane pilots so they lightened his load by assigning him to a dwarf conifer planting.

A water line

The Schumachers installed a water line to the top of the hill, early on. That made possible the creation of their first pool, which looks like the collection of water from a small hillside spring. It's a 3-ft.-deep concrete basin, stone edged, with a recirculating pump hidden under a front ledge. Water trickles in from above, rhododendron and ivy frame the goldfish basin and it looks completely natural. They have since installed an underground watering system on the whole hillside with "pop-up" emitters, much needed during dry summers on this south-facing slope.

Walking up the hillside, enjoying the view from each of the four terraces, the striking feature, especially in winter or early spring, is the expert pruning that's been accomplished. Liz and Ralph have had help over the years from a talented young man, Tom Jackson, who is now a landscape design student at the University of Delaware. An example of their combined skills can be seen in a group of three multistemmed stewartias shaped to show off their handsome mottled bark and to provide afternoon shade for the sitting area around a little pool. A row of hemlocks has been topped at 15 ft. to provide privacy from an adjoining property. The *Pinus bungeana* and *Acer griseum* have been pruned to highlight their interesting peeling barks. In this exuberant garden there are definitely several pairs of controlling hands.

At the summit, we follow a rhododendron path to a structure that almost had to be built, given Liz's early love affair with things Japanese. It's a tea house, a lovely teak structure designed by Liz where she and Ralph often take their summer breakfasts. This building affords a superb view of the hillside and valley in any season. Ralph, whose medical specialty is rheumatology, entertains his University of Pennsylvania students here each fall, pointing out to them the ancient plants *Colchicum* and goutweed that have been used medicinally to treat rheumatism. I imagine, however, that it's the view from the tea house that they'll never forget.

Both the Berds and the Schumachers have conquered the challenges of steep hillside gardening. Each has used the special advantages of a hillside to grow the plants they enjoy most. If you have a chance to visit either of these gardens you'll see the challenges and advantages of a steep site, and as the physician Schumacher reminds us, "it's great for the quadriceps."

Reading*

Hillside Gardening; Evaluating the Site, Designing Views, Planting Slopes, William Douglas, Simon and Schuster, N.Y., 1987.

See also, General Works list on p. 35.

*This book is available to members through the Pennsylvania Horticultural Society Library.

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Writer-photographer Mary Lou Wolfe is a frequent contributor to *Green Scene.* Wolfe has recently moved from a garden with a substantial slope and says frankly she's looking forward to the challenge of her new flatter landscape.

*Garden Accents, 4 Union Hill Road, West Conshohocken, Pa. 19428 (Phone: [215] 825-5525).

The Irrepressible Urge to Garden in the City

by Joanne Miller

Three city gardens with limited space and light as well as fluctuating temperatures lead three gardeners to meet challenges innovatively and creatively.

There's something timeless about the urge to tend a seedling, and something wonderful about having the talent to help it truly flourish. Even the harshness of modern cities with their swollen concrete landscapes that intrude upon the play of sun and air, cannot suppress the instincts of those who love to garden. Many of the gardeners I have met in Philadelphia seem determined to meet the challenges posed by city living through the use of imagination, ingenuity, and the love of plants.

As we investigate the adventures of three Philadelphians, common threads begin to surface, though each story is unique. In all cases, some limitation particular to the nature of urban living inspired a plant lover to seek a novel gardening solution. Rather than fearing temperature extremes, space limitations and tricky light patterns, these gardeners use innovative and creative ways to beat the problems, often starting from the roof down.

Robert Kershaw's garden reaches new heights

Because most homeowners have limited gardening space to work with in the city, any area not permanently set in concrete or brick will quickly be used to grow plants. In many cases, adding a window box cleverly extends the garden beyond a little patch of green.

continued

photo by Gina Burnett

Is space a problem? Try window boxes, vines, containers. Robert Kershaw's ingenuity netted him third place in the 1992 Container Gardening category of the City Garden Contest.

Garden in the City

photo by Gina Burnett

Window boxes soften the landscape from both inside the house and for the passerby.

Window planters can add a new dimension and look to the outside of a building. And when inside, looking out through the silhouette of foliage and flowers suspended in the air, one sees a softer and more pleasant scene. Such plantings can act as aesthetic buffers against the sometimes intrusive views of street lights, utility wires and neighboring buildings. At Robert Kershaw's property on Webster Avenue in South Philadelphia we find a stunning example of how window boxes can add beauty and planting space to a city home.

As a third place winner in the Pennsylvania Horticultural Society's 1992 City Garden contest, Kershaw was recognized for his inventiveness. During the summer months, every window at the front of his charming blue row home is adorned with a window box brimming with trailing ivy geraniums *(Pelargonium peltatum)* and variegated vinca vine *(Vinca major* 'Variegata'), as well as the low-growing *Juniperus horizontalis,* which will stay to cascade down the boxes' sides in winter, long after the summer flowers are gone.

Beautiful as these touches are, however, they did not wholly satisfy Robert's need for more planting space. After mastering the art of window box gardening, his next target was the 10-ft.-high light pole that stands outside his home. Through his ingenious machinations, Robert managed to hang large round flower pots on this pole, fill them with annuals and junipers, and maintain their lushness through the warmest months. Although the elevated junipers proved too vulnerable for winter weather, the pots continue to bloom with bright flowers in the summertime.

During the first few years of this 10-ft.-high gardening adventure, Robert brought out his ladder every other day so he could haul water up to his plants. This summer, he hasn't had to bring out the ladder so often, thanks to an invention of Gardena Co., Inc.* Gardena Company, which produces watering devices for the home gardener, must have had Robert in mind when it created a pole-length tool complete with water nozzle at one end, and a capacity to connect with a garden hose at the other —the hose extension is perfect for hard-to-reach spots.

These days Robert only brings out his ladder in the spring to plant, and again in the fall to clean up and prepare his gardens for winter. Window boxes can be watered and fertilized using common, less elaborate techniques. Through the use of imagination and armed with determination, Robert has created beautiful plantings at his South Philadelphia home despite the limitations of space. And, his gardening bug has been contagious. Many neighbors have asked for his advice about greening up the outsides of their homes. Today, thanks to Robert's inspiration, his block on Webster Avenue is lined with Bradford callery pear trees *(Pyrus calleryana).*

I congratulate Robert on his success as a city gardener and a contest winner,** and thank him for sharing his love of plants with his neighbors. He is helping to maintain Philadelphia's 'Greene Countrie Towne' tradition.

The Dimerman solution

Like Robert Kershaw, the Dimermans wanted to increase their gardening space. Located near the corner of 4th and Locust streets, in Society Hill, Philadelphia, the Dimermans' home had a 24-ft.x17-ft.x6 ft. walled-in space they wanted to develop into a multipurpose garden for the family. The space would be viewed from the dining room and master bedroom, and also serve as the entranceway to and from the front door of the house.

The Dimermans hired me to provide a garden design. The family wanted pleasing year-round color, usable space for sitting outdoors in nice weather, and storage space to hold bicycles, trash cans, and other household items, without marring the garden's attractiveness.

Bob Dimerman set the ball rolling by designing two large storage areas to be topped by planting beds. These spaces established a formal structure for the garden, even as they performed their jobs as storage receptacles. (See drawing for position and sizes.) After the brick storage structures were built, I developed a planting design for them. Tall evergreen shrubs for the beds would screen out noise and create a more appealing view. Since the planting bed was only 10 in. deep, minus 1 in. for gravel and another 1 in. for mulch, only 8 in. were left for a root ball. That meant I had to find five plants with maximum height and limited root growth.

Without insulation or heat in the storage areas, and with no extra space in the planting bed to install insulation, these plants' root systems would have to withstand freezing and thawing. Because the plants would be planted 5 ft. off the ground, they would also have to tolerate wind. Because of the garden's northern orientation and the presence of an existing honey locust tree *(Gleditsia tricanthos)* the plantings would also need to tolerate shade.

After a lot of thought and research, I finally chose *Juniperus chinensis* 'Robusta' for the background in the planters. An

*Gardena Co., Inc., 1902 Cypress Lake Drive, Orlando, FL 32837 (no phone listing available).

**For information about the Pennsylvania Horticultural Society's City Garden Contest, contact Flossie Narducci, 325 Walnut Street, Philadelphia, PA 19106, Phone: (215) 625-8280.

photo by Joanne Miller

Specially designed storage structures provide a base for planting beds for junipers and annuals in this city garden used for relaxation and occasional dining.

evergreen shrub, now 4 ft. tall, with a potential height of 15 ft.; it's excellent for screening. Junipers are, overall, hardy plants and retain their good foliage color throughout the year. The specimens I had selected were still growing in the nursery's field when I chose them, so the nurseryman was able to give me the smallest, shallowest root ball possible (8 inches), without causing too much stress and damage to the plants.

