GREEN SCENE

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TLC: Tender, Loving Conditioning Pays Off at the Harvest Show.

See page 6

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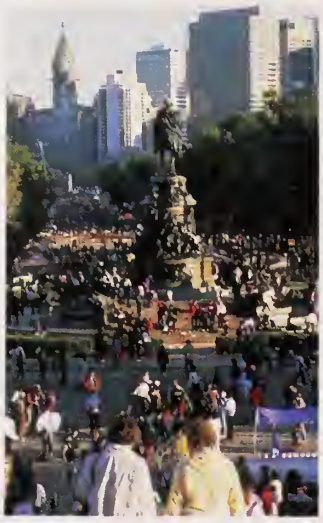

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CORRECTION:

In the May issue of *Green Scene*, in "Gardening in Public Housing" (page 22), author Natalie Kempner mentioned that Bartram Village lacks an adult tenant organization for community projects. Bartram Village does have a Tenant Council, headed by Emma Templeman. The Council does a number of community projects; the point Kempner was making, however, is that the tenants have not been able to generate the supportive organization for their gardening activities. The Council and Templeman have, however, provided Philadelphia Green space for workshops. Emma Templeman, herself, has supported and helped the Children's Garden since it's inception.

CORRECTION:

July *Green Scene*, page 32. "Building a Community Pond in a Community Garden": the photo of the pond on page 32 was by Denise Jefferson, not Mary Pat Kane as marked.

Front Cover: Chinese chives and goldenrod. See page 6

photo by Walter Chandoha

Back Cover:

photo by Tim Morehouse

in this issue

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An Apple Tasting Party

photo by Liz Ball

The winner: The Fuji apple from Japan.

by Liz Ball

Over a lifetime, the average person may taste about six or eight varieties of apples. These are the ones available to most of us in the local grocery store or farmer's market. This limited experience persuades us that apples are basically round; are, with one or two notable exceptions, usually red; and that they are pretty similar. Rarely do most people have an opportunity to become acquainted with a dozen or more varieties of apples simultaneously and learn the wonderful and subtle differences in color, shape, taste and texture that actually exist among the many varieties of this wonderful fruit. This was the unique pleasure a group of us enjoyed at an apple tasting party that Jeff and I hosted at our home.

Our unusual invitation intrigued our friends. Since most of them are interested in good food, the prospect of an apple tasting was irresistible, and they arrived on a Sunday afternoon in October ready for anything. We had ordered a sampler of 12 varieties of apples from Applesource in Illinois (see sidebar), all of which were uncommon and therefore, unfamiliar to all of us. Our plan was to follow the model of a wine tasting, requesting that our guests sample each of the varieties of apples and then evaluate them. We hoped to determine if there was a favorite apple, one that would appeal to nearly everyone, or if individual tastes would prevail and there would be many winning varieties. Of course, we also hoped to have fun.

Careful preparations beforehand contributed to the success of the day. First, we carefully designed the table setting. We set out around the circumference of the dining room table two of each variety of apple on a dessert plate with a small paring knife. We labeled each place setting with the apple variety the guest would be tasting. Since we were expecting 16 guests, we allowed plenty of space for each guest to comfortably approach the table and circulate around it to reach the apples. Our apple varieties included newer ones such as Holiday, Melrose, and Jonalicious; Japanese varieties such as Fuji and Mutsu, and antique representatives such as Newton Pippin and Esopus Spitzenburg.

We also added some interesting, but not overpoweringly strong, types of cheese to be eaten between apple tastings, to clear the palate. Here we tried to represent different countries, deciding after consulting with people at the local cheese store, on Gruyere from Switzerland, Creamed Havarti from Denmark, Brie from France and Blarney from Ireland. Several of the guests, already in the spirit of the occasion, contributed homemade sourdough and French breads, which we augmented with a loaf of fresh, dark pumpernickel. Standard alchoholic beverages common at traditional parties are not appropriate during the tasting process, since they tend to deaden the tastebuds. So we offered kir, a Chablis wine mixed with enough Creme de Cassis (black currant liqueur) to make the wine a rich pink color, which is recognized as an effective drink for cleansing the palate. Luckily, we had lots of seltzer water on hand, too, because that is what most of our guests chose to drink.

Finally, we developed a scorecard for

continued

photos by Liz Ball

Since the apple varieties were unkown to all of us, we did not devise a blind taste test similar to wine tastings. The labels helped guests keep track of which apples appealed to them.

our guests to rate the apples they were to taste. After much debate we decided that the characteristics to be judged should be: color, aroma, texture, taste. These would be recorded on a scale of 1 (poor) to 10 (excellent), the scores being totaled to arrive at an overall rating for each type of apple.

Shortly after our guests arrived, after they had a chance to great each other, we handed each of them a scorecard and pencil. We invited them to begin their tour around the table at whatever point they preferred, slicing a piece from each type of apple, sampling it, then recording their impressions.

Apples are not just round and red; they are speckled, striped, pinkish, beige, yellow or green or maroon. They come crispy and soft and gradations between; and tart and sweet, with very white flesh, and cream colored flesh, and tough skin and tender skin. They have round bottoms and pointed bottoms; are sometimes huge and occasionally are on the small side. Some are downright ugly and would never win the beauty contests at the supermarket produce counter. What revelations as we surveyed the specimens arrayed on the table and noted the obvious differences.

This was the quietest party we've ever had. Our friends approached their assignment with great seriousness and the room fell quiet as they sliced, sampled, smelled, thought, wrote, sipped, munched bread and cheese, then moved to the next plate of apples. We were all astounded at how sophisticated our standards became after sampling four or five varieties. Many guests became partisans of one or another of the apple varieties on the table, marveling with each new taste experience how distinctive each apple was.

Tallying ballots was the climax of the afternoon. The noise level increased impressively as the 16 guests gradually completed their scorecards and then informally debated among themselves the virtures of each apple variety. They chatted and ate more bread and cheese as ratings were toted up. The winner? A significant consensus: the Fuji. This apple is the best selling one in Japan and obviously our party guests appreciated its virtures too. It is huge, with an attractve russet color, and a crispy, beautiful white flesh that is pleasingly sweet. It has a long season here in the US and is rapidly becoming very popular.*

The 18 of us did not finish all 24 apples, so after the party was over, my mother peeled and sliced the remnants and steamed them over a little water with lemon juice, sugar and cloves added, until they were cooked just to the point of softening. This impromptu compote, a blend of 12 different apple flavors, was a delicious conclusion to one of the most interesting and successful parties we have ever given.

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Liz Ball is a photographer specializing in custom "Garden Portraits" and plant photography. Her photographs have appeared in several national magazines and are featured in the *60 Minute Garden* and *Problem Solver* books by Rodale Press

*Editor's note: The only source of Fuji apple tree nursery stock we could find on the East Coast is Adams County Nursery, Aspers, Pa 17304 ACN offers a free descriptive catalog available upon written request.

Each guest tasted a slice of apple, then rated its various characteristics. Each was surprised by the variations of color, flavor and texture between the 12 varieties tested.

How to Order for Your Apple Tasting Party

The apple tasting party was suggested to us by Jill and Tom Vorbeck, orchardists in Illinois. Their Applesource Company produces and ships 60 different varieties of apples all over the country, including many of the hard to find, old-time favorites such as Northern Spy, Winter Banana, Northwestern Greening, and Golden Russet.

Apple varieties featured at our party were: Mutsu, Melrose, Esopus Spitzenburg, Blushing Golden, Fuji, Gala, Swaar, White Winter Pearmain, Golden Russet, Holiday, Jonalicious, Newton Pippin.

Customers can select the varieties from their catalog for a Pick Your Own box of 12 apples, representing six different varieties, or the Vorbecks will recommend an assortment as they did for us. Their Sampler Box has 12 apples, each one a different tasty variety (often obscure, less conventionally attractive ones), and the Explorer Box features six modern, very good, attractive varieties

Their shipping season is from late October through early January, although orders can be placed at anytime. They will mail orders for a specific requested date, otherwise the orders will be shipped about two weeks after they are received during those months.

For information write: Tom and Jill Vorbeck, Applesource, Route #1, Chapin, Illinois 62628

Sonoma Antique Apple Nursery offers a Tasting Pack containing two apples each of 12 different varieties selected from the following available: Baldwin, Golden Delicious, Newton Pippin, Sierra Beauty, Spitzenburg, Stayman Winesap, Winter Banana, Yellow Bellflower, White Pearmain, Arkansas Black, Black Twig, Granny Smith, Rhode Island Greening, Wagener and Lady depending on availability October 1. Boxes shipped UPS October 5. Catalog $1. UPS air shipment east coast. Sonoma will offer a Christmas pack as well this year.
Sonoma Antique Apple Nursery
4395 Westside Rd.
Healdsburg CA 95448
707-433-6420

Applesource and Sonoma are the only two shippers we could find that offer any breadth of apple varieties for shipping. If you want to party on a more modest scale, check with your local orchard or county extension agent; the Cooperative Extension offices often have lists of nurseries and their specialities. Here are three suppliers close to home that you can try

Linvilla Orchards
Media, PA
215-876-7116
Will ship via UPS to anywhere, beginning in November through January.
Golden Delicious, McIntosh, Cortland, Red Delicious, Stayman Winesap, Empire, Macoun. Jonathan available for three weeks only, call for ripening times

Snipes Farm and Nursery
Rte. 1, Morrisville, NJ
215-295-3092 Orchard Hotline
No mail order. Offers Pick-Your-Own August through October Varieties ripen at different times, so call for schedule.
Jerseymac, Tydeman's Red, McIntosh, Cortland, Macoun, Red Delicious, Yellow Delicious, and Stayman Winesap

Styer Orchards
Woodbourne Road, Langhorne PA
215-757-7646
No mail order. Direct to customer marketing on premises.
Red Delicious, Stayman Winesap, McIntosh, Jonathan, Golden Delicious, Empire, Macoun, and Red Rome.

TLC: TENDER, LOVING CONDITIONING PAYS OFF AT THE HARVEST SHOW

The modest sunflower happily basks in the sun before stealing a ribbon or two at the Harvest Show. Proper conditioning will preserve the quality of your flowers.

A little extra care can net a blue ribbon for your flowers

by Cheryl Lee Monroe

When I wander through the Pennsylvania Horticultural Society's fall Harvest Show making notes on flowers to consider for my garden, I'm sometimes disheartened when I see well-grown flowers wilting prematurely. Flowers need not die quickly and can become blue ribbon entries when conditioned properly.

Conditioning flowers is a designer's standby for prolonging freshness, and their techniques can be used to win ribbons at the show or to extend the life of flowers at home.

For garden flowers, quality also depends on the special care the plant receives throughout the season. The nutrients you supply during the growing season enable flowers to hold their petals longer when cut. Excessive nutrients, however, lead to growth that is too soft, foliage that damages easily and a short life. Water and temperature are important to producing outstanding specimens; extremes of water or temperature stress the plant and reduce the quality. Grooming plants will provide a continuing profusion of blooms. Deadheading and removing seed pods encourages plants, annuals in particular, to continue to produce flowers.

A season of nurturing your plants, coupled with good cutting and conditioning habits, will expand the life of your flowers and put them in top form for judging day. When a flower is picked, it immediately responds to the shock of cutting by forming a callus or layer, not unlike skin, over the cut to reduce the amount of water that is lost. There are several ways to slow the loss of water and improve moisture uptake.

First when cutting specimens consider the best time of day to cut. Cut early morning or late evening when stems are most turgid. Using a sharp knife, cut the stem or branch on an angle to expose as many water carrying cells as possible. With the exception of chrysanthemums (which need leaves for maximum water uptake) strip the leaves that will be below water level from the stem, and place stems in tepid water. Tepid water is best for garden flowers because it reduces the shock the flower experiences when cut. Carrying a pail of water with you in the garden is a great help when possible. Flowers purchased in a florist shop and those that wilt are best conditioned in warm water.

When preparing pails of water for conditioning your blooms, add a drop of two of

photos by Walter Chandoha

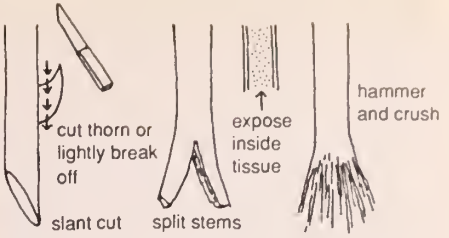
Varieties of dahlias. Look for favorites among Harvest Show winners — or cut and condition for a home bouquet.

bleach to the water; it works miracles. Bleach reduces the amount of bacteria that accumulates and clogs the stem preventing water uptake. Flower stems will bleach if too much is added to the water. Floral preservatives can be purchased from florist shops and garden centers and do a wonderful job of extending the life of flowers. These preservatives, in addition to keeping down the growth of bacteria, provide a source of food for the flower. Don't use table sugar because it encourages bacteria to grow, and flowers once cut cannot convert this sugar into a usable form to support their life system.

After cutting your flowers, leave them to soak in a pail overnight or up to 12 hours, if possible. A minimum of five or six hours will suffice if pails are placed in a cool, dark place; heat, light and drafts accelerate moisture loss. On judging day, freshen flowers with a fine spray except where petals are ruined by drops of water. That includes such flowers as lilies, sweet peas and stachys. Plants such as begonias absorb moisture through both their stems and petals, so dip the complete bloom in cold water. Then allow to drain and place freshly cut stem in water.

Conditioning is dependent on the type of stem a plant has. Woody plants such as *Ilex*, viburnums and evergreens have to work harder to provide food and mositure to leaves and flowers. Hammering the stems to crush the fibers or splitting them helps expose as many water carrying cells as possible allowing maximum water absorption. Fibrous stems, such as chrysanthemum, must also be split, and all need lengthy soaking.

Plants with predominantly milky sap such as euphorbias and poppies are difficult as sap clogs the water carrying cells. Place stems in 2 inches of boiling water for several minutes then transfer to tepid water. Flowers or buds can be protected from the steam by wrapping in tissue or newspaper. Fleshy soft stems of bulbs, corms and tubers such as dahlias and gladiolus can be cut on a slant and conditioned in cold water. With the flowers of bulbous plants, remove the white base section as water is more easily absorbed through the green parts of the stems.



The optimum method for flowers with hollow stems such as delphiniums and lupines is to invert the stem, fill with water plug with cotton. Then replace the stem in water. Amaryllis, though a bulb, is best treated this way and will last a long time. For odds and ends such as ornamental ferns, ivies, ornamental kale and cabbage, and caladiums, immerse the whole stem or branch in cold water for up to four hours.

Roses belong in a category by themselves. A favorite for their exquisite beauty, they are a challenge to maintain and always seem fleeting. Cut when buds are just unfolding and showing color, and remove all unnecesary foliage. Removing thorns will assist in the uptake of water but take care not to damage the stem by tearing them from it.

I hope these few words of advice will encourage you to lavish a little extra care on the flowers in your garden and bring a few entries to the Harvest Show.

The Harvest Show

Members' Preview on Friday, September 23rd from 4:00-7:00 pm
All visitors on Saturday and Sunday, September 24 & 25 from 10:00 am-5:00 pm
Exhibitor entry times are Thursday, September 22nd from 5:00-8:00 pm and Friday, September 23rd from 7:30-10:00 am
Entries are judged on Friday, September 23rd.
Schedules can be requested from the Society at 625-8250.

Classes to enter your flowering plants:
Design Classes
Floral Bounty (collection of fresh blooms)
Cut Branches (evergreens, Ilex, Viburnums, etc.)
Annuals (Celosia, Marigolds, Zinnias, Cosmos, etc.)
Biennials
Perennials (Aster, Chrysanthemums, etc.)
Bulbs, Corms, Rhizomes and Tubers (Dahlias, Gladiolus, Begonias)
Roses
Herbs

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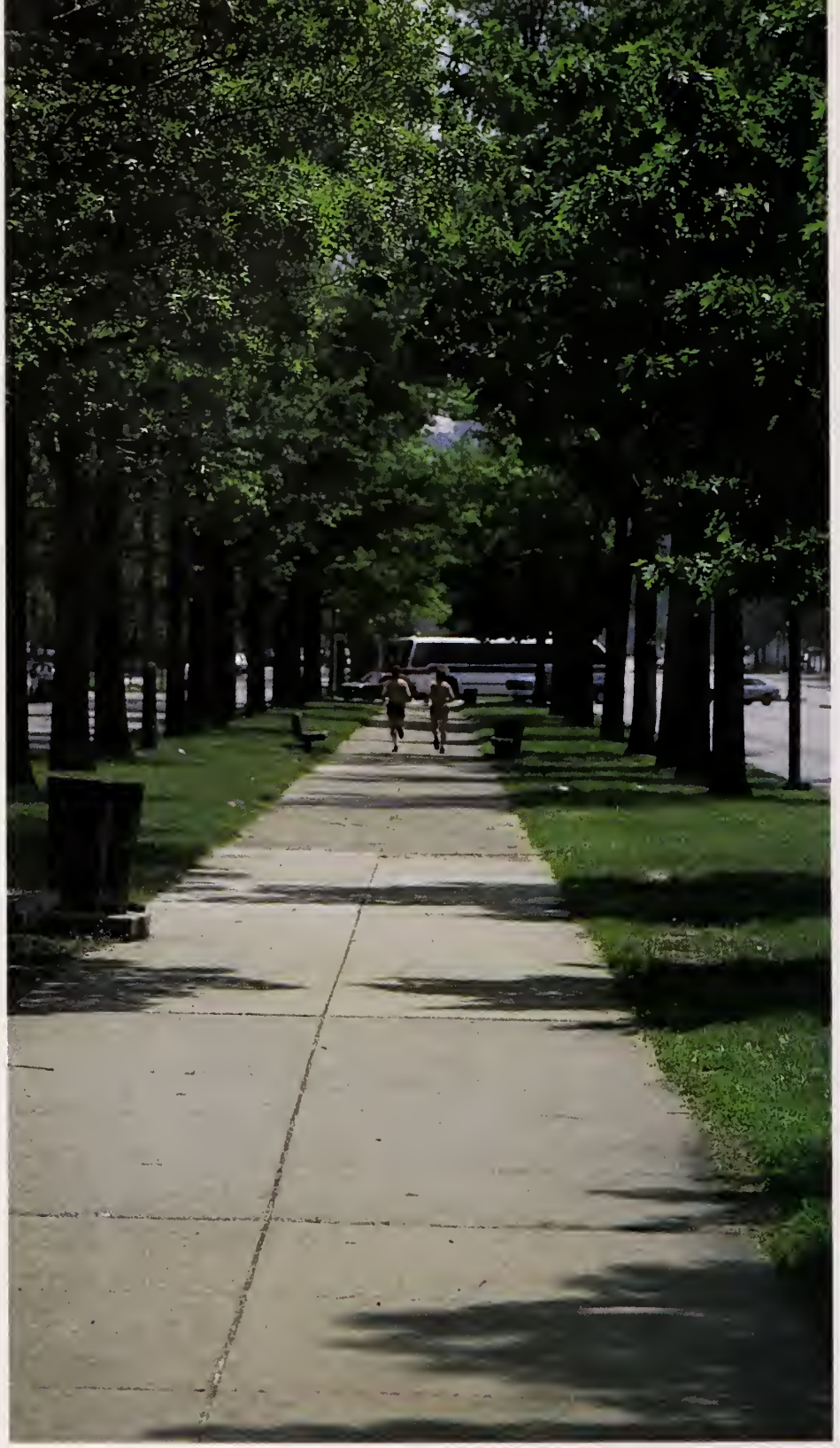
Cheryl Lee Monroe is administrations coordinator at the Pennsylvania Horticultural Society. A graduate of the University of Maryland, she specialized in horticulture; she now spends her spare time gardening and designing flowers for various events.



photos by South Street Design

When viewed down the length of the Parkway, the red oaks look quite uniform and give the overall impression of health; however, many individual specimens are in terrible conditon.

Fairmount Park: A Good Beginning or the Beginning of the End

by Anne S. Cunningham

Picture a landscaped plot with no gardener. You could imagine a romantic version of the Secret Garden waiting to be discovered, or you might envision a weed- and disease-infested mess of trees and shrubs struggling for survival. Now consider Fairmount Park's 8,700 acres (2,300 require mowing every 10 days, spring through fall) and try to guess how many people it would take to keep them healthy.

It's no wonder Fairmount Park's tree crews are called the Undertakers. They are so overwhelmed with work, they can attend only to dead and dangerously half-dead trees; they have little time for pruning, spraying or other preventive maintenance. Planting new trees is wishful thinking.

In addition, Fairmount Park crews are responsible for all the street trees, the sidewalk trees throughout Philadelphia's neighborhoods. And when a park tree and a street tree both need help, the street tree usually gets the attention because, as Park Commissioner Ernesta Ballard says, "Park trees don't vote."

Standard tree management practice says 5% of any tree population dies each year and should be replaced. Applying that figure to 250,000 street trees and to the millions of trees in the Park as a whole, the number of trees Park crews need to care for becomes staggering. However, due to budget limitations, Park tree crews have planted fewer than 100 trees in the past decade. Some large tracts of Fairmount Park haven't been touched since they were planted more than a century ago. The best the Park crews can do is keep up with calls for help.

"This Park system is fragile, and the city cannot do it all," says William E. Mifflin, former director of Operations and Landscape Management for Fairmount Park, who moved up to Deputy Commissioner of Maintenance for the Department of Recreation last spring. "The longer we delay, the longer it will take to bring it back to its full potential."

Disease and distress signals were apparent throughout Fairmount Park when

The Benjamin Franklin Parkway is a favorite location for citywide festivals, but the soil compaction caused each year by millions of trampling feet has predisposed the trees of the Parkway to epidemic disease.

the Park Commissioners agreed on the need for action. They commissioned the landscape architect, urban design and environmental planning firm of Wallace, Roberts and Todd to draw up a master plan, which was adopted in December, 1983. By 1985-86, using the plan as a guideline, the Commission outlined the following objectives:

- Expanded tree and ground maintenance crews.
- Reforestation and restoration of key Park areas:
  —Kelly Drive
  —Franklin Delano Roosevelt Park
  —Pine Road Picnic Area
  —Logan Square
  —The Benjamin Franklin Parkway.
- A comprehensive tree planting program, including establishing a Fairmount Park Nursery where specimen trees could grow until they were needed.

It all looks good on paper, but the cost of fixing one Parkway block is somewhere between $150,000 and $180,000.

The Fairmount Park Commissioners agreed with Ernesta Ballard's expression of moral obligation to "plant for future generations because that's what people did for us. When trees fall down, we need to plant more, but it takes time for them to grow."

the Pew Grant for Reforestation

It also takes money, and The Pew Charitable Trusts, in 1985, offered a total of $1.3 million over a four year period for a Fairmount Park Reforestation Project.

Full of hope for the future, 26 areas within Fairmount Park were selected by Fairmount Park staff under the direction of William E. Mifflin to serve as models for reforestation and restoration work. The chosen areas offered tremendous horticultural challenges for what they could show about regeneration of abused city park land.

Michael Nairn and Gary Smith of South Street Design Company were hired to design and implement the work along with the Park's staff.

the Ben Franklin Parkway

The stately Ben Franklin Parkway was one of the 26 sites chosen for refurbishment. South Street Design calls it "the most interesting horticultural and urban design issue in Philadelphia." As they explain it, the tree-lined Parkway is the only major architectural space in Philadelphia that's defined entirely by vegetation. But the tall trees, marching down the Parkway in crisply lined-up regiments, are riddled with disease and are dying. The oaks have obscure scale, the London plane trees have anthracnose, and there is evidence of the always-fatal canker stain moving into the Parkway.

The challenge of rescuing the Ben Franklin Parkway was to maintain the architectural grandeur while removing diseased trees. No one wanted to hear 'just plant new oaks, wait 50 years, and it will look fine.'

South Street Design proposed reestablishing the formal allee with mixed species. New red oaks (*Quercus rubra*), to tie in with those that were still alive, red maples (*Acer rubrum*) and ash (*Fraxinus americana*), all upright trees with straight trunks, the same canopy density and growth habit, were considered to fill in the holes where diseased trees were removed. From an aesthetic point of view, the most important thing became not what species was planted but that the new trees were planted in straight lines to reinforce the linear character of the Parkway vegetation.

Soil compaction is the Parkway's other major problem. In addition to daily pedestrians, huge crowds trample the ground during Parkway extravaganzas. Then large vehicles, driven and parked on the ground to service the crowds and clean up after them, further compact the soil. The trees no longer can absorb water and oxygen efficiently through the concrete-like soil, another death blow to vegetation struggling to survive daily automobile exhaust and other urban stresses. Contrary to popular myth, the trees don't die from lack of water; they actually drown because the water sits in tiny pockets and doesn't disperse through the ground.

Turf and soil regeneration solves one problem, when workers add organic fill, aerate the soil, seed and fence off the space from the public until the turf is established. Another solution is to limit the number of major crowd-gathering events held on the Parkway each year; and if a group insists upon exceeding that limit, the sponsor has to pay for soil aeration after each event.

It all looks good on paper, but the cost of fixing one Parkway block is somewhere between $150,000 and $180,000. Some might argue that's too much. Others insist the job should be done correctly and there is a lot of catch-up work to be done as well as forward movement. If the Parkway, and indeed the whole Park, are going to be the

continued

photos by South Street Design

◀ A new grove of golden rain trees adds color during the summer months along Kelly Drive.