After planting the larger bed with junipers, the 12 in. x 7 ft. strip in front of them left room for spring daffodils and summer impatiens. The last 12 in. x 7 ft. strip of space was then planted with *Cotoneaster horizontalis.*

I chose cotoneaster for its year-round interest. A semi-evergreen shrub, it will begin, as it grows, to cascade down the wall of the raised bed. In June, its small pink flowers will appear, followed in fall and winter by bright red berries.

To add more color and interest at the ground level, we scattered planters of various sizes throughout the space, planted with flowers or shrubs, according to season. To balance out the rest of the garden, two other raised planting areas were filled with another evergreen species, *Juniperus communis* 'Stricta.' English ivy *(Hedera helix), Ilex aquipernyi* and spring bulbs (crocus and iris) complemented the junipers in these beds. Wall pots filled with warm weather annuals and winter evergreens and hollies completed the picture.

Proper watering is important in this garden, because the planting areas are so small. Liquid fertilization is vital: in May, Peters Professional Soluble Plant Food, All Purpose 20-20-20 encourages healthy foliage and root growth. Then, in June and July, Peters 10-30-20 Blossom Buster encourages flowering. Because of their unusual planting conditions, these specimens need careful maintenance. The healthier the plant, the less likely it will be infested with insects or diseases.

As a final touch, chairs and tables were added to the garden for occasional alfresco dining and for simple outdoor relaxation. Perhaps some day the Dimermans will also enter the Pennsylvania Horticultural Society's City Gardens contest, for theirs is a utilitarian yet charming response to the 'Greene Countrie Towne' idea.

continued

Tips for City Gardeners

Choose plants that can tolerate extreme temperature fluctuations:

Heat reflected from street surfaces, concrete, glass or brick, can raise soil and plant temperatures. Then, as the earth moves and the sun is lost behind a tall building, soil and plant temperatures drop; air temperature is also lowered, when this occurs.

Study the sunlight patterns of your garden:

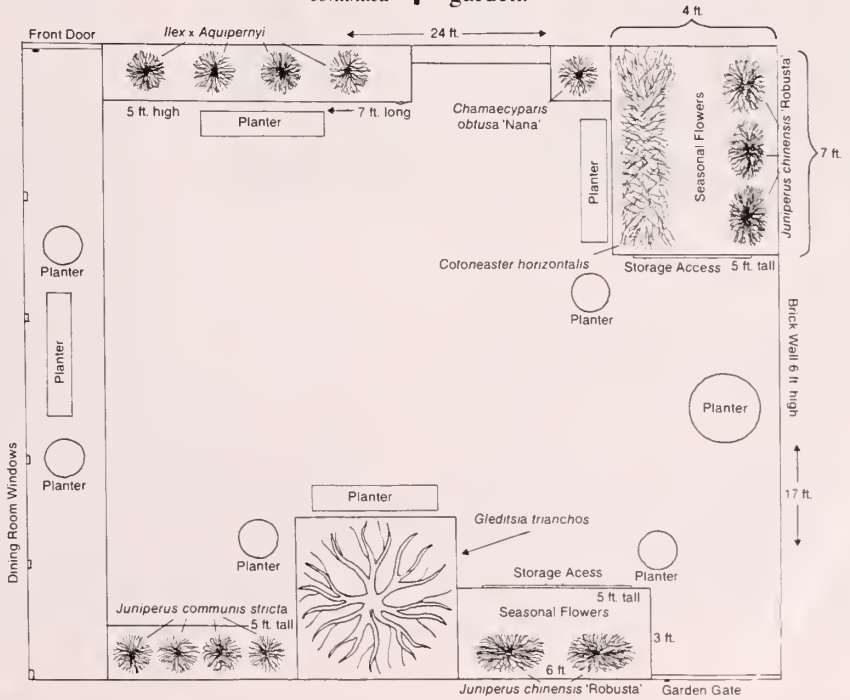
When you know how much light your garden receives, you will be able to choose the appropriate plants. Remember, light patterns will be affected by a change in season, as well as by the leafing out of neighboring trees.

Understand wind dynamics:

The city's tall buildings channel wind, creating wind tunnels that forcefully direct themselves between buildings, and down streets and alleys, as they collect speed. These winds can be damaging, especially to plants grown above ground level, where winds are stronger. Winds can dry out plants quickly, so they require more frequent watering. In the winter, cold winds can cause pots and roots to freeze.

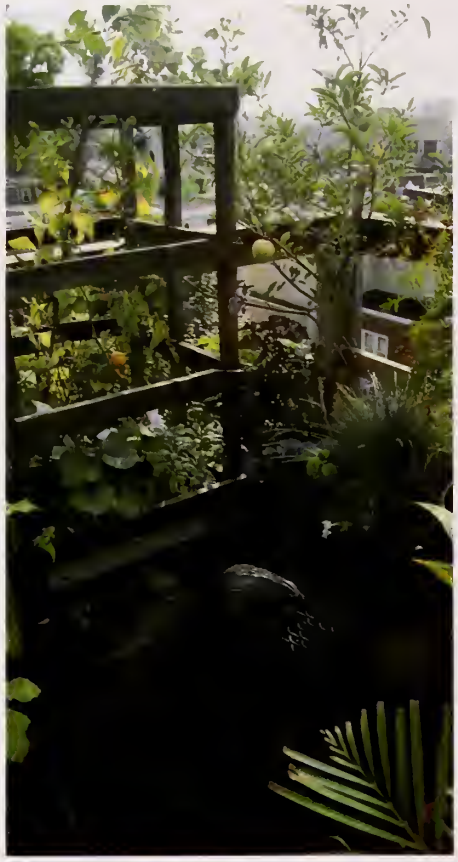
A city garden raised off the ground is more rodent resistant:

Norway rats are part of most cities' wildlife. Rats will usually stay away from raised cultivated areas, because people dig, weed and water there. Cats help kill rats, yet can become pests themselves. Sometimes spraying cats with water will keep them out of the garden.



Garden in the City

photos by Gina Burnett



Top: A golden delicious apple from Penn State Urban Gardening with blue fescue grass, cosmos, yarrow, sweet potatoes, tomatoes, coconut palm, palm and many other container-grown plants on the roof deck of Philip O'Connor's three-story North Philadelphia rowhouse. **Bottom**: Philip J. O'Connor (left) in his rooftop city garden with William Coppens, City Garden Contest judge, surrounded by masses of rooftop plantings in recycled containers (Benjamin Franklin Bridge in background on left). The collection of herbs, tropical, and hardy trees and shrubs, as well as a small planted fish pond in a barrel, has evolved over years of studying which plants do best in this environment of extremes.

Philip O'Connor's rooftop artistry

Artist Philip O'Connor says it was a friend who first lured him onto the rooftop of his own Fishtown home. A bit daunted by the perceived shakiness of his house's roof, Philip could not have imagined that this spot would one day blossom — literally — into a meditative and exotic garden. Once he realized how inviting the roof truly was, Philip had an 18 ft. x 18 ft. deck built accessible by a straight-up ladder in a closet. So began his rooftop gardening odyssey.

Though enthusiastic about plants even before beginning his rooftop experiment, Philip has since become enamored of the particular delights that come with gardening in the very open air. The extremes of temperature, and the windiness that Philip faces on his roof (the house is near the Delaware River) challenge his talents, yet are balanced by the great amounts of sunshine available. Plants on a roof receive direct sunlight from dawn until dusk.

That rooftop sunniness has allowed Philip to successfully nurture a variety of tropicals, all of them planted in containers. As with earthbound gardens, Philip's is graced by a backdrop of trees: palm trees, lemon trees, ficuses, white pines, junipers. Corkscrew and dragon claw willows thrive in whiskey barrel ponds.

Even dwarf golden delicious and Macintosh apples can be found growing on Philip's roof, though a banana tree failed when heavy winds brought on leaf damage. Philip explains that when raising trees in containers, the gardener must be sure to root prune the plants. Inevitably, advanced container gardening such as this is work-intensive.

Yet, while Philip has found that container gardening can be time consuming, it does afford him certain artistic freedoms that "earth gardening" does not. He is able to easily redesign his rooftop, layering textures, colors, and scents in ways that satisfy his painterly instincts. Upon the recommendation of H.R. Draper III, friend and Penn State garden advisor, Philip has recently begun to experiment with moon gardening: planting white flowers that glow in moonlight.

Everything, it seems, manages to find a place in Philip's rooftop garden: beach grass bogs, wood hyacinths, herb and berry patches, vegetables, bulbs, annuals, wisteria vines, and whiskey barrel ponds filled with goldfish, cattails, and umbrella papyrus. In summer Philip will transfer a variety of indoor aquatic plants from his fish tank to his outdoor whiskey barrels.