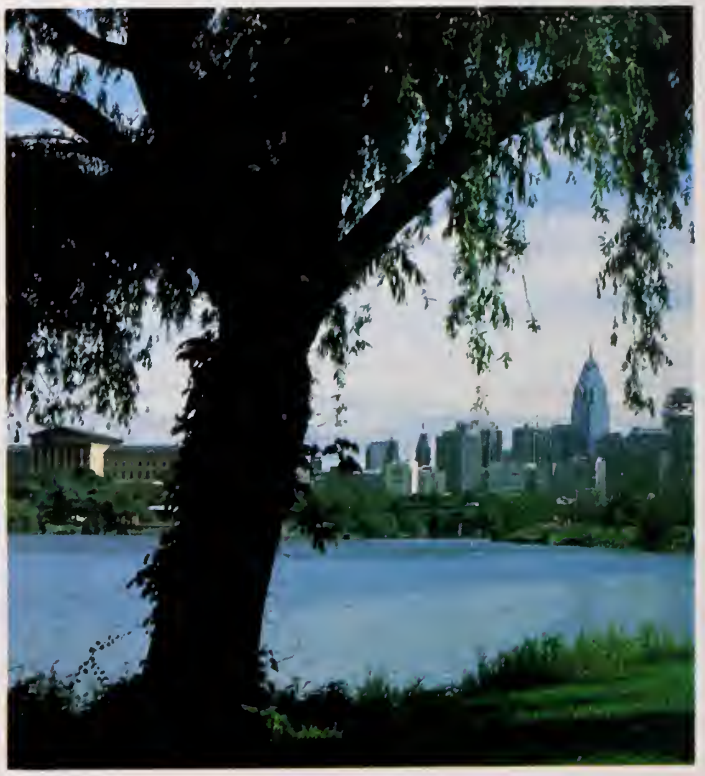
▼ Pennypack Park in Northeast Philadelphia rivals the Wissahickon Valley for its natural beauty, but decades have passed since any new trees have been planted there. This floodplain picnic area at Pine Road will be regraded and planted with native riverside species such as bald cypress, red maple, and river birch.

pride of Philadelphia and not a source of embarrassment, the land needs a lot more help than a few new trees and some grass seed sprinkled around.

Experience says, however, that it's easier to raise money to plant things than it is to raise money to take care of what's already in place. 'We're very pleased that the Pew Charitable Trusts gave their grant for deferred maintenance, pruning and spraying, as well as for new planting," says South Street Design's Gary Smith. "The grant is a great beginning. The money will work like seeds: it's going to grow as more support comes from other sources."

clearing the view along the river

Another site chosen for work under the Pew Grant involves the major commuter routes along the Schuylkill River. Michael Nairn of South Street Design describes the



Thickets of invasive ailanthus, box elder, asiatic bittersweet, and norway maple have obscured the views of the Schuylkill along the West River Drive. The Vista Clearing Project saved the best trees, such as specimen quality American sycamore and European alder, and opened up views to some of Philadelphia's most beautiful sights.

intent of the original design "to give carriage riders a variety of scenic experiences while traveling along the Schuylkill River. Long views down the river alternated with passage through enclosed spaces heavily planted with ornamental trees. During the last two decades, the groves of ornamentals declined until little of their glorious spring display remained and the experience of journeying next to the river was lost by the dominance of invasive vegetation.

"Through careful vegetative management the reforestation project has cleared vistas, planted groves of cherry trees to celebrate spring, and groves of golden-

Thanks to the generosity of the Pew Charitable Trusts, a total of 100 acres of Fairmount Park has been saved from horticultural extinction and will flourish for decades.

rain tree (*Koelreuteria paniculata*) to extend the blossoming time into summer. In addition large sections of turf in the most heavily used areas have been renovated."

South Street Design made a "hit list" of species that had to be removed, and they were amazed at what they found hidden in the undergrowth. Box elder, Ailanthus, Norway maple and asiatic bittersweet headed the "hit list." When they were removed, gorgeous specimen river birch and european alder came to light. They discovered native American sycamores (*Platanus occidentalis*) with beautiful white exfoliating bark, unlike the more common sycamore, the London plane tree, (*Platanus acerifolia*), with yellowish patches. American sycamores, according to South Street Design's Gary Smith, "are unusual to find naturalized in a city, but we uncovered 15 or 20 along West River Drive that are very happy along the river's edge."

Thousands of people who use Kelly Drive and the West River Drive daily now appreciate the vista clearing work and tell-tale orange fences that surrounded turf regeneration projects. The renovation area cleared 25% of the space along the river and there is much more to be done.

Other areas chosen for regeneraton under the Pew Grant are scattered throughout the city, representing different horticultural problems. Northeast Philadelphia's Pine Road Picnic Area presents a great challenge as the test site for flood plain picnic areas where space was cleared long ago with no thought about the muddy conditions that would result. The designers see a good opportunity to use red maple and white ash, both tolerant of wet conditions, and bald cypress.

Standing in South Philadelphia's Roosevelt Park, a Park employee commented that "Center City was always getting the flowers." South Street Design went to the Park with the worker and the result is totally new entry planting, with flowering trees, shrubs and perennials.

Not all improvements made possible by the Pew Grant are on a large scale. Significant small improvements include tilting the flower bed around Logan Circle, so that the floral displays could be seen more easily by passing motorists. Twelve inches of soil were banked along the back of the bed, and the effect is a much fuller, more colorful field of flowers.

Each project has been designed with the rest of Fairmount Park in mind. Thanks to the generosity of the Pew Charitable Trusts, a total of 100 acres of Fairmount Park has been saved from horticultural extinction and will flourish for decades. Future Philadelphians will see portions of the Park as it was meant to be. Those involved today hope the work will inspire further donations, but they realize it's difficult to care about trees you don't see every day. If that's true, thousands of acres of Fairmount Park, the largest landscaped city park in the world, could be neglected until it's too late.

●

Anne S. Cunningham is a free-lance journalist who writes on gardening subjects. A frequent contributor to *Green Scene*; she has also written for the *Philadelphia Inquirer* and *Flower & Garden* Magazine.

PLANT A TREE FUND

There are millions of trees in Fairmount Park. Thousands of them are lost each year to old age, disease, lightning, accidents and vandalism.

The tragedy is that we are not replacing these losses. There are not enough tax dollars to do the job. For the past ten years the few new trees that have been planted were purchased through private contributions.

You may not notice what is happening, because the dead trees are scattered throughout the hundreds of acres of our parks. But if we let our present losses continue, one of these days we will wake up and find sun-baked stretches where today we have shady groves and woodlands and wild areas.

The Park needs your help. Only through your contributions can Fairmount Park continue to be the pride of Philadelphia. Only through your contribution can we continue to enjoy a leafy canopy over our drives and walks and picnic grounds. Only if you act today can your children and grandchildren look forward to the kind of parks that past generations enjoyed.

The way to help is to make a donation to the Fairmount Park Plant A Tree Fund. Every dollar is needed and welcome. And there are special opportunities for larger gifts:

A Special Tree. A $150 gift will plant a ten-foot tree in a park area of your choice, and you will receive a handsome commemorative certificate *plus* a well-justified boost to your civic pride.

A Special Grove. A $1100 gift will plant a grove of ten trees dedicated in honor of a member of your family, a friend, or a group you are interested in.

Contributions not designated for special trees or groves will pay for preserving existing trees and shrubs and buying new ones. Your favorites are on our list: laurel, rhododendron, dogwood, shadbush, ferns and many more. Any amount you can give — large or small — will provide us all with better parks and help make Philadelphia a better place to live.

Other work being done in the park is through the 60 to 70 groups whose members support their own segment of Fairmount Park. Numbering in the thousands, these special volunteers come under a larger umbrella organization, Friends of Philadelphia Parks. For more information write Friends of Philadelphia Parks, P.O. Box 27291, Philadelphia, Pa. 19118.

HARVESTING VEGETABLES:

There's Many a Step Between Garden and Pot

by Libby J. Goldstein

You can pick your garden goodies anytime you're ready and they are, but the newest research indicates that there really is a difference between the nutrient value of vegetables picked on a sunny day and those picked when it's cloudy. The cloudy day harvest will be lower in vitamin C than the sunny day goodies. On the other hand, if your harvest sits around in the sun for very long after it's been picked, it will lose vitamin C and perhaps some B vitamins too, and you know your lettuce, greens, herbs and flowers will wilt a lot.

It's not too hard for home gardeners to preserve the nutrients, flavor and texture of the vegetables they want for their next meal. All they have to do is pop out to the garden and bring in just what they plan to eat. But when you live a block or more away from your veggies, you tend to pick everything that's ready and take it home to keep until your next garden day. Of course, home gardeners with a bumper crop of something or other that all turned ripe at the same time will have to cope with the same problems. The effulgence will have to be picked along with dinner.

picking and plucking

After years of gardening around the corner, I realized that I had developed a **method**, an order of harvest, if you will. When you're out in the hot sun with nothing cool to drink within blocks, you do the hard stuff first; creeping about on the ground searching out cornichons that insist on hiding until they're huge, prickly cucumbers, for example. (After a summer of that, my cornichons grow on trellises, thank you.) Next come the fruits of your labor: tomatoes, cucumbers, eggplants, peppers, okra and various green beans. All of these go into the shade as soon as possible while you go for things like celery, green onions and kohlrabi that don't wilt quickly and put them in the shade too. Next come the herbs and finally, leafy stuff and flowers. These last two do much better if you have a bucket of lukewarm water along to plop them in as soon as they're picked, but some days a person just can't face walking down a hot street with pounds and pounds of veggies AND a bucket of water, greens and flowers; so they get picked after gossiping and just before the trek home. Anyway, that's **the method.** I've never had the nutrient values of my crops, checked, but most everything, including lettuce is in good shape when I get home.

really cool

If you've decided to go to a pick-your-own farm for really great corn, for more strawberries than a gardener could ever produce or enough green beans to last you the whole year, take a cooler with plastic bags full of ice in it. You can even take your cooler out to the community garden and skip **the method**, for the most part.

No matter what anyone tells you, rhubarb is not just a spring crop. It's perfectly fine to pick rhubarb in the fall. I've been doing it for years, and my rhubarb just grows and grows. Indeed, fall is more fun.

Whatever temperature your veggies like best, reducing their "field heat" helps them keep better and slows down the enzymes that keep them ripening till they're well past their prime. The best temperature for most things is 32-35° F. according to the Penn State Urban Gardening Program information sheet, "Guide to the Care of Fresh Vegetables and Fruits." But do keep the exceptions in mind. If you are going to put your harvest in a cooler with ice, put a piece of styrofoam or heavy cardboard over the ice before you pack snap beans, cucumbers, eggplant, melons, okra, peppers, pumpkins, squash (especially winter squash) and tomatoes whether they're mature green or ripe. They should be cooled but do better at temperatures in the 40's and 50's.

corn and beans

If I were a catalog copy-writer, I'd put in something about when to pick my wonderful weird veggies. It's fine to tell folk how to grow them and how to eat them, but no one seems to mention the important step in between: the harvest. Yard-long or asparagus beans (*Vigna sesquipedalis*) will grow almost that long, but that's not when they taste best. They taste best when they're 10 inches or less and round and green with no beans to be felt inside the pod. If you're not going to cook them immediately, put them in a plastic bag, tie the top and put them in the fridge, preferably in the hydrator. Wash them before you use them not before you store them. Fresh soy beans (*Glycine max*) can be picked at either of two stages: When the pods are well filled and bright green or a little later when the pods have got a bit yellowish. Several years ago, in my soy bean period, I sat some of my friends down for a soy bean taste test. We blanched the beans for three minutes or so to make shelling them easy and popped them out of their pods and into our mouths. The consensus was that the riper ones tasted better, but the green ones were good too.

Fava or broad beans (*Vicia faba*), *dow fu* in Chinese, can be eaten at various stages if you're not one of those people who are allergic to them. When they're very small, they can be picked and used like snap beans; when you can feel the beans in the pods or see their outlines, pick them, take them out of the pods and steam them. My Iranian neighbor, who is also a chef, recommends serving them with a little ground dried sumac berry (available at Bitar's Market at 1167 South 10th Street). When the beans are very visible in the pods, and the pods are really big, shell them out, steam, boil or pickle them, and remove the membranes around the beans. I never let them get that old. Removing a membrane from each and every bean is more "prep time" than I'm willing to spend on anything in life.

Even if you didn't order 'Baby Asian' corn from Le Marche, you can have your very own 3" ears from your last planting. Pick the little ears just as the silk begins to show *et voila*. Next year you can actually plant a baby corn patch or two. Just plant yor seed 6" apart and remember to pick at the right time.

cornichons and baby veggies

Cornichons are really nothing more than baby spiny cucumbers meant for pickling. If you haven't grown them on a trellis, you're bound to miss more than you find, at least I did. Not to fret, the large size looks a bit mean, but it makes fine pickles anyway. If you do find them when they're small, you can make really crispy whole pickles overnight: if you don't, just slice them into rounds

photo by Steven A. Frowine

Pak choi (*Brassica rapa* Chinensis group).

and do up a batch.*

Baby veggies are just that: generally immature (and often without the flavor of more mature specimens). Picking baby squash of any variety means taking it when it's only 2-3" long (an inch in diameter for patty pan and other roundish sorts). If you want baby eggplant, try to wait until the little thing has shiny skin. Of course, if you're growing something like 'Bride,' its skin never really does get very shiny; pick it when it's 2-3" long. To my taste, the long Asian cultivars are better candidates for picking young than the round kinds, but if you're growing round or egg-shaped kinds, pick them when they're 1-2" in diameter.

Though I truly love Pak choi (*Brassica rapa*, Chinensis group) when it's full-sized and usually pick it stalk by stalk as the stalks mature, one can pick entire immature heads when they're 3-6" high. They are tender and lovely in salad, steamed or stir-fried whole and perhaps seved over pasta with a sprinkling of chopped pecans and shredded ham. Whether the mustard you're growing is as American as 'Southern Giant Curled' or as Asian as 'Mizuna' (*Brassica japonica multisecta*), it is very good when young. There is absolutely no need to pick the whole plant (unless, of course, you want the space for something new). I almost always pick it like leaf lettuce, taking just what I need and leaving the rest to grow, either till it looks as though it's about to bolt in summer or till it's absolutely going to be killed back in late fall or early winter.

*For a copy of recipe send stamped self-addressed envelope to: *Green Scene* HV, Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106.

greens

If you want lovely tender arugala (*Eruca sativa*), pick it early and often. As the leaves get older their flavor becomes more intense and they get tougher, so keep it picked like lettuce. If it does bolt, pick the flowers. Among the other incredibly chic veggies that California chef Alice Waters brought to Reading Terminal Market last spring for Philadelphia's "The Cook and The Book" celebration were bunches of broccoli flowers. Like its mustard cousins, radish, Pak choi, etc. arugala's flowers are really nice in salads or dotted over cooked vegetables, yard-long beans or Brussels sprouts, for instance. If you're going to use the flowers in a salad, toss the salad and dressing first and then sprinkle on the flowers.

There are several ways to harvest coriander (*Coriandrum sativum*) leaves, otherwise known as cilantro, *cilantrillo* or Chinese parsley. Since the roots are used in some Asian recipes, one might want to pull the whole plant as soom as the rosette of rather flat leaves is full. If you only want the leaves for Asian, Mexican or North Arfican recipes, you can pick them as you would lettuce or parsley and then harvest the whole plant just as it begins to form the feathery leaves that precede flowering. If you are going to use your cilantrillo in *sofrito* (see Jan. 1988 *Green Scene*, page 25) pull the whole plant just as the flower buds form.

Benincasas and other things

Fuzzy gourd or mao gwa (*Benincasa hispida*) is one of my favorite Chinese vegetables, particularly since it doesn't seem to be attacked by such foul beasts as cucumber beetles and squash vine borers. It is a little cousin of the winter melon and, if picked when it's 6-8" long and left lying about on the kitchen counter, it will eventually develop the same white waxy coating as the winter melon. If, however, you pick it when it's 4-6" long, it is tender and wonderful raw or cooked. I usually rub the fuzz off or peel it and eat it raw. It seems to me to

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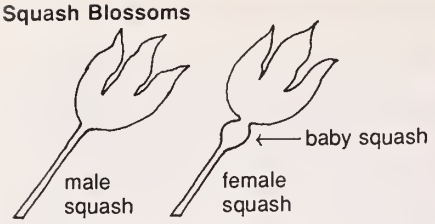
Squash Blossoms



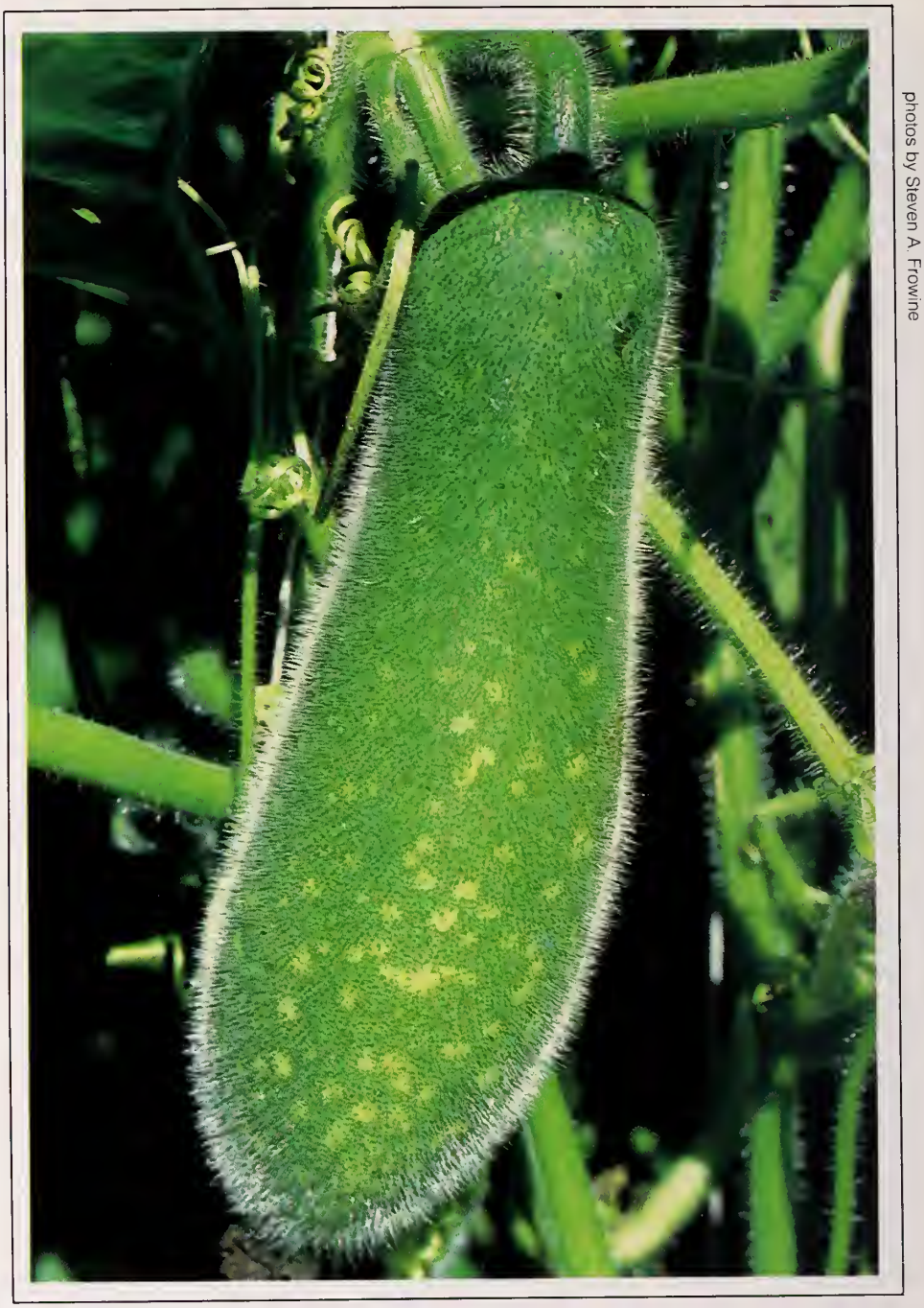
taste like a cucumber dressed with a bit of lemon juice. It's a bit bland when cooked but is a wonderful vessel for all manner of stuffings and sauces.

Winter melon, also *Benincasa hispida*, should be treated like any other winter squash and picked when its rind is hard and its stem woody. Over time it will develop its waxy coat; it may even start in the garden, which is another way to tell that it's ready to harvest. It is a super storage vegetable. Philadelphia Chinatown Development Corporation exhibited one at several Harvest Shows (it was only in competition the first year, however) before it was finally eaten.

I used to think the thing to do was to keep parsley and cilantro in a glass of water in the fridge, but Dona Valentina Rios, a serious cilantrillo grower, told me I was doing it all wrong, and she was right: both last much longer in plastic than they did in the water glass.

Nowadays, a person can actually buy seeds for squash that have been specially selected to provide squash blossoms to the connoisseur. If you didn't buy them this year, however, you can pick the blossoms off your regular squash plants. Being a kind of miser, I object to picking female squash blossoms because one has to pick the little baby squash with the flower. You can steam the infant squash and its flower. Just cut the blossom twice the long way stopping before it joins the fruit; steam for two or three minutes and spread the cut blossom out like a fan to serve. Even though the females are a bit easier to handle, I prefer to pick male blossoms for stuffing. That way I get a double harvest: flowers and fruit. Whichever you choose, take the flowers in late morning while they're still open and fresh. (Picking male blossoms early in the morning keeps the bees from taking their pollen and carrying it off to the females.) Be sure to leave the stem or immature fruit on the blossom. It will be easier to handle in the kitchen.

If you didn't buy any rat-tail radish (*Raphanus sativus* 'Caudatus') from Seeds Blum this year, you can still serve radish pods in your salad. Most of us who plant radishes and have weird schedules find radish blossoms growing in our gardens. You don't have to pick all of the flowers for salad; just wait. Seed pods will form and can be picked when they are green, shiny and full. Of course they will not grow 9" long like the rat-tails, but they will be good in salads, stir fries and such.



photos by Steven A. Frowine

Fuzzy gourd or Chinese melon (*Benincasa hispida*).

No matter what anyone tells you, rhubarb is not just a spring crop. It's perfectly fine to pick rhubarb in the fall. I've been doing it for years, and my rhubarb just grows and grows. Indeed, fall is more fun. There are ever so many fruits and herbs and spices around then, and rhubarb is a wonderful base for all manner of chutneys and preserves. If you have it, pick some now. Just remember to pick the outer stalks only. Rhubarb is also swell later combined with cranberries and honey or boiled cider, enough to satisfy your sweet tooth (or keep you mouth from getting all puckered up.) Simmer it in a tiny bit of water, till it's barely tender, add the cranberries and cook over medium heat, adding sweetening to taste, till the berries just pop. The sauce will jell all by itself. You can either put it into hot sterilized jars, put on canning lids prepared according to the manufacturer's directions and process in a boiling water bath for five minutes or spoon it into your favorite cranberry sauce container, cover and refrigerate. It will keep for months in the refrigerator.

in the kitchen

Practically everyone I know throws their entire harvest into a sink full of water as soon as they get it home. It's good practice for some things if you want to keep them

crisp and fresh, but don't just drown everything. Berries absolutely shouldn't be soaked in water, nor should lima and snap beans, Brussels sprouts, savoy cabbage, cauliflower, corn, cucumbers (unless you're saving a bunch for future pickling), eggplant, leeks, head lettuce and individual lettuce leaves, melon, okra, onions, peppers, pumpkins, scallions, squash and tomatoes.

Beets, however, just love being soaked in cool water until they've firmed up, but if you've picked them with their leaves, keep the leaves dry while the roots have their bath. Beets keep best at 32-35° F., and I like to keep them in a plastic bag that's big enough for the leaves not to get crushed together.

Add salt to the soak if cabbage worms or aphids have been a problem. Should your garden be near a street with a lot of traffic, adding vinegar to the soaking water will remove most of the lead from automobile exhausts.

Broccoli, on the other hand shouldn't be soaked unless it's full of aphids. Just stand it up in 2-3 inches of water for several minutes, sprinkle the florets lightly, and refrigerate it. Parsley and cilantro can be treated the same way. They keep very well in a loosely closed plastic bag after sprinkling. I used to think the thing to do was to keep them in a glass of water in the fridge, but Dona Valentina Rios, a serious cilantrillo grower, told me I was doing it all wrong, and she was right: both my cilantrillo and parsley last much longer in palstic than they did in the water glass.

Red and green cabbage and all manner of greens should be soaked in cool water for 30-40 minutes (20-30 minutes for endive, escarole and radicchio), drained, sprinkled heavily and refrigerated. Add salt to the soak if cabbage worms or aphids have been a problem. Should your garden be near a street with a lot of traffic, adding vinegar to the soaking water will remove most of the lead from automobile exhausts. If you pick a whole leaf lettuce plant, it will keep best if you soak it in cool water for 15-20 minutes and then drain it butt up. (If you want to show it, wrap the drained lettuce in a damp paper towel, put it in a plastic bag and refrigerate it. We had one hold up for three days with its roots in water after treating it that way.) Head lettuce, however, should not be soaked at all, just sprinkle it lightly and refrigerate.

Chinese parsley (*Coriandrum sativum*).

Carrots, daikon, parsnips and turnips should be soaked in cool water until they're firm, but radishes should only be soaked for 5-10 minutes. After draining, my trick is to sprinkle the inside of the plastic bag that I'm going to put them in with just the least bit of water, bag them and refrigerate. I think it works better than sprinkling the drained roots themselves. Despite its resemblance to the root vegetables, I've found that kohlrabi keeps all winter long if it's just put in a plastic bag and refrigerated. I don't even wash it till I'm ready to use it.