With the daring and thriftiness typical of artists, Philip is always on the prowl for unusual planting containers. Round peach baskets and abandoned fish crates salvaged from Center City Philadelphia's Reading Terminal Market have served him well. With the addition of thin mesh screening and the inspiration of the "crop crate" idea, Philip creates modular systems out of throw-away crates. Baskets whose bottoms have fallen to bits decorate plainer terra cotta and plastic pots.

To hear Philip talk about his prizewinning rooftop garden†, it's obvious that the beauty he has helped nurture brings him great pleasure and a sense of peace. He refers quietly to the blending tones of wood and aging basket. He talks about the great freedom of spending time on a roof, of feeling close to the sky in more than just a physical way. One is reminded that whether home is in the city or the countryside, the joys of wind and seed are just the same — vital and insuppressible.

* * *

The stories of these three Philadelphia gardeners are inspiring. Clearly the benefits of growing plants are tremendous. Just remember, once a space is established in the city for gardening, the rewards of seeing the plants flourish far outstrip the difficulties encountered along the way.

†Second place in the Container Garden category of The Pennsylvania Horticultural Society's City Garden Contest.

Book* Selected by Janet Evans

The City Gardener's Handbook: From Balcony to Backyard: a Comprehensive Guide to Planting Small Spaces and Containers, Linda Yang, Random House, N.Y., 1990.

*This book is available to members through the Pennsylvania Horticultural Society Library where Janet Evans is librarian.

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Joanne Miller graduated from Temple University, Ambler Campus, with a degree in Horticulture. She is a part-owner of Horticultural Services, a business that operates primarily in Society Hill, Philadelphia, specializing in all phases of city gardens' ground maintenance and historic grounds maintenance.

photo by Andropogon Associates

Southeast corner of 26th & Penrose Avenue. The challenge: transform this visual nightmare into a landscaped Gateway.

Public Landscapes:
Who Cares; Who's Responsible?

by William Guthrie Hengst

Philadelphia Gateways create our visitor's first impressions and reinforce daily travelers' impressions on those same roads. They're the difference between people wanting to come again, wanting to stay or wanting to get away as soon as possible.

Here's how a group of people and organizations saw one of the problems and cooperated to transform the messy Philadelphia Gateway landscape along 26th Street, on the route to and from Philadelphia's International Airport.

Blaine Bonham, Jr., Executive Director
The Pennsylvania Horticultural Society's Philadelphia Green Program

Against a backdrop of oil refineries, tank farms and a mammoth car-crushing machine, motorists traveling between Philadelphia's International Airport and Center City along the one-mile stretch of 26th Street were assaulted by a clutter of billboards, abandoned automobiles and trash. A quick glimpse of this roadside mess at 50 miles an hour left a lasting impression: *Gritty City*. Hardly a gateway Philadelphians were proud of, and yet the mess persisted, defying solutions for decades until the Pennsylvania Horticultural Society's Philadelphia Green Program took it on.

The Pennsylvania Horticultural Society (PHS) created the 26th Street Gateway Project with a grant from Atlantic Financial (before it closed) as an opportunity to demonstrate that all of us have a responsibility for public landscapes. The Society began by building a coalition of people with a stake in the 26th Street corridor: City and State agencies, land owners and managers, airline and travel-related corporations, and community gardeners. Says Barbara Olejnik, manager, Public Landscapes for PHS's Philadelphia Green Program: "This project wouldn't have happened if we hadn't brought people together and stirred them with the possibilities for making a difference. We offered a sense of ownership in the project by forming plant/people partnerships." (See box for list of partners.)

The vision for the 26th Street Gateway Project design came from Andropogon Associates, a nationally known ecological planning and design firm hired by Philadelphia Green as consultants for its experience in landscape management and restoration.

The designers started by getting to know the site, and studying how it worked ecologically. The 26th Street corridor consisted of leftover sections of what was once a tidal marsh, part of Tinicum Marsh, later filled for industrial and transportation uses. These

continued

land uses and ownership patterns shaped the site's visual character into five distinct landscape areas (See drawing).

"When we first looked at the place," says Carol Franklin, partner at Andropogon, "we had a hard time seeing its potential as a landscape because all that's visible are the symptoms of neglect and abuse. What at first seemed impossible, on closer inspection offered many possibilities for creating an attractive gateway into Philadelphia. After we peeled away the dirt, grime, and the billboards we could see the site contained fragments of a rich, urban meadow and old field vegetation on the west side, and stands of diverse plant species to the east on top of the railroad slope."

Says Franklin, "We conceived the project as a linear sequence of spaces in which the edges must be exploited because they're what the motorist mostly sees. Our idea was to create an urban parkway landscape that would link the five areas." Given the site's complexity and funding limitations, the project was implemented in phases.

continued on p. 23

The 26th Street Gateway Partners

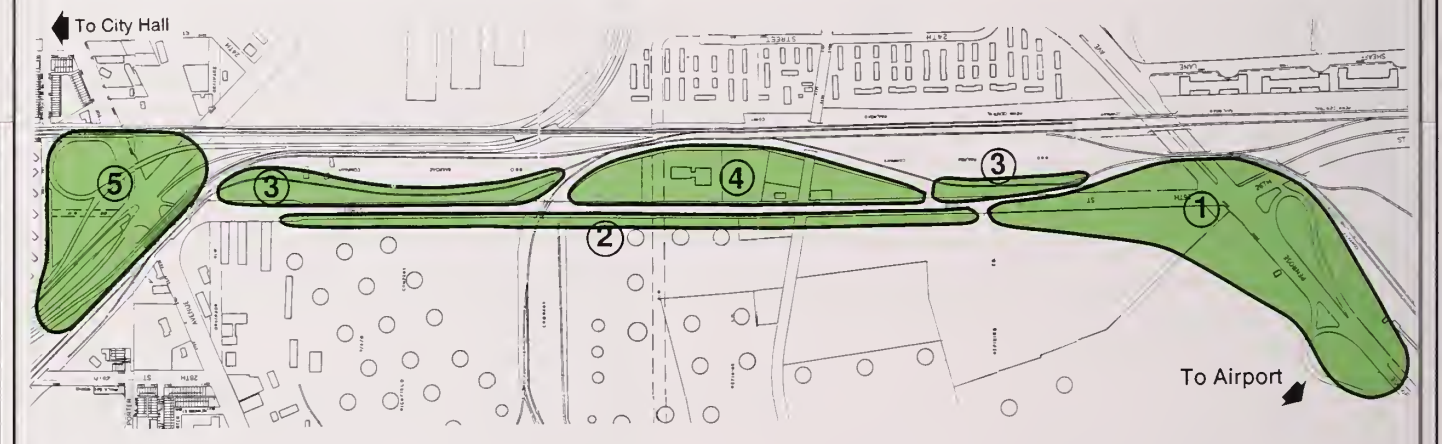
Andropogon Associates/Designers

Pennsylvania Horticultural Society

Site Participants:

Chevron
Consolidated Rail Corporation
Pennsylvania Department of Transportation
Philadelphia Department of Streets
Philadelphia Electric Company
Sun Company, Inc.

In addition to contributions from these participants, a number of other organizations and individuals contributed to get the project started and to keep it going.



The Five Major Landscape Areas of the 26th Street Gateway Corridor

The one-mile straight stretch of 26th Street is a distinct link in the airport-to-center-city drive.

1 **26th Street & Penrose Avenue intersection, "Penrose Meadows"**
2 **Sun Company Refinery Edge**
3 **Railroad Embankments of Conrail and CSX**
4 **Private Lands (Steen Outdoor Advertising, Mary Pruitt Estate)**
5 **26th Street and the Schuylkill Expressway Interchange**

photo by Andropogon Associates

The intersection of 26th Street & Penrose Avenue

Before: The corner, chosen first to create an immediate visual impact and show the partnership what could be done, contained an abandoned, paved parking lot owned by PennDOT. The practically impervious soils were comprised of deep, heavy clays, mixed with construction rubble in the upper layer, and almost no organic layer. The corner cried out for something spectacular.

photo by Barbara Dejun

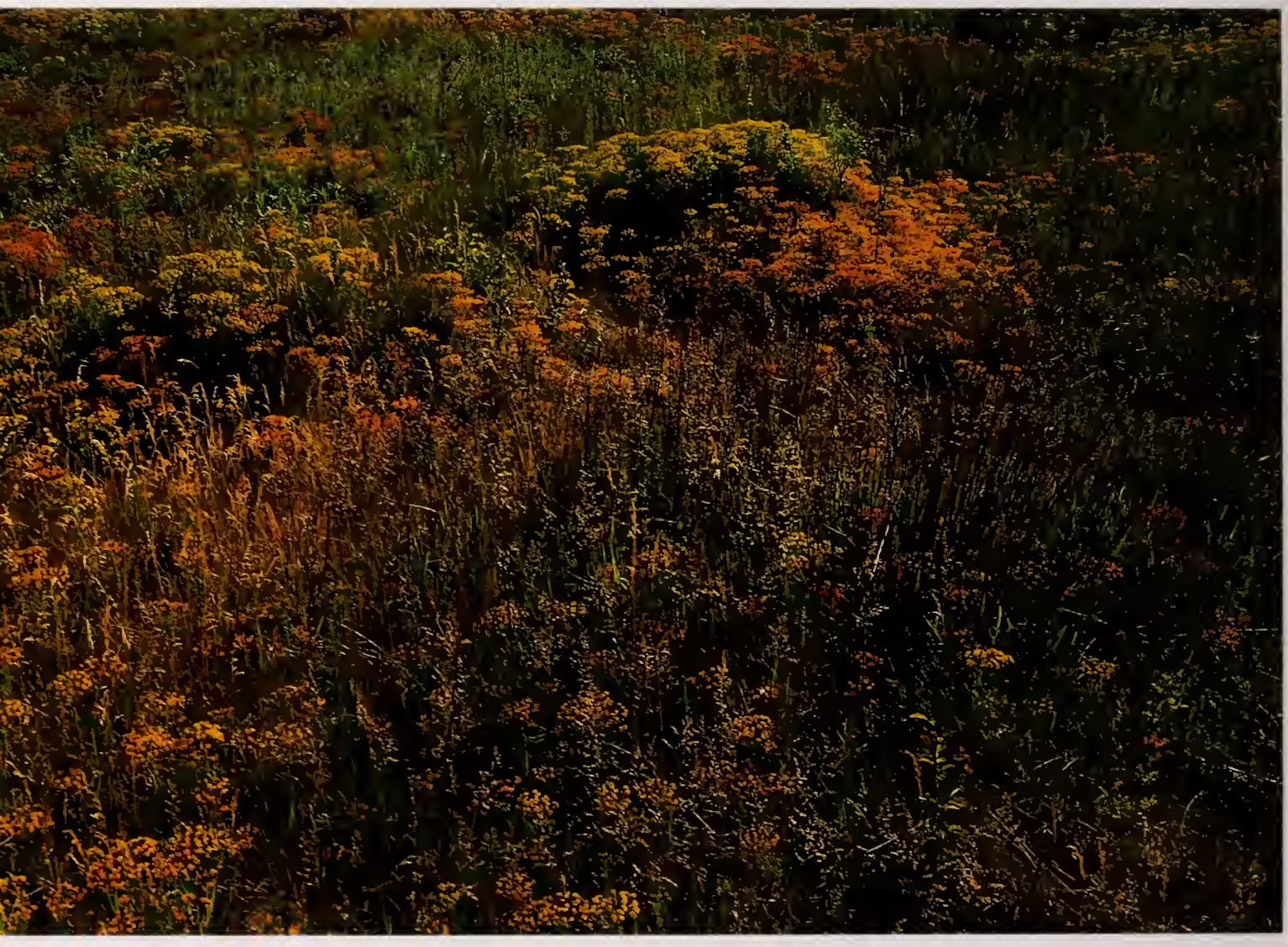
After: After PennDOT removed the pavement, subsoil was amended with a mixture of "Earth Life," a recycled byproduct donated by the City Water Department from its sewage treatment facility. The soil then was shaped and mounded into berms, which were planted with flowering crabapples, viburnums and red cedars. The edge between the roadway and berm was highlighted with ornamental grasses and a ribbon of golden wildflowers. The carefully selected grasses, though not native, excluded invasives. A similar planting scheme was recently installed on the remaining three corners. It was funded by our partners the City of Philadelphia's Streets Department and PennDot.

continued

Penrose meadow

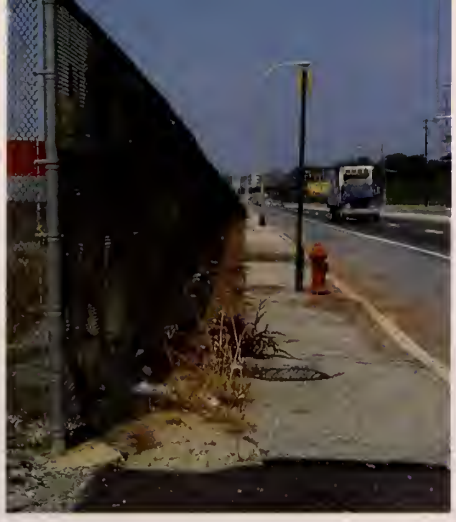
Before: An untended urban meadow lay behind the corner. Although scraggly and weedy, it contained many handsome native species, including milkweed, goldenrod, and asters. In urban settings with very local differences in soil structure and hydrology, meadow rejuvenation requires a process of trial and error over several years to learn the dynamics of the specific site and establish a sustainable and attractive meadow system.

photos by Andropogon Associates



After: The invasive vines and herbaceous plants were removed by hand and with selectively applied herbicides, keeping disturbance of existing native plants and soils to a minimum. More than half of the rejuvenated meadow's native grasses already grew on-site. Because the organic layer was too shallow to replant the meadow with grass plugs, the grasses and wildflowers were increased by overseeding the meadow with a wildflower mix that included a cover crop of sheep fescue and 15 annual and perennial wildflower species. The results: stunning.

photos by Barbara Olejnik



The refinery edge

Before: How to transform the long, desolate and deteriorated paved edge that enclosed the Sun Company's tank farm along the west side of 26th Street became the 26th Street Gateway Project's biggest challenge. An ugly ribbon of asphalt and chain-link fence rimmed the 3/4-mile refinery edge, an easy place to dump abandoned vehicles and trash because there were no curbs or guard rails. Here some of the partners intervened and paved the way for horticultural solutions.

Coincident with the project, the Philadelphia Electric Company (PECO) had plans to dig a trench along the road's edge to lay some of its lines underground. PECO agreed to backfill the trench to meet the project's soil specifications for a planting bed. Then we installed new curbing, guard rail, and sidewalk.

After: With funding from Sun Company for this phase of the project, a series of 10-foot-high triangular, chain-link, steel trellises were installed along the perimeter of the fence and planted with two kinds of native vines: woodbine and trumpet vine. The trellises serve several purposes: they support the vines, heightening their visibility, and they stabilize the old fence. The trellises and vines softly frame yet keep Sun Company's tank farm's sculpture-like forms visible to motorists.

Further planting of the edge included red cedar evergreens which, combined with the trellises, interrupt the monotony and syncopate the roadside rhythm. A variety of trumpet vine with orange flowers and a diversity of orange and yellow wildflowers and grasses were planted to extend the ribbon-of-gold. The variation in textural contrasts along the eastern edge increases the sense of depth, enriching the visual experience. Implemented in two stages, the entire stretch of fence line should blaze with blooms by late summer 1993.

continued

Ongoing maintenance/management

What reading, writing, and arithmetic are to education, weeding, mulching, mowing, pruning, fertilizing and watering are to horticulture. The basics. Corporate sponsors, particularly Sun Company and Conrail, have generously funded an ongoing Gateway maintenance program that enables Pennsylvania Horticultural Society to retain and work with maintenance/management contractors.

Fortunately, Andropogon's design requires relatively low maintenance because it relies heavily on native plants, which require less fertilizer and irrigation than typical ornamental plantings. Less trash accumulates along 26th Street today because the landscape looks cared for. Maintenance here requires, what Carol Franklin calls, "succession managers rather than turf mowers."

Maintenance/management, the name-of-the-game along the eastern edge, moved into high gear this year with contributions from Conrail. After eliminating half the billboards, masses of invasive vines and plants were removed. The slopes of the railroad embankment will be stabilized and enhanced with hedgerow plantings of red maple and sweetgum, similar to those already established on the western side. Native grasses and perennials will be planted along the edge to tie the scheme together with the ribbon-of-gold theme.

photo by Barbara Olejnik

photo by Andropogon Associate

What we learned

With three of the five landscape areas successfully launched, the 26th Street Gateway Project has borne fruit of several varieties (listed below): There is even evidence that the rejuvenated landscape attracts more wildlife. Barbara Olejnik reports hearing lots of songbirds and seeing pheasants and butterflies, including Monarchs, none of which were sighted here before the project. In addition to the tangible transformation of this once messy roadside into a seasonally stunning parkway, these lessons stand out:

- **Plant/people partnerships really work**. Put together the right mix of people and expertise — public stakeholders, private land owners and managers, landscape horticulture professionals, and volunteers — and you create a synergistic effect. As Olejnik puts it: "Nobody can do it alone. What at first seemed like an overwhelming project that no one wanted to tackle, became doable as we worked together."
- **Break the project into stages and go for immediate results**. The entire 26th Street corridor was too much to tackle all at once. Only after the landscaped corner site was complete and visible to the potential partners did commitments become real.
- **Re-evaluate periodically**. Once you put a design like this into the ground, you need to go back over several seasons to see if your original ideas are holding up and doing what you thought they would do. It is not a definitive process, rather an ongoing learning experience for PHS, the designers, the partners, and the maintenance contractors. Ongoing maintenance support with long-term commitments to landscape management are necessary for success.
- **Educate the eye**. Appreciation for the kinds of landscapes that surround urban industrial sites requires careful looking to understand them. According to Barbara Olejnik, "People are used to seeing mowed lawns and ornamental shrubs instead of wonderful, wild scraggly things. What we've got here is a looser, more naturalistic landscape. The eye needs retraining to appreciate diversity in the landscape." PHS holds periodic tours for its partners, giving them the opportunity to walk the site together, learn first-hand what grows here, how to recognize and care for it. And finally, to cherish it.