While most of your harvest will keep best at cool temperatures (and corn will stay sweet longer if you keep ice on it), some things shouldn't be chilled. Cucumbers, eggplant, red tomatoes, peppers, okra and winter squash like to be cool (50° or so), but really lose flavor and texture if kept any cooler. If you want to ripen green tomatoes instead of frying them or using them in chutney, keep them at 55-65° F.

Depending on whose instruction you read, celery should either be chilled in a cold water bath after picking (*The Organic Gardener's Guide to Vegetables and Fruits*, Rodale Press, Editors, Emmaus, Pa., 1982) or soaked for 20-30 minutes at room temeprature water and then drained butt up before refrigeration (Penn state Urban Gardening Program; *Guide to the Care of Fresh Vegetables and Fruits*). I usually pop mine in a lightly sprinkled plastic bag and refrigerate at once. The common thread here is to remove the "field heat," crisp up the celery and then keep it slightly moist at 32-35 degrees, so it will be lovely and crispy when you serve it.

curing and storing

Some crops need to be cured before they ever get to the kitchen or wherever you plan to store them. Curing toughens their skin and lets any bruises or surface cuts heal so molds and rots will have trouble getting a foothold. It also allows starches to change into sugars and reduces the vegetables' moisture content so they'll keep better.

Onions should be spread in an airy sunny spot for three days to a week before being brought inside to dry even further in a warm dry place out of the sun. If the weather is damp, bring them inside at night during their outdoor rest cure. While garlic and shallots also benefit from curing outdoors for several days, they sould be held in a shady spot. Store them near 32°, but keep them as dry as possible.

The easiest thing to do with sweet potatoes is to use them. Curing them can be a mite complicated. After drying in the sun for an hour or so after digging, they need to be cured in a warm, 80-90°, dark, humid place for two weeks. If you can't find a suitable location, and I never can, cure them for three weeks at 65-75°. If you don't have a pressure canner, don't even think about canning them, store them in a moderately dry place (like a cellar) at 55-60°.

I never grow enough Yellow Finns and other "white" potatoes to worry about long-term storage; however, if you've dug enough potatoes to store, be sure to cure them in the dark in a dry spot with temperatures from 60-75°. That will let their skins thicken enough to store well in a moderately moist place at 35-40° through late fall and winter.

On the rare occasions when I've not lost my whole winter squash or pumpkin crop to borers and squash bugs, I've just let them sit on my kitchen counter till I'm ready to eat them. Since the kitchen is air conditined in hot weather, it's fairly dry, and the temperature usually runs between 75 and 80°. I had the right curing conditions without even knowing it. It only takes a week or so to cure these guys, and they really shouldn't be stored on the counter. They'll last well into winter and taste better if you keep them at 55° in a fairly dry place like a cellar. If your cellar tends to be humid like mine, you might want to make some squash or pumpkin pasta* and freeze it, assuming there's enough room in the freezer.

I much prefer picking fruit and vegetables to deadheading flowers. The work is much the same. The rewards are much different. Having food that's at its best when you're ready to eat it is one of the great pleasures of a well cared for harvest.

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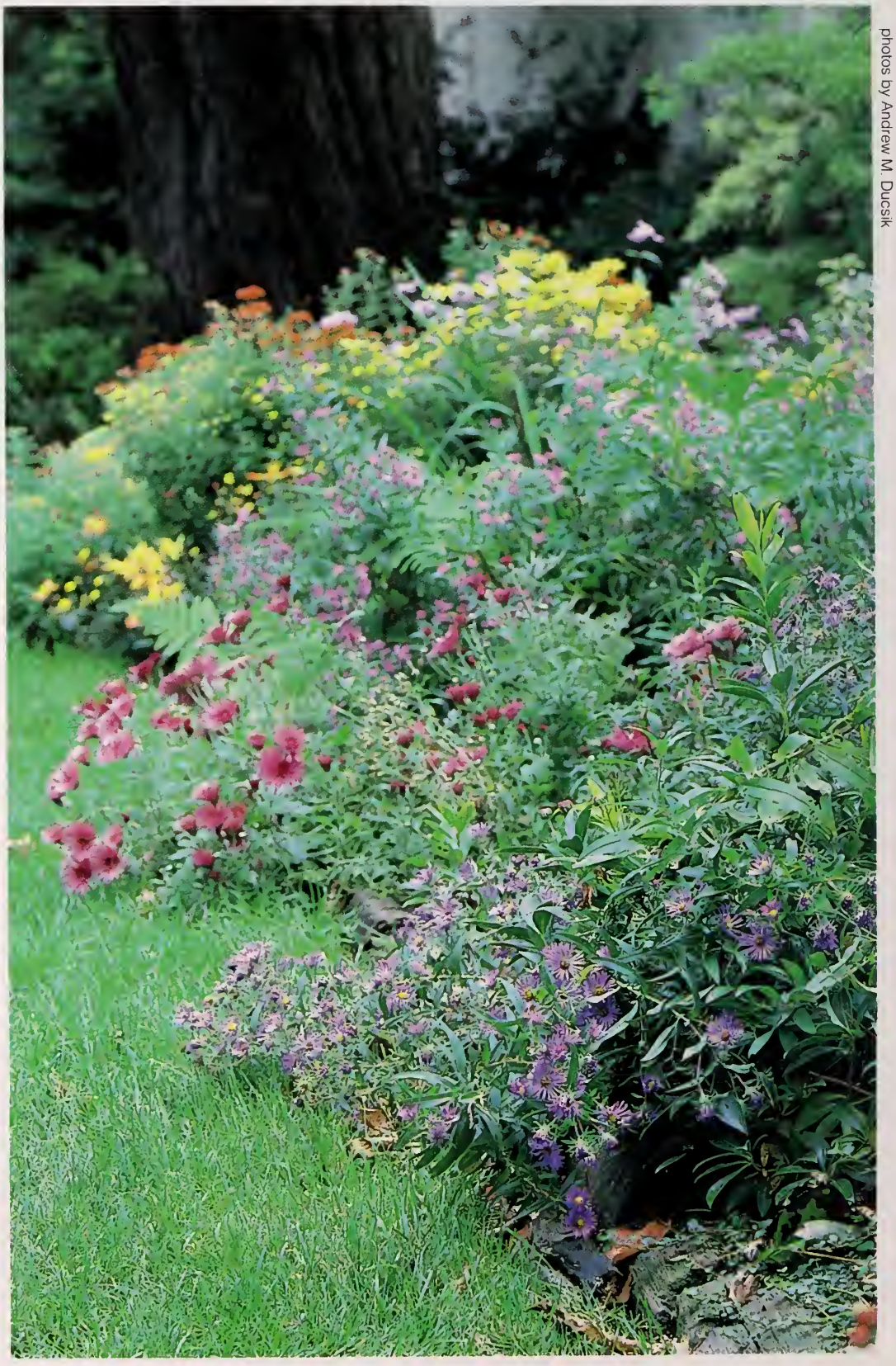
Libby Goldstein was director of Penn State's Urban Gardening Program for 10 years during which time she wrote a weekly column, The City Gardener, for the *Daily News*. She is a frequent contributor to *Green Scene* and has written for *National Gardening* and *Organic Gardening*.

AN AUTUMN BORDER WITH

by Andrew Ducsik



photos by Andrew M. Ducsik

Mums are not pinched but allowed to grow leggy and encouraged to spill over the edge blurring the lines.

ALL YEAR INTEREST

Variegated foliage combines with long blooming perennials to give two months of color.

I think the first in a series of inspirations for an autumn border began when I saw a picture of Gertrude Jekyll's Michaelmas daisy garden at her home Munstead Wood in Surrey. The picture showed a glorious sight of subdued but full color with textural interest given by edging and other plants. It was designed to be spectacular during September and October but could have had little color or interest at other times of the year.

The idea of one season gardens is not new or limited to a special type of garden. Woodland gardens, for the most part, are for springtime flowers only, becoming mostly green but no less beautiful later. Rose time in June or later in high summer with July and August perennials are other examples of one season gardens. The main advantage of these seasonal gardens or borders has been the concentration of bloom and color at one time. And the flip side of the one season garden, the main disadvantage, is often low interest during the balance of the year. I have tried to overcome this disadvantage and describe here my own approach to an autumn border.

The dimensions of my border are 20 ft. long by 7 ft. wide. A firm, strong, design is given by a 6 ft. wall running behind the border and an edging in front of small stones. Within this frame, shrubs and herbaceous plants are tightly packed.

An evergreen background against the wall was essential since the border is viewed through the french doors of the main sitting room, and I wanted to sustain year-round interest. The dark green also served as a better contrast to the color in front than the cream colored stucco wall. Hollies and azaleas provide this background for the most part.

Flowers were chosen for bloom during September and October. I wanted to keep the colors muted: blues, mauves and pinks, with soft yellows for contrast. The yellows are achieved with variegated shrubs and plants (hollies, hostas) and chrysanthemums. *Eupatorium*, asters and more chrysanthemums finish off the scheme. Some ferns add dashes of green in the right places.

The placement of the herbaceous plants was most important. To achieve a natural, airy and unstudied look I interspersed the

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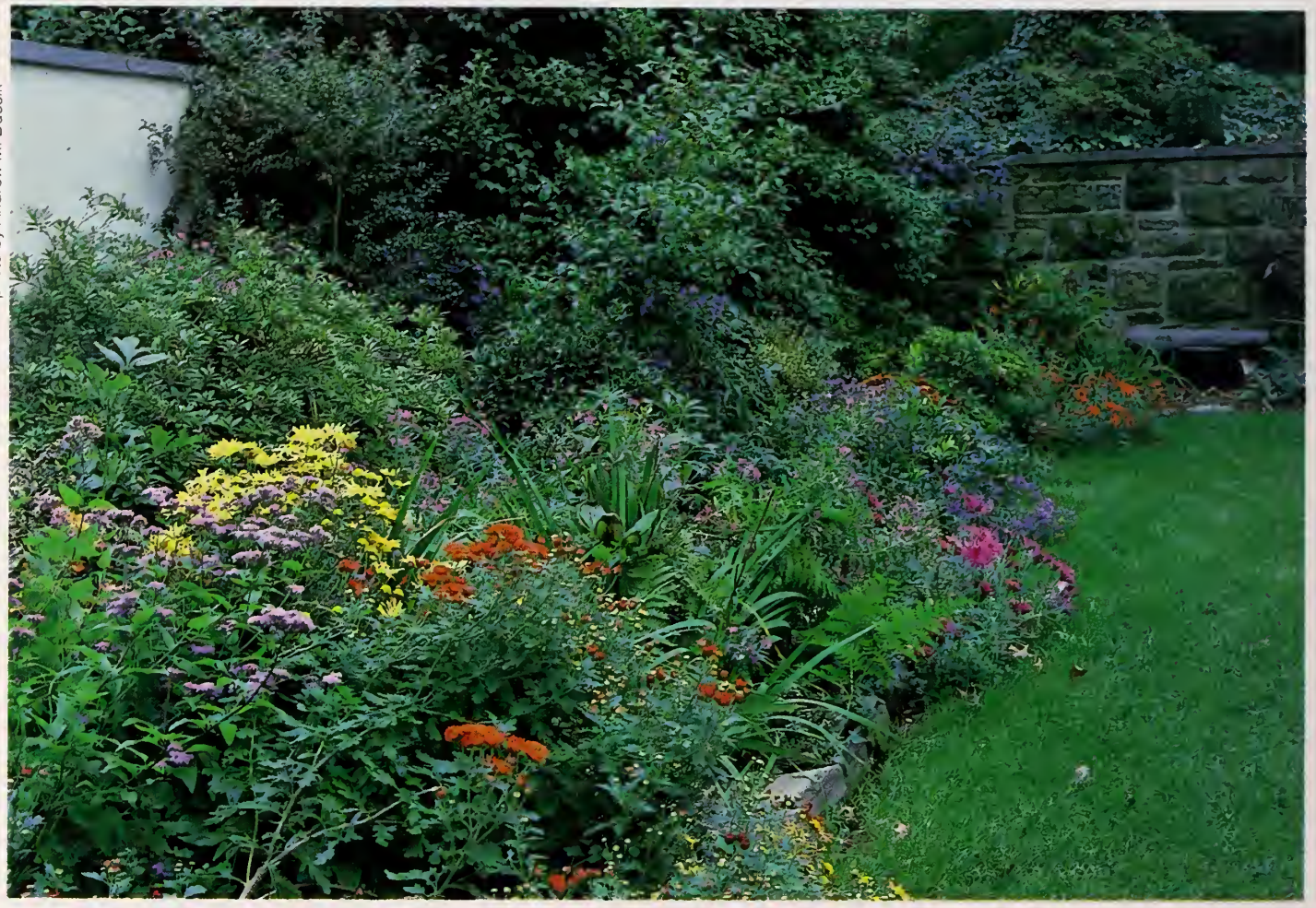

photo by Andrew M. Ducsik

Lots of green from ferns and hollies and the leaves of the perennials themselves set off the flower colors and make them more beautiful than solid masses of color.

plants around the permanent shrubs. The chrysanthemums were not pinched and the lanky asters grew through their shrub hosts for support. They were allowed — encouraged— to tumble over the stone edging blurring the formal lines.