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William G. Hengst, free-lance writer and land planner, resides in West Mt. Airy, Philadelphia. His interest in the landscape began during boyhood in the 1940s when lawn mowing and eradicating crabgrass were the rage. Today, in his spare time, he assists as a horticulture volunteer at the Morris Arboretum of the University of Pennsylvania.

photo by Barbara Olejnik

◀Before: Section between corner and refinery edge.
After: Spring in bloom.▼

photo by Andropogon Associate

photo by Barbara Olejnik

Same site in fall. At first some people were surprised by the wilder, more scraggly landscape. They thought that the softer, browner colors meant the ornamental grasses were dying. Used to suburban gardens, they came to understand the requirements of urban industrial sites where these plantings replaced mowed lawns and ornamental shrubs.

The Maddening Perennial:

by Olivia Lehman

photo supplied by J. Revlock & B. Agard

Misha Revlock (right) and friend. Children take their paths where they find them.

Do we fool ourselves when supposing that gardens are natural places, removed somehow from the designed interiors and measured highways of our lives? Though composed at bottom of humble earth and seed, and fed by the sun, gardens are separated from the abandon of dunes, marshes, forests, and valleys by a distinctly human touch. The fabled Japanese gardeners bend to sweep up falling pine needles — only to strew the same frail leaves minutes later, in artful imitation of nature's grace.

Inevitably, a gardener is both master and servant. To tend the earth we must *serve* the elemental, yet *master* or control the neighbors. Nowhere is this predicament more evident than when we consider those garden spots that bear the weight of heavy pedestrian traffic. How do the caretakers of public gardens maintain the integrity of a horticultural design when up against the maddening destructiveness of the human foot? Experts from city, university and community gardens must address this problem daily. Their solutions are characterized by a sometimes brutish common sense.

New York City's Central Park

More than a century ago landscape architects Frederick Law Olmsted and Calvert Vaux won the coveted privilege of designing New York's expansive green refuge, Central Park. Incredibly, all 843 acres of this grand public "garden" are man-made, although much of the Manhattan schist used to create the park's distinctive hillocks was excavated from within the site itself. Dramatic features such as these rock formations, as well as a zoo, lakes, ponds, and theaters draw more than 14 million people through the iron gates every year, yet it is still the sprawling greenery that distinguishes the park most.

Sheep Meadow, the Great Lawn, Strawberry Fields: here are spots where countless native New Yorkers and out-of-towners have protested, celebrated, memorialized, and summered. Director of Horticulture for Central Park Neil Calvanese, and his crew of 50, see to it that these throngs find themselves relaxing on grassy carpets, not dusty rock heaps.

Calvanese, trained in arboriculture, be-

photo supplied by Grounds Dept./Central Park

Before and after: They say it can't be done. Yes, they've eliminated desire lines (paths of least resistance) with sod at Loeb Boathouse, Central Park.

Foot Traffic through Gardens

gan working for the park in 1981, as a tree climber. Today he's responsible for the upkeep of all the site's horticultural elements. Not surprisingly, Calvanese quickly stresses the importance of grass for city parks. He claims that because it is perhaps the first feature visitors take in, constant maintenance is essential.

In Central Park, landscapers favor tall turf-type fescues because of their deep root systems, and subsequent drought resistance. Grassy spots are kept well aerated, overseeded and nearly herbicide-free; to further insure that lawn areas remain as lush as possible, specific sites, like Heckscher Ball Field and Sheep Meadow, are periodically off limits, e.g. can't be used. As recently as the 1970s Sheep Meadow, just a stone's throw from the famous Tavern on the Green Restaurant, had fallen into utter disrepair. Today, by closing off Sheep Meadow in winter, crews can properly maintain this resurrected field.

With thousands visiting the park each year, the problem of theft arises. Calvanese partially solves the problem by planting beds with modestly priced, hardy plants that share the aesthetic qualities of costlier varieties: *Helleborus orientalis* in its fullness can provide shape and texture similar to that of *Hosta; Liriope spicata* takes to the wind with the grace we expect from exotic grasses; and *Vinca minor* as an attractive groundcover, though less expensive than other low-growing plants like pachysandra and ajuga.

To more aggressively deter theft and to direct foot traffic away from planted areas and onto designated paths, Calvanese uses spiny barrier plants, shrubs that establish themselves quickly and are uncomfortable to handle. The barberry *(Berberis julianae)* fits the bill, as do hawthorns and *Acanthopanax.* The park's purely ornamental plantings feature hardy shrubs, e.g. euonymus, oak leaf hydrangea and *Abelia* x *grandiflora.* When choosing non-spiny plants to form barriers, consider size; for example, knee-level plantings take more abuse than taller ones. Calvanese recommends that in areas subjected to heavy foot traffic unprotected plants be either sizable or thorny.

Although barrier plantings and defensive structures like fences and stone walls can protect those areas vulnerable to foot traffic,

photo by Howard Holden

Heavily used Bryn Mawr campus grounds accommodate students at concerts, May festivals and other events.

gardeners might also benefit from letting mosses like path rush settle into compacted areas; taking a more relaxed view of garden use can be liberating. It is in that context that we focus our attention on those natural, yet sometimes frustrating, brown gashes known as "desire lines;" those roughly beaten-down paths pedestrians create through constant use. Although not formal elements of a garden's original design, they certainly make their marks, sometimes inspiring garden landscape redesigns.

Where busy scholars do not fear to tread: challenges of campus gardening

Both Howard Holden and Rick Ray are more than passingly familiar with the persistent emergence of desire lines. Holden is associate director of Facilities Services at Bryn Mawr College and Rick Ray an instructor of Ornamental Horticulture at Delaware Valley College, each of these horticulturists faces the challenge of maintaining an unusually scenic campus.

Bryn Mawr, located in the Main Line suburbs west of Philadelphia, boasts of a landscape based on designs created by the Olmstead/Vaux team, while Doylestown's Delaware Valley College is being redesigned constantly by the school's many horticulture students. For these energetic young people, the campus becomes a drawing board of sorts.

During a tour of Bryn Mawr's rolling lawns, led by Holden's Grounds manager Dennis Kryszan, one gains a sense of what a campus gardener is up against. Students express, through their stubborn pathfinding, the essential needs of their academic lives. Students can't get to the computer building too quickly it seems. They ignore a paved walkway leading to this building, and carve out a more direct line instead. Kryszan appears frustrated by this disturbance of the lawn's lush appeal and discusses future plans. Inevitably, designers will create formal pathways out of some of the students' brazen ones, we hope the task does not turn Sisyphean.

Kryszan favors perennial rye grass as well as blue grass, and like Neil Calvanese he constantly reseeds. In the battle against

continued

The Maddening Perennial

photo by Howard Holden

The well kept grounds create a serene setting for students en route to classes. (Cutting across grass, off paths, often creates desire lines — bare spots — that groundspeople must deal with in a variety of ways.)

foot traffic he uses small shrubs such as dwarf euonymus, fire thorn, and William Penn barberry, in addition to larger hollies, as barrier plants. Students are invited to lend a hand in maintaining the landscape, consequently investing them more in its preservation. Undergraduates propagate annuals in a small campus greenhouse, prune, plant and even label trees poetically, as befits their renowned liberal arts college. Besides bearing a common and botanical name, many specimens display appropriate literary quotations on their trunks. One of the campus's many ornamental cherries bears poet A.E. Housman's lines: "Loveliest of trees, the cherry now/Is hung with bloom along the bough."

Interestingly there's a particular spot on Bryn Mawr's campus that students are unlikely to ravage: the long grassy aisle punctuated at its end point by a charming "moon bench" and lined on its sides by white oaks and sugar maples. This is Senior Row, hallowed ground, the site of romance and May Day ritual. With young women laughing and running behind them, wooden hoops of nearly totemic value are rolled down this aisle's corridors by graduating seniors, thereby determining futures and spreading joy. This sort of foot traffic does a landscape good.