This planting gives a satisfying color picture for two months with almost no maintenance. The evergreen and variegated foliage keeps it looking good during the balance of the year. The secret of its success, I think, lies in the firm lines, structure and background from evergreen shrubs, simple planting scheme, and informal grouping.

If you want to begin your own autumn border start by choosing a site with at least half sun out of the wind, some established background such as a wall or hedge or fence is always helpful. I think a 5 ft. width is a minimum, the length can be adjusted to your site. Next select your evergreen background. I prefer holly. I love its rich glossy leaves and berries. Azaleas gave an extra bonus of color in spring as well as the needed evergreen background, but you could use any broadleaved evergreen or needled evergreen that would take pruning (yew, hemlock, juniper, rhododendron); these are planted in a row but allowed to grow together for a natural look.

Next select the second tier of shrubs, concentrating on variegated leaves or plants with leaves colored other than green and plants with bold foliage, deciduous or evergreen. Plant these in front of your background — not in a row but staggered.

The best fun begins when you paint your picture with the flowers. Make your plant selections when the mums and asters are in bloom at the garden centers. Then group colors together and be sure to keep the planting informal with some to the front some to rear, gaps here and there. You will have an instant and attractive picture. But, the best will be next year when the tightly pinched plants of this year grow lanky, twine themselves around the shrubs and spill all over your firm design.

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Andrew Ducsik is a partner in Noble Landscaping, garden designers and installers. During free time he enjoys developing and refining his own garden in Chestnut Hill, reading about gardens and visiting gardens here and in England.

AN URBAN GARDENING GUERILLA COMPOSTS

by James Wiegand

illustration by Michael Herquet

Pick up an average handful of city soil. Chances are that is is mostly clay, excavated from below grade to form the basement of the nearby house. Not very pretty to look at, this lump of yellow, sticky decomposed rock, compressed to lumpy tenacity by decades of traffic. Dig deeper, below the fill level, and you'll find the remnants of building debris, broken concrete, maybe even the foundations of homes that stood and fell long ago. Such was the soil I had to deal with when I decided I was born to grow vegetables.

Taming this soil would require the addition of compost. There was only one problem with using compost in my garden: I didn't have any.

By the time hard-frozen ground had put an end to my collection spree, there were 85 bags, almost three thousand gallons of leaves in all.

My yard is mid-sized, around one thousand square feet, and I had to amass a mountain of raw leaves to have enough compost to spread around. But my holly tree and my neighbor's maple only produced a few bushels of fallen leaves at most — far short of what I wanted. I wondered if I ever could get enough compost to make a difference in my soil.

Last fall, I found the answer sitting on the curb of the row houses on my block, prepackaged and waiting for me to come along. In the process of cleaning their yards of fallen leaves, homeowners have prepared the richest ingredient for building a compost heap — a mixture of leaves, dead grass, and soil that is primed and ready to ignite. All that has to be done is to collect the raw material and give it a home in which to ignite.

Collecting these leaves meant driving

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URBAN GARDENING GUERILLA

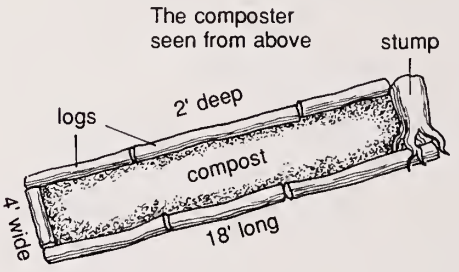
around with one eye on the curbside, trying to divine the contents of dark green bags at a glance, while steering clear of parked cars and traffic. Most times I had to park a considerable distance from my quarry, since by the time I realized that a home had bags of potential mulch out in front of it, I had long passed the mark. My one hope is that carrying dozens of bulging, wet bags half a block through the rain and snow had more redeeming value than building soil or working out my untrained muscles.

Getting the bags home in my van was no problem, as most of my compost material was collected from within a four-block radius of my home. There, I piled the bags up in my driveway to await the spring and the building of the compost heap, adding every week of the fall to the growing mountain. By the time hard-frozen ground had put an end to my collection spree, there were 85 bags, almost three thousand gallons of leaves in all.

When everything melted in the late winter I realized that I had no place for this outburst of organic material. The first order of the garden was to build the Composter, a giant raised bed fully eighteen feet long, four feet wide, and two feet deep. Using the logs left over from clearing out a maple tree from the yard (to make the garden) made building the bed like playing with giant blocks. The four-foot-tall stump formed the keystone of the Composter, with the other logs keying into the stump to form a rigid container. It was a way of getting rid of both the pile of bags and the pile of logs.

Little had I considered that people would put more than just leaves into their bags, that is, until I started dumping the bags out into the Composter. To them, the leaves were trash, and any other trash went right along in there, from the omnipresent invincible plastic food wrappers to the advertisement circulars that never got picked up from where they landed on the front lawn. The stuff that set my hair on end, though, were the broken bottles and shards of window glass, that would surface from an innocent pile of leaves without warning like sharks in the surf. There were a few hypodermic needles and glassine bags in the mix too, reminders that the world was not all fruits and vegetables.

I piled up the leaves to overflowing in the Composter, cleaned out the trash, and stirred in some kitchen scraps to fan the fire. (I did not include meats because they draw rodents.) For an entire month I prodded the heap, waiting to see the faint curl of steam that meant the compost was cooking — so brimming with biological activity that the temperature jumps above 100° — but no such sign was forthcoming. Then I read in a garden catalog where a tool designed to punch holes in a compost pile was supposed to promote heating, so I took my crowbar and rammed 100 holes through the pile. That didn't help so I decided I had better find out what I was doing wrong. I consulted my botanic library.



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Failure to heat up is the most common composting flaw — meaning that my titanic heap was simply a larger version of that neglected pile of leaves I mentioned before. At the rate it was sputtering along, my batch would not be ready in time for the crucial fall mulching, and maybe not even until the following fall. Bacteria in the pile were having a bad go at it, so I had to provide them decent living conditions, namely food and water. The food I gave them was in the form of sodium nitrate, two pounds dissolved in a bucket of hot, soapy water. After I wet the pile thoroughly I carefully dribbled the solution evenly over the pile. (Note: sodium nitrate is a poisonous chemical and should be handled like all agricultural chemicals, carefully and with respect. It is absorbed by the microorganisms as food to break down the leaves.)

The change was apparent within a week. The leaves had darkened and begun to cook down; when I turned the pile's upper layer with a hoe, wisps of steam ghosted upwards. Finally, with enough nitrogen to balance the carbon in the leaves, the bacteria worked feverishly to break down the pile of leaves into soil, a process that would have taken a year or two without intervention. Any source of nitrogen would have worked: ammonia solution, ammonium phosphate, potassium nitrate, even horse manure.

By summer the pile had sunk below the walls of the Composter and had cooled enough to be planted. As the Victory Garden suggested, I planted my compost heap, though not with zucchini like they did. I planted my favorite indestructible cucurbit, the luffa gourd, whose firm, immature fruit taste better than zucchini when cooked in tomato sauce. The luffa acted as if I had planted it on top of a uranium mine, sending out strong vines that yellowed themselves every morning from midsummer on with two-inch-wide flowers. Not counting the fruit that I missed that became overripe, the five vines produced eighteen pounds of savory fruit.

Thanks to the nutrients and the frequent waterings, the Composter was ready to be emptied as soon as the first frosts had laid low the luffa vines. I pulled apart the logs, hoed down the pile to fine black fluff, and wheeled wheelbarrow-load after wheelbarrow-load into the garden to be dumped onto the four main beds. Each of the four beds got three loads and a smaller bed off to one side got two loads, for a total of sixty-two cubic feet of compost, enough for a one-inch layer of nourishment.

This year, I've carried out my compost program a little differently. First, I got most of my compost from a collection site four blocks away where the Streets Department had stacked up a vast pile of the stuff, already steaming and mostly decomposed. I stuffed the van with the compost and made five short trips to get two cubic yards.

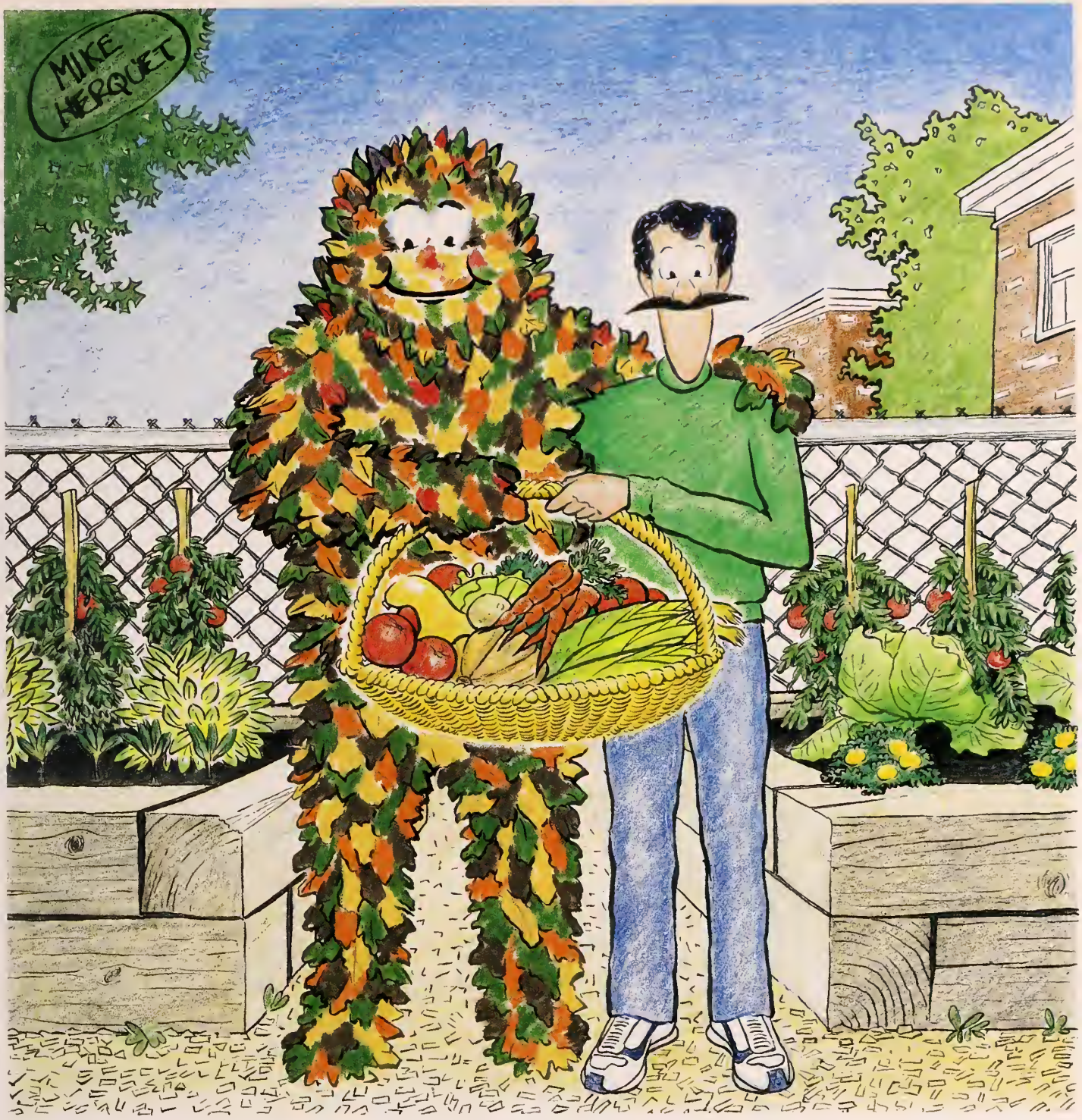

illustration by Michael Herquet

This both greatly increased the amount of compost I am able to generate and enabled me to make a great deal of compost with little effort.

That meant I would be able to collect more raw material than the old Composter would be able to handle, so I set up small compost silos made from cylinders of wire fencing three feet tall and about that wide in diameter. These I filled first, with the Streets Department compost, since that would be done sooner and out of the way before the leaves would finish up.

I limited leaf collecting because I was already ahead of the schedule I had followed last year. I made only the easiest and most obvious pickups and, in contrast to last year, I got many bags from my neighbors, one of whom even carried a bag across the street for me, although he has a bad knee.

This year I filled the Composter up and fertilized it in the winter, so it would have a head start on breaking down the pile of leaves I stuffed into it. Though I did cut back on my collecting efforts, amazingly I ended up with more bags of leaves than last year. If I could only apply that principle to money I'd have it made.

What I look forward to is seeing the soil under the midsummer sun, not pasty and shallow-complected but black and deep-toned, simmering beneath the rising tallness of the tomato plants. Yes, this year it will be tomatoes and spices.

Luffa Seeds

If any readers would like luffa seeds, please send me a SASE and I'll be happy to pass some along: James Wiegand, 6041 N. Park Ave., Philadelphia, Pa. 19141.

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James Wiegand is a writer who supports himself doing sales work for an electrical supply house. When not at work, he gardens indoors and out. Wiegand took second place in the City Garden Contest in Mid-sized Vegetable Gardens in 1987 and 1986.

FROM FORAGE TO FEAST:

The Delights of the Edible Landscape

by Catherine J. Knes-Maxwell

photo by Paul Meyer

◀ *Rosa rugosa* hip: high in vitamin C and delicious in teas and jellies.

Gina Hart foraging for cattail shoots, an ephemeral spring treat. ▼

photo by Catherine J. Knes-Maxwell

You can smell the hickory nut muffins cooking. The sauteed daylily buds gleam green, nestled amidst succulent purslane stems. Spicebush tea, tart and spicy, is steaming. It's obviously a gourmet luncheon, but these exotic vegetables didn't come from the specialty grocer.

Foragers Judy McKeon and Gina Hart have hosted another feast at the Morris Arboretum of the University of Pennsylvania, where they co-teach a class on their art of creative food gathering. They reveal a bounty of culinary delights, found creeping in the lawn, nestling in the woodland, and masquerading as mere ornamentals in the perennial border. A well-matched team, both Judy and Gina bring something special to the partnership.

Gina, a retired maternal health care educator who returned to her first love, horticulture, has rich experience with herbaceous plants. She began foraging as a child in the Maryland countryside.

"I have no idea how young I started," she recollects. "I simply followed where my father led. He had foraged since he was young in the Apennines of Central Italy. Foraging is a part of my life — a part of my attachment to my father. It's also basic to me, to take something to no apparent value and make something of value."

Judy McKeon, rosarian at the Morris Arboretum, grew up gathering the honeysuckle nectar and loganberries of Mt. Airy, in her native Philadelphia. Years later, while researching and designing a self-guided, edible plant walk at Bartram's Garden, she began to forage in earnest. Judy's specialties are woody trees and shrubs, particularly those reflecting the lifestyles of the native Americans and early settlers and the recipes they shared.

"When I forage, I'm reminded frequently of the American Indian. It gives me an alternate time experience — an awareness of the way it might have been when Fairmount Park and the Wissahickon were the sacred places of the Leni Lenape."

"When I forage, I'm reminded frequently of the American Indian. It gives me an alternate time experience — an awareness of the way it might have been when Fairmount Park and the Wissahickon were the sacred places of the Leni Lenape."

Both Judy and Gina take pleasure in the intimacy with the seasons that foraging necessitates. These "crops" are not set out by a gardener's calendar in predictable rows, but awaited patiently as the seasons change, and searched out diligently in their favored habitats.

As autumn creeps in, toward late September, the fruit of the pawpaw (*Asimina triloba*), the only nontropical member of the custard family, begins to soften into ripeness, ready to eat on the spot or to be used in pies, cakes or beer-making.

The diligent forager, having saved the pawpaws from the possums, must next compete with the birds for the ripe red berries of the cornelian cherry, and squirrels for the nuts of the shagbark hickory. The hickory was known as "Powcohicora" to the native Americans, who made a mild milk substance from the nuts. Nuts are ripe when the husks split open.

Though much of successful foraging depends on careful timing, the weekend forager may gather some items at leisure, even during the winter months. Woody twigs for tea, such as those of spicebush, sweet shrub (*Calycanthus floridus*), or black birch, can be collected any season. Watercress found near streams, can be harvested for soups and salads 11 months of the year.

Early spring is a busy time. Fresh greens

continued

photo by Paul Meyer

Yucca petals, soft summer beauties, enhance salads, drinks, and omelets.

and tender shoots often come and quickly go.

"You have about a week in April in which to harvest young cattail shoots," which, Gina reports, are good steamed like asparagus. "They are best between the time they sprout and the time they break above water."

Fiddleheads from the ostrich fern (*Matteuccia pensylvanica*), found in late April to early May, are delicious in a stir fry or vinaigrette. Timing, again, is key: a fiddlehead becomes an unappetizing fern within a few days.

Foragers must also rethink their concept of the season of interest for many plants. Daylily flowers (*Hemerocallis* sp.) hold forth in midsummer, but the young leaf shoots, a delicious salad green, emerge in early spring.

Summer is heralded by the blooming of roses and yuccas, whose petals contribute to fairylike salads, jellies, cold soups and omelets. Judy recommends the petals of rugosa roses such as 'Agnes,' or those of shrub roses such as 'Bonica' for cooking, since they repeat bloom and need not be sprayed. (**See caution.***)

Juneberry, also a member of the rose family, is Judy's favorite. The first of the summer berries to mature (in June, of course) they can be used in pies, jellies, or fresh. Native Americans dried them for winter food.

More ephemeral summer treats are the pods of milkweed (*Asclepias syriaca*), good parboiled and served with a dressing. They must be harvested in late summer or early fall, Gina relates, before the pods burst.

Foragers may also extend the season of some plants. According to Gina, pokeweed shoots can be collected throughout the summer, if you faithfully harvest the six inch shoots for soups and salads. This promotes the sprouting of new shoots.

Whether it be through a cattail shoot savored once in early spring, an often visited lawn of dandelions, or rose petals harvested all summer, foraging opens a broad sensual realm, a new way to relate to food, to gardens, and to nature. For the forager, autumn is an invitation to explore, to discover, to celebrate the cycle of life in events subtler, yet no less sublime, than the appearance of the first fiery tints of fall leaves. Savoring the first succulent pawpaw on a cool September day is a powerful rite of passage into autumn, harking back to the rhythms of our pre-agricultural ancestors.

"The experience of finding and picking the fruit (or other plant part), noting the color of the skin, feeling the texture of the bloom and finally tasting the fresh or prepared wild food is a unique experience," says Judy, "that we can't even compare with that of cultivated foods."

Modern day hunters and gatherers share this unique experience through the delectable seasons: from forage to feast.

Gina's Hickory-nut Date Muffins

2 cups sifted flour
1/4 cup sugar
3 tsp. baking powder
1 tsp. salt
1/2 cup chopped dates
3/4 cup hickory nuts, chopped
1 cup milk
1/4 cup oil or melted margarine
1 egg

1. Oven 400°. Bake 20-25 minutes.
2. Sift flour with sugar, baking powder, and salt. Add dates and nuts.
3. Add oil and eggs to milk. Whisk until mixed.
4. Make a well in flour mix, and pour wet ingredients into dry ingredients. Stir quickly with fork until just moistened. Do not beat. Batter will be lumpy.
5. Spoon into 12 greased muffin cups. Bake until golden.
6. Empty pans when out of oven and cool muffins on rack.

Gina's Sauteed Daylily Buds and Purslane with Vinaigrette

2 cups daylily buds
2 cups purslane
2 cups pokeweed stems (optional)
1 Tbs. olive oil
1 clove garlic, minced
1 small onion, minced

1. Remove stem end of daylily buds, wash. Clean and wash purslane and poke. Parboil in shallow pot 10 minutes, until tender.
2. Sautee garlic and onion in oil, until onion is clear. Add vegetables, turn and coat each piece well. Cook five more minutes. Remove to serving dish.
3. Make vinaigrette. Pour over vegetables. Serve hot or cold.

Vinaigrette Dressing

6 Tbs. olive oil
2 Tbs. wine or balsamic vinegar
1/2 tsp. salt to taste
several twists fresh ground black pepper

Whisk or shake ingredients until well blended. Makes 1/2 cup. Proportions may be adjusted, or additional seasonings added to taste.

Judy's Ginger-Hickory Spread

1/4 cup chopped ginger
1/4 cup chopped hickory nuts
2 Tbs. minced orange pulp
1 Tbs. maple syrup
1 tsp. vinegar

Mix all ingredients. Use as spread or filling.

Judy's Spicebush Tea

1 cup fresh spicebush twigs, bark, or leaves
1 quart boiling water
4 tsp. dried, crushed rosehips (optional)

Simmer or steep 15 minutes. Add honey, maple syrup, lemon to taste.

This aromatic tea was widely known as a restorative among the American settlers.

Gina's Watercress Soup

2 oz. butter
1 cup chopped onion
1 cup chopped potato
5 cups chopped watercress
2 1/2 cups chicken stock
2 1/2 cups creamy milk (can substitute evaporated skim milk)

***CAUTION:** Please forage carefully to avoid the toxins of both man and nature.

Know your foraging area. Avoid areas that may have been treated with herbicides or pesticides, or contaminated by runoff from streets, industrial areas, or other users of chemicals.

Use a good plant identification book. A plant that looks similar to a food plant could be quite toxic.

Foraging on Your Own

Common Name	Scientific Name	Season	Habitat	Plant Part and Culinary Use
Black birch	*Betula lenta*	year-round	damp forests	twigs for tea
Cattails	*Typha latifolia*	early spring summer	ponds and marshes	young shoots as cooked vegetable pollen as flour
Chickweed	*Stellaria media*	spring and fall	gardens, lawns, other moist places	stems and leaves as salad greens
Crabapples	*Malus* spp.	early fall	old fields, in cultivation	fruit for jellies, cobblers, etc.
Dandelions	*Taraxacum officinale*	spring, summer, fall	lawns, fields, roadsides	leaves as soup, cooked vegetable, salad green; flowers for wine
Daylily	*Hemerocallis* spp.	early spring summer	in cultivation	new shoots as salad green flower buds for stir fry, salads
Dogwood	*Cornus mas* or *Cornus officinalis*	early fall	forest understory, in cultivation	fruit for jellies, jams
Juneberry	*Amelanchier canadensis*	summer	forest understory, in cultivation	berries fresh, in pies or jellies
Hickory	*Carya ovata*	mid-autumn	forests, in cultivation	nuts fresh, for baking, candy, flour
Milkweed	*Asclepias syriaca*	late summer	open fields, roadsides	unopened pod as cooked vegetable
Ostrich fern	*Matteuccia pensylvanica*	early spring	rich, moist soil in swamps, forests, on streamsides	fiddleheads as cooked vegetable or in salads
Roses	*Rosa* spp.	spring, summer, fall	in cultivation, in open fields	petals in salads, omelets or drinks, or for wine or candies hips for jellies, teas
Pawpaws	*Asimina triloba*	early fall	forest understory, in cultivation	fruit for puddings, pies, custards, snacks
Pokeweed	*Phytolacca americana*	spring, summer, fall	fields, gardens, roadside	young shoots as cooked vegetable
Purslane	*Portulaca oleracea*	mid-spring, summer	fields, roadsides, in cultivation	stems and leaves as cooked or salad green
Spicebush	*Lindera benzoin*	year-round	damp forests, streamsides, in cultivation	twigs and leaves for tea
Watercress	*Nasturtium officinale*	year-round	streamsides	leaves and stems for soups, as salad or cooked green
Yucca	*Yucca filamentosa*	summer	in cultivation	petals for candies or garnishes, in salads, omelets, or drinks

1. Melt butter and add onions and potatoes, turn until well coated. Cover and sweat on gentle heat for 10 minutes.
2. Add watercress and cool until soft.
3. Puree vegetables in blender or processor.
4. Add chicken broth after pureeing if using processor. Add to vegetables if using blender.
5. Add milk and heat. Don't boil.

Judy's Birch Tea

Cut some narrow sweet birch twigs into 1 inch pieces. Use 6-8 pieces per cup boiling water. Steep several minutes. Add honey, milk to taste.

Suggested Books for Foragers

**Edible Wild Plants,* Oliver Perry Medsger, The MacMillan Company, New York, 1945.

**Edible Wild Plants of Eastern North America,* Merritt Lyndon Fernald, Harper & Brothers, New York, 1958.

**A Field Guide to Edible Wild Plants of Eastern and Central North America,* Lee Peterson, Houghton Mifflin Co., Boston, 1978.

**Field Guide to Wild Herbs,* Ed., Rodale Press Inc., Emmaus, PA, 1987.

Ornamentals for Eating, Mark Podems and Brenda Bortz, Rodale Press, Emmaus, PA, 1975.

**Stalking the Wild Asparagus,* Field Guide Edition, Euell Gibbons, McKay, New York, 1962.

The Wild Gourmet: A Forager's Cookbook, Babette Brackett and Maryann Ash, David Godine Publishers, Boston, 1974

*An edition available in PHS Library

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Catherine J. Knes-Maxwell completed a year's term as education intern at the Morris Arboretum of the University of Pennsylvania in June 1988. She is a born and bred blackberry picker of the pastures of North Carolina, and a graduate from UNC-Chapel Hill and N.C. State University

The Christmas rose (*Helleborus niger*).