At Delaware Valley College in Doylestown, strong horticulture and agriculture departments make their mark on the 500-acre property that includes cropland, forest, wetlands, a lake, streams and turf grass. Rick Ray, an instructor of ornamental horticulture at the college, stresses the importance of preserving soils in heavily trafficked areas by constructing protective "hardscapes": brickwork, flagstone, gravel, boulders and grass pavers. These structures will guard underlying soil from extreme compaction, thereby ensuring the health of trees and shrubs. Ray suggests that young trees be planted when constructing the hardscape so the trees will benefit from noncompacted soil at an early age.

Those who welcome the look of hardscape in a garden may consider adding planters and/or raised beds, which display plantings beautifully while elevating them out of harm's way. Ceramic, iron, and terra cotta urns, or log-edged raised beds, add a sculptural quality to the garden landscape, while eccentric elements like bathtub planters can add a touch of humor.

Ray offers a few simple yet valuable pointers for garden pathway designs. For example, "people love straight lines" and that the narrowing of traffic promoted by paths can be diffused by pavers, which combat the compaction so common to these garden spots. Placing a sizable boulder or kickstone at an entrance way as well as mulching paths also limits compaction.

As a long-time ornamental horticulture instructor, Rick Ray is familiar enough with plants to know that they are often capable of defending themselves. In addition to the previously mentioned thorny plants, like hardy oranges and barberries, Ray suggests wildflowers when trying to fend off foot traffic. An expansive wildflower planting defends itself passively simply by its scale and durability. The sprawling wildflower bed brimming with cosmos, daisies, asters, Queen Anne's lace, gypsophila and poppies, often presents a protective shield that belies the delicacy of the planting's individual specimens.

Ray's final words of advice to gardeners sound like so much common sense, yet they are invaluable: recognize that the most compacted, eroded and vulnerable garden spots require our greatest efforts. By knowing the history of your garden space you will best be able to resolve soil problems and understand light patterns. Vulnerable spots become even more vulnerable when we place plants inappropriately. Some species, however, can tolerate many types of conditions, including heavy foot traffic. For example, Ray recommends rupturewort *(Herniaria globra),* which Yvonne England uses successfully, for example, on the walkway at her retail herb farm in Honeybrook, Pa.

Urban community gardeners

For those who tend urban community gardens, high foot traffic and the theft that often accompanies it are part and parcel of the gardening experience. Yet no matter how many tomatoes are pilfered or chicken wire fencing left in tatters, the devoted manage to persevere. An urban community gardener, perhaps more than any other, understands how to protect a garden by using tactics both material and psychological.

Many of Philadelphia's community gardens thrive with the help of the Pennsylvania Horticultural Society's Philadelphia Green staffers like Sally McCabe and Deborah Hall. Deborah organizes gardening efforts at several of the city's public housing projects, and has become a firm believer in the value of ornamental paths and slope gardening. Using materials like flagstone, granite, and the humble woodchip, Deborah helps residents fashion those walkways that will steer traffic away from prized azaleas, rhododendrons, lilies, irises and more. Plantings on slopes, near steps or on short-cut paths for example, protect elderly residents and children from the danger of slipping on eroded surfaces.

Ultimately, however, Hall relies on the

photo by Ira Beckoff

Need to unify a large garden? Woodchip paths will do the trick. Champlost Homes, Philadelphia.

"investment" factor, when it comes to protecting a garden: "If enough people become involved in the creation of a plot, then it stands a better chance of surviving." Children, for example, often delight in fending off garden stalkers.

Sally McCabe heartily agrees with Deborah when it comes to valuing community involvement. Sally sees urban gardens as territorial in nature and is convinced that even the sturdiest fence will not keep out those determined to ravage a garden lot. McCabe suspects that people respects boundaries more times than not, and that most passersby will be less likely to harm a garden that is being well taken care of. That means it's important to fix problems immediately, so as not to foster the disrepair that invites trouble.

For Joe Revlock and Beverly Agard, caretakers of the glorious Summer/Winter community garden in Philadelphia's Powelton Village, protecting their beloved lot has inspired some ingenious scare tactics. Positioned dangerously close to the dormitories of late night Drexel University revelers, the Summer/Winter garden is an easy target for vandalism. One Mischief Night Joe and Beverly decided to try a humorously aggressive approach to warding off troublemakers by positioning hoses at both entrances to the garden. Even the fiercest revelers are apt to be put off by rough sprays of water washing over them.

Special flowers like phlox, columbine, bleeding heart, and tulips have been filched from the Summer/Winter garden, forcing gardeners to keep some flower plots locked up. Joe and Beverly and their fellow gardeners have not given up on their green oasis however. In summer gooseberries, wineberries, raspberries, Nanking cherries and more stand ripe for the picking. Bee tending, fish farming and elm cultivation are just some of the wonderful projects that keep Summer/Winter gardeners busy. Joe Revlock mentions that happily there are some advantages to high foot traffic. Woodchips on his garden path are so trod upon each year that by spring they are sufficiently decomposed to be used as humus for the gardens.

It is easy to forget the pleasure of sharing our greenery with others as we struggle to preserve a garden's charms. With a little planning, however, we can gain both order and fellowship. Feet do belong in gardens; it is the task of wise gardeners to choreograph their dance.

How to Cope with Foot Traffic in the Garden

- Consider turf-type fescues and rye grasses when choosing seed for a highly trafficked lawn.
- For vulnerable beds, plant moderately priced varieties, or ones grown from seed.
- If barrier plantings are your solution, remember that sizable or thorny shrubs and trees will serve you best — knee-level plantings will receive more abuse than taller ones.
- Remember that "desire lines" are often difficult to fight. Why not incorporate them into your garden design?
- When planning to construct hardscapes around trees, try doing your building at the same time young trees are planted, to ensure tree health.
- Consider raised beds and planters. They can add a sculptural appeal to your garden, while they protect plants.
- Place pavers and kickstones at pathway entrances to combat compaction. Mulch fights compaction of paths themselves.
- Use a wildflower bed as garden protection.
- Placing plants in spots that suit their particular needs will make them better able to survive heavy traffic.
- Plant areas that have been eroded so people will be less likely to stumble on them.
- When possible, have neighbors, children in particular, become involved in maintaining trafficked areas; that will encourage protectiveness.
- Remember that a well maintained garden is less likely to be destroyed.

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Writer/editor Olivia Lehman lives and gardens in Narberth. She enjoyed learning gardening while working as a neighborhood coordinator for the Pennsylvania Horticultural Society's Philadelphia Green.

illustrations by Julie Baxendell

How to Grow Plants Indoors

by Michael W. Bowell

Ah, to live in a glasshouse with tile floors and drains in every room . . . a dream many of us share. For those who have not yet achieved utopian growing conditions for indoor plants, the author offers some suggestions.

Growing plants in our homes can be quite a challenge, especially for gardeners who cannot be satisfied with just a few pots of tropical, low-light plants. We all must deal with realities that range from hot, dry apartments to cold, drafty old houses and super sterile, airtight new homes. Then there are the organic pests that include spider mites, mealy bugs, jealous pets and significant others who just don't understand dirt, mildew, spiders, fir bark in the kitchen sink nor trails of water throughout the house. Let's start with the physical aspects and requirements of interior horticulture.

The basic requirements that all interior plants are adequate light, temperature, water and humidity. Secondary concerns include pest control, repotting, grooming and ultimately, enough space to grow everything to its fullest potential. Since very few houses serve as good greenhouses, it makes sense that changing conditions to accommodate houseplants and gardeners sometimes create other problems we need to address.

Light and space

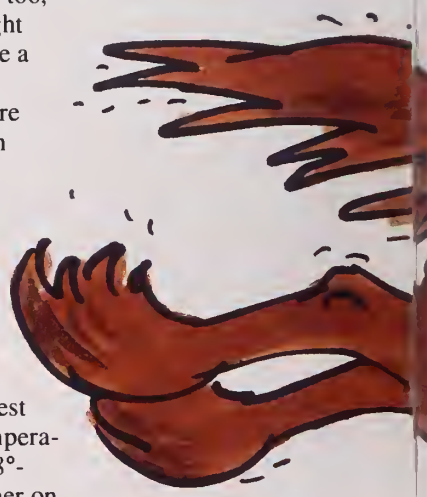
The two most difficult conditions that indoor gardeners must struggle with are light and space. The space must be in a spot where light (and other growing conditions) are adequate. As with life's other problems, an ounce of prevention is worth a pound of cure. Whenever I have shopped for a place to live, the natural lighting (not the neighborhood) topped my list of concerns. As I now plan a new home, light and exposure are again my major considerations. A southeast window is utopia for most plants requiring lots of light. The sun is low from late autumn through early spring, providing plenty of light. Vertical blinds provide some relief for the plants when it becomes too hot and dry on late winter days. By the time the trees leaf out, blocking more light, many of these plants can go outdoors.

Select the right plants for the right spots. Low-light plants such as dracenas, aglaonemas, philodendrons and pothos would need protection in any southern exposure, but would do well in any other window location. Plants that are being over-wintered indoors do not require the same conditions as they would for optimum growth. That's true for hibiscus, lantana and other summer favorites. The general rule here is the lower the light, the lower the temperature and water requirements. These plants will jump back into full growth outside when days are long and temperatures are high in late spring.

You can increase the light intensities in your home several ways. Dark-colored paneling, wood, or paint absorb light and reflect very little; white walls reflect light and create brighter conditions. High gloss reflects more light than a matte finish. White or light-colored blinds or drapes are better alternatives to dark ones. Mirrors reflect lots of light. Mirrored walls can make a huge difference in a marginal setting. The most obvious way to increase brightness is to install artificial lights. These range from overhead and vertical track lighting to hanging fluorescents and several forms of high intensity lamps. Fluorescent light stands or carts provide "bunkbeds" of optimum growing conditions for your plants, using precious space efficiently.

Temperature and humidity

Temperature modification and humidity control are interrelated, so I will discuss them together. Most houseplants benefit from a diurnal swing in air temperature, warmer during the day and cooler at night. This daily temperature differential mimics their native habitats. As you know, our own temperate plants experience this same cycle. We know, too, sunny bright days create a greater temperature swing than cloudy dull days; that's natural. Most houseplants perform best at day temperatures of 68°-75°F, higher on sunny days when the sun raises the temperature. Those temperatures should drop 10° to 15° at night to lows of 58°-68°. That can be accomplished by growing the coolest loving plants in an unheated room and cracking the windows at night (careful, not right over the plants, especially if it's windy). If you need supplemental heat, which is usually not the problem, the small electric cube heaters work well in a small room. You might also use heating cables under seed trays, other propagation trays, or plants that require lots of warmth.



Humidity levels should range from 40-60% for many houseplants, including most foliage plants, gardenias, ferns, begonias and orchids. Basically, when the temperature goes up, the relative humidity falls. When the temperature falls, the humidity rises. Misting benefits houseplants that require high humidity, especially if it's done after the plants have warmed up a bit in the morning and you expect sun and warmer temperatures. You can also create higher humidity levels around the plants by grouping them together and by using hu-

When You Don't Live in a Glasshouse

midity trays. The trays have water in them and either stones, overturned pots, or plastic inserts that keep the pots out of the water. A five percent Clorox solution in water, added to the trays occasionally, deters algae and other unwanted plant organisms.

Other sources of humidity are vaporizers, pots of water placed on the woodstove and humidifiers tied in to the heating system. Plants that require very high humidity can be grown in terrariums or glass bowls with covers. Again, picking the right plant can be an alternative to raising the humidity or changing the temperatures. Most cacti, succulents, cycads and herbs will grow very well in either warm, dry or cool, dry conditions.

In many homes, the heating vents or radiators are located near the windows, great for keeping the windows clear of condensation during the winter months, but miserable for many plants. If you have multiple vents throughout the home, simply close those adjacent to your growing area. South, southeast, and southwest windows will clear during the day but be wet at night. North windows will turn icy during the coldest winter weather, especially if artificial lights run up the temperature in those rooms. On the other hand, growing under lights makes the most sense in north, northeast, and northwest facing rooms, since it cuts down on regular heating costs and keeps those rooms cozy warm on cold winter days.

When we modify the temperature and control the humidity to maintain our plant collections, we're likely to encounter some controversy in our homes. Whereas additional light might fade carpets and upholstery, and the growing size of the plant collection or individual specimens might compete for living space, these conditions evolve gradually and may go unnoticed for awhile; fogged windows and mildew are difficult to ignore. Have the Tilex ready, and check behind the furniture for patches of mildew.

Mirrors reflect lots of light. Mirrored walls can make a huge difference in a marginal setting.

To defend your collection you can argue that turning the heat down at night saves money and makes you environmentally sensitive. Point out, too, that humidities of 50-60% rather than the typical winter dwellings' of 10-20% benefit furniture woods and minimize problems with static electricity or dry, achy throats. Argue further that artificial lights help to relieve the symptoms of SADD (Seasonal Affective Depression Disorder), also known as the winter blues, which affects many of us to some extent.

Watering

Friends whom I questioned about the difficulties of growing plants indoors, all responded with the same concern: watering. How often, how much, how to figure out water quality and fertilization schedules, and how to keep the house clean. Here are a few generalizations. Almost all plants should be watered when they get dry, except for those going through a dormancy period. When you water plants, water them thoroughly, don't just "bless" them. Don't let them get bone dry before you fertilize; root damage may occur. If in doubt, water first, then fertilize. I keep saucers under all pots not set on humidity trays or in other plants. I empty these saucers if they retain water after several hours.

Potted plants placed on wooden furniture have saucers, usually within the pot, and a cork pad underneath the pot. I also nest my smaller plants in the pots of the larger plants. This creates nice visual combinations, cuts down on the volume of water that I have to carry, helps to maintain humidity around the plants, and ultimately, saves me time.

If a tray becomes too full of water, I use a siphon tube to lower the water level or mound the stones to raise the drowning plant. After you have used this system for

continued

awhile, you get the knack of knowing when to stop watering to prevent spillage. Beware of plants that have gotten so dry that their soil ball has contracted from the sides of the pot. Water these slowly or set in a pan of water. Otherwise, the water will run around the soil instead of being absorbed and create a river across the floor. Properly watered plants tend to stay healthy and not lose leaves nor create puddles, thus saving maintenance time.

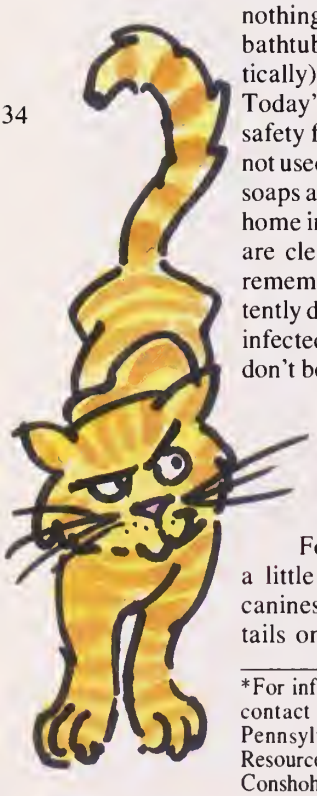
If you are experiencing difficulties growing certain plants, consider checking water quality. You can eliminate chlorine in your water by allowing the water to sit for a few days before you use it. You may have an unusually high or low pH that limits the solubility and absorption of certain minerals. A high soluble salt content might also limit the solubility of fertilizers or cause root damage to sensitive species. If you are experiencing difficulties that cannot be attributed to other sources, have your water tested.*

Air

Air ventilation will help keep your plants healthy. Opening windows when the weather is suitable generally makes you and your plants 'feel' better. Placing fans in your growing areas, generally on low speeds, mimics the plants' natural environment and helps control disease. Remember, some pots may dry out faster than others if you add fans.

Control insects, diseases and other pests

The way we control insects and diseases has changed greatly over the last several years. Ten years ago, I would have thought nothing of piling the houseplants into the bathtub and spraying them (and me, realistically) with an organophosphate pesticide. Today's conventional wisdom calls for safety first, especially in your home. I have not used anything stronger than insecticidal soaps and horticultural fine oil sprays in my home in the past three years, and my plants are cleaner than ever. Most important to remember is to be observant and persistently deal with critters and disease. Cut off infected leaves when you spot disease and don't be afraid to discard plants. If you can diagnose the disease, you may be able to modify the growing environment or simply move the plant to prevent further infection.

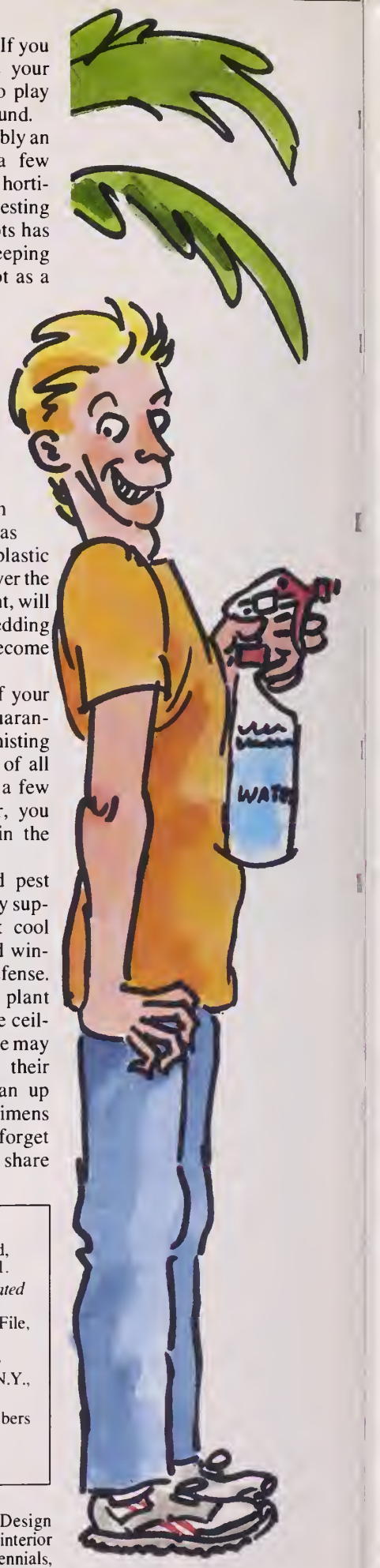


Four-footed pest control may require a little more effort. Short tails on small canines are much less destructive than long tails on large ones, especially when they express admiration enthusiastically. If you have a puppy who likes to divide your orchids, chances are he just likes to play with a pot. Leave a few empties around.

"Felines vs. Houseplants" is probably an article unto itself, but here are a few recommendations from cat-loving horticulturists. As mentioned previously, nesting small pots into the tops of larger pots has many advantages; one of them is keeping kitty from digging and using the pot as a litter box. This can also be accomplished by putting potato-size rocks into pots so the cat can't dig there. One friend has had success with inflated balloons; once the cat pops it, the cat is gone forever. Chicken wire is effective, also, but is not very attractive. Keeping cats out of those larger pots may also keep them from scratching the trunks of plants such as ficus and dracena. A fine black plastic netting or nylon bird netting pulled over the entire plant stand, including the plant, will usually discourage the cats from shredding or swatting foliage, unless they become bored or annoyed.

Another tool to use in defense of your potted friends is a 'water scooter'; guaranteed to work. Keep a water pistol or misting bottle set at full blast within reach of all plant-growing areas. I'm told after a few encounters with the water scooter, you simply need to pick it up to attain the desired result.

For two-legged pests, integrated pest management works best. I've already supplied some good arguments about cool temperatures in winter, heat, fogged windows and mildew to serve in your defense. But for cohabitants who are not plant lovers, the spiders dropping from the ceiling, escalating collections and the like may seem like major infringements on their territory. So here's my advice: clean up your messes; share your prize specimens when they're at their peak; and don't forget to leave a little time for those who share your space.



Books* Selected by Janet Evans

Garden in Your House, Ernesta D. Ballard, Harper & Rowe, N.Y., Revised ed. 1971.

Growing Beautiful Houseplants; an Illustrated Guide to the Selection and Care of over 1,000 Varieties, Rob Herwig, Facts On File, N.Y., 1987.

The New Houseplant; Bringing the Garden Indoors, Elvin McDonald, Macmillan, N.Y., 1993.

*All of these books are available to members through the Pennsylvania Horticultural Society Library where Janet Evans is librarian.

*For information on where to have water tested, contact your County Extension agent or the Pennsylvania Department of Environmental Resources, S.E. Regional Office, 555 North Lane, Conshohocken, PA 19428, (215) 832-6000.

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Michael Bowell, proprietor of Floral Design Associates of West Chester, specializes in interior and exterior garden design, focusing on perennials, unusual annuals, tropicals and orchids.

Regenerate Your Garden's Life

In his article "Regenerate Your Garden's Life" (*Green Scene,* May 1993), Wayne Clifton speaks about the secret to speeding up the composting process, namely, by achieving the optimum carbon to nitrogen (C/N) ratio or 30 to 1, further noting that approximately 30 pounds of leaves to every pound of grass will yield this optimum ratio. This statement apparently incorrectly assumes that leaves and grass clippings are 100% carbon and nitrogen, respectively.

All elements used in composting are part carbon and part nitrogen in these approximate ratios: grass clippings, 15 to 1; weeds, 20 to 1; leaves, 60 to 1; paper and straw, 90 to 1; kitchen garbage and fruit wastes, 16 to 1; dried cattle manure, 15.4 to 1; and so forth. If one mixes 30 pounds of leaves with 1 pound of grass clippings, the resultant ratio comes out to 59 to 1 (much too low a nitrogen content to properly heat up the composting material to a level essential to fast composting and essential to destroying weed seeds, parasites, and so forth). On the other hand, mixing say three pounds of leaves with seven pounds of grass clippings yields a ratio of 28.5 to 1, well within the desired range. (According to the literature, there is nothing sacred about hitting the ratio on the nose, that ranges between 25 to 1 and 35 to 1 are perfectly acceptable to achieve excellent results.)

I personally compost under the so called 14-day method, using a compost tumbler marketed by Kemp. Kemp has put out excellent literature on this subject. And for those thirsting to know composting in depth, there is the 1007-page book published by Rodale Books entitled *The Complete Book of Composting.*

William C. Becker
Princeton, NJ

Wayne Clifton responds:

My Rodale composting books* list the same carbon to nitrogen (C/N) ratios as listed in Mr. Becker's letter. My 30:1 ratio comes from *my* 10 years of gardening experiences. While I learn from books, I adapt this knowledge to *my* garden's needs.

In my article, I should have been clearer when pointing out that this 30:1 ratio applies to composting my fall leaves. In each of the past five years, I have composted over 150 large bags of leaves roughly following my 30:1 ratio with excellent results. I rarely have enough grass clippings during late fall to accommodate all my composting needs. My fall composting process involves preshredding the leaves using a Troy-Bilt garden shredder, layering the leaves with grass while adding water. The compost pile requires turning twice over the winter.

While approximating the 30 to one ratio, I have recorded, using my Kinsman garden thermometer, temperatures as high as 140°F in the center of the pile. I prefer not to have the compost completely composted by spring. I allow the microbes in the soil to finish the composting process.

The C/N ratio will change if one practices the 14-day composting method, which requires a considerably higher nitrogen (i.e., grass clipping) level in your compost. To keep the pile cooking, the nitrogen material must react more vigorously with the carbon material. The 14-day method requires turning the pile frequently to keep the process going.

The secret to composting is knowing the demands of the composting process you want to use. For fall leaf composting, a higher C/N ratio can be used. For year-round composting, the C/N ratio must be lower for quick composting.

Mr. Becker indicates to maintain a C/N ratio of 28.5:1, you would want to use three pounds of leaves to seven pounds of grass clippings. Using this ratio, I would need a considerably larger supply of grass clippings versus leaves. Using this ratio in my leaf composting process, I would need 350 bags of grass for my 150 bags of leaves. Perhaps Mr. Becker's ratio should be seven pounds of leaves to three pounds of grass clippings. Using this ratio would indeed create a hot pile but still require a considerable amount of grass.

No matter what method is used, the goal is to recycle your garden waste into a renewable source of garden "Gold." Every individual garden will develop techniques that works for them.

*See books listed in May/June (1993) *Green Scene* on page 22, "Regenerate Your Garden," by Wayne Clifton.

Books* Selected by Janet Evans

General Works on Plants for Difficult Sites

The American Horticultural Society Flower Finder, Jacqueline Heriteau and Andre Viette, Simon and Schuster, N.Y., 1992.

Conservation Plants for the Northeast, David G. Lorenz, W. Curtis Sharp, and Joseph D. Ruffner, U.S. Department of Agriculture, Soil Conservation Service, Washington, D.C., 1991.

The National Arboretum Book of Outstanding Garden Plants; the Authoritative Guide to Selecting and Growing the Most Beautiful, Durable and Care-Free Garden Plants in North America, Jacqueline Heriteau, Simon and Schuster, N.Y., 1990.

Ortho's Plant Selector, editorial staff, Ortho Books, Chevron Chemical Co., San Ramon, Ca., 1991.

Right Plant, Right Place; the Indispensable Guide to the Successful Garden, Nicola Ferguson; American Editor, Fred McGourty, Summit Books, N.Y., 1984.

*All of these books are available to members through the Pennsylvania Horticultural Society Library where Janet Evans is librarian.

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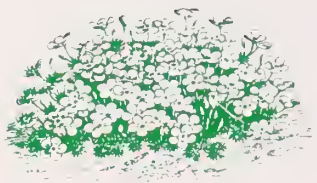

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Limited space at this South Philadelphia home drew on Robert Kershaw's ingenuity. Window boxes, containers hung on the 10-ft.-high light pole and a few shrubs soften the concrete landscape around his home.

photo by Gina Burnett