Anemone nemerosa 'Alba'

Are You

by Tim Morehouse

In early fall gardeners are often swept away by what I call "Dutch Fever." With a supply of catalogs and their tempting pictures we often dream of a spring parade of tulips and daffodils (at bargain prices). But there are available equally "frost proof" spring plants — those that have their own "time schedules," which seem never to go awry no matter what the weather or their zonal locations; they are as predictable as relatives (although, perhaps, more welcome) in the very early days of spring. For a change why not consider white blooms — for early, mid-season and late?

True: the fickle weather of March and April will often confuse both plants and gardeners. Who can really predict when winter ends and spring begins? Sudden high temperatures encourage sap to flow, buds to swell, and then — does it ever fail? — an overnight freeze browns forsythia and quince or scorches the tiny wine-colored leaves of the Katsura tree. But if we focus our attention closer to ground level, where winter mulch and stray patches of snow cover the tiny bulbs — such as anemones, snowdrops, and crocus — bright clumps soon emerge under deciduous trees and shrubs. Gray winter days glow with the abrupt, unexpected appearance of white spring flowers; the cool temperatures and bright sun combine to reveal dazzling miniature pictures that not only charm the casual onlooker but lead the gardener to poke and probe about in anticipation as the new year arrives.

the first bulb

One of the first little bulbs to show itself in spring, the snowdrop (*Galanthus nivalis*), produces white, drooping bells fringed with green markings. Easily naturalized it will grow in drifts in the woods, under shrubbery, or anywhere in the open shade, where, after flowering for several weeks in February, it vanishes until the next year. Late snow falls never damage its performance.

Helleborus (*H. niger*), the Christmas rose, a semi-evergreen perennial, produces creamy, off-white cupped flowers with bold.

Dreaming of a White Spring?

"White flowers," Harris once wrote, perhaps having heard the same thing from Vita Sackville-West, "are anathema to all but the oldest and most sophisticated gardeners."

—from *New York* Magazine, June, 1988, p. 42-43 "Bloom Town: High Wasp Chic at White Flower Farm" by Nelson W. Aldrich

—quoting William B. Harris, a former editor at *Fortune* Magazine, who with Jane Grant, a former *New York Times* reporter, founded White Flower Farm.

golden stamens. It prefers a cool, rich woodland soil, the same suitable fro rhododendrons. The foliage, a handsome leathery dark-green, gradually dies as the flowers appear. They will increase slowly and prefer the same spot for years although the plants can be divided and moved after blooming. A superb spring plant that no shade garden should be without, its blossoms will last well over a month before turning green and producing seed pods among the new leaves. Break the pods open and scatter the contents about the base of the mother plant for new offspring the following year.

The Windflower (*Anemone sylvestris*) — in its white form with glossy, yellow stamens, seems never to cease blooming. Any soil is suitable — sun or shade — and its roots spread rapidly. Every spring new plants appear in unexpected places. Some gardeners consider it invasive but the "univited" can easily be "weeded out" to make room for later summer flowers. My own supply seems to begin flowering in late April and continues, non-stop, until the June roses finish their display. A rarer form, *Anemone nemorosa* 'Alba,' is quite small, growing to 6 inches, with star-shaped outer petals and a dense button center. It naturalizes under trees and shrubs; a distinct advantage is its complete disappearance after blooming. This is true of most early spring flowers grown from rhizomes and bulbs with the exception of the ubiquitous daffodil (handsome though it is) which must

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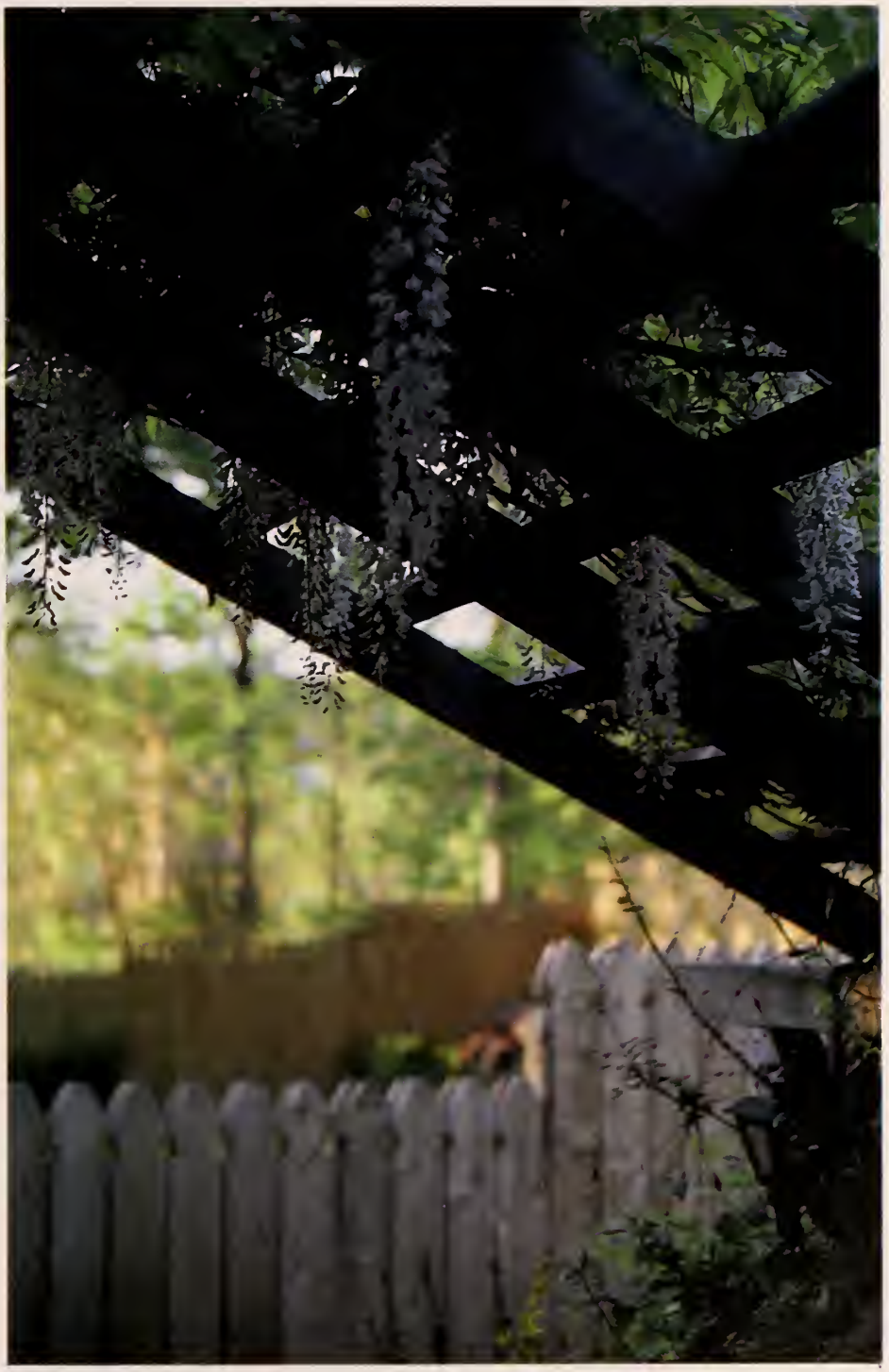

photos by Tim Morehouse

The white form of Japanese wisteria (*Wisteria floribunda* 'Alba').

'White Czar,' a pure white violet (*Viola odorata*).

"ripen" its foliage for flower production the following year.

The bleeding-heart can now be cultivated in a white form (*Dicentra spectabalis* 'Alba') and, although not as robust as its pink cousin, the glaucous-green foliage and white blooms (identical in shape to the pink) are lovely in the shady border among clumps of ferns and hostas.

The white form of the Japanese wisteria (*Wisteria floribunda* 'Alba') is ideal for a sturdy arbor or trellis. It is not as rampant as the Chinese variety, so may be perfect for a smaller garden. Late frosts spoil buds but the long racemes are striking over a patio — especially when the sunlight illuminates the chains of pea-shaped flowers on a cool day. Always purchase grafted plants; those raised from seed may take years to bloom, if they ever do. By hard pruning in late fall and a generous feeding with superphosphate, young plants quickly establish themselves. Avoid any fertilizer high in nitrogen: this only results in heavy vegetative growth and no blooms.

Peony, (*Paeonia* 'Gold Standard'), opens with a display of pure white, papery petals surrounding a thick crown of golden stamens. Not a heavy bloomer, but sturdy, it tends to stay upright during sudden spring rains and not flop like the older varieties. At last a cultivar where it's unnecessary to lift a head to admire the face. When planting peony rhizomes in the fall, arrange the fleshy roots with red buds just one inch below the surface of the soil: deep planting discourages subsequent blooms.

The trillium (*Trillium grandiflorum*) commonly called trinity flower or wake robin, is a long-lasting plant, very hardy, and worthy of a corner in all gardens where there is shade. Grow it with ferns and bleeding heart. Here Nature's white can not be improved upon: its simple radiance is unsurpassed by other spring flowers.

rare and others

A rare white, *Sanguinaria canadensis* 'Flore Pleno' (sometimes listed as 'Multiplex'), the double bloodroot is a perfect neighbor for other diminutive spring flowers along woodland paths. The blooms, so very Victorian, are rounded and cup-shaped appearing above large, flat, gray-green leaves. Plant nearby *Viola odorata* 'White Czar', a large-flowering, long-stemmed pure white violet.

Blooming later than the "snow-proof" bulbs but nonetheless spectacular, is the white form of the foxglove (*Digitalis purpurea* 'Alba') a biennial that tends to show "perennial" characteristics if allowed to self-sow. Plant only the white form or the bees (through pollination) create their own colors. They rise above the ferns and helebores — like sentinels — as spring extends into summer. Do not cover the crowns in winter with mulch or leaves; they may rot.

White flowers enhance all garden schemes; in fact, they accentuate and in-

photos by Tim Morehouse

A rare white double bloodroot (*Sanguinaria Canadensis* 'Flore Pleno').

tensify the elegance of other colors. Magnolias, dogwoods, viburnums, many orchard trees, provide a lavish froth of white in late spring. A common mountain rhododendron (*Rhododendron maximum album*) blooms in June after its more sophisticated relatives have finished. Its dome-shaped blossoms last for several weeks in cool weather and the evergreen leaves are handsome year round. Well-drained, moist soil with an annual top-dressing of oak leaves and a sprinkling of cotton-seed meal for acid conditioning will nourish it for years.

Gray, fickle spring days, just as winter begins to wane, offer endless surprises for the gardener. Perhaps the executive with briefcase in hand — the fair-weather, weekend gardener — slows down to catch the white blooms of spring in transit from home to office. And this awareness, however fleeting, becomes a spiritual delight, a moment to reflect on before the daily domestic routine begins. Even the familiar jogger passing the front lawn might notice these early spring signs. Russell Page, in his classic book, *The Education of a Gardener*, writes: "Remember that one of your aims must be to lift people, if only for a moment, above their daily preoccupatons. . . a glimpse of beauty outside will enable them to make a healing contact with their own inner world." Life begins once again in all its purity.

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Tim Morehouse is a retired teacher whose passion for gardening has persisted over 30 years. He gardens in southern Ohio and traveled to the 1988 Philadelphia Flower Show for a late winter gardening pick-me-up. His articles have appeared in *Garden Design*, *Garden*, *Your Home*, *Victorian Homes*, *American Horticulturist* and others.

Sources, planting zones, blooming times (approximate) for plants mentioned in article:

Snow Drop (*Galanthus nivalis*) Zones 3-8
Fall planting. Blooms late February-April
White Flower Farm, Route 63
Litchfield, CT 06759 (Fall catalog: $5.00)

Wayside Gardens
George W. Park Seed Co., Box 1
Hodges, SC 29695-0001
(Wayside Catalog: $1.00
Park Seed Catalog: free)

***

Christmas Rose (*Helleborus niger*) Zones 5-7. Blooms late February-early April depending on weather. Order in spring.
White Flower Farm (address above)

Wayside Gardens (address above)

***

Windflower (*Anemone sylvestris*; *Anemone nemorosa* 'Alba') Zones 4-8. Blooms April to July in Zones 5-6.

Andre Viette Farm & Nursery
Route 1, Box 16
Fisherville, VA 22939 (carries the rare *A. nemerosa* and states it will bloom in early April)
Catalog: $2.00

Vick's Wildgardens
Box 115
Gladwyne, PA 19055 Catalog: $.25

***

Bleeding Heart (*Dicentra spectabilis* 'Alba') Zones: 3-9. Blooms late April - early May

Gardens of the Blue Ridge
Box 10
Pineola, NC 28662 Catalog: $2.00

White Flower Farm (address above)

Andre Viette Farm and Nursery (address above)

***

Japanese Wisteria (*Wisteria floribunda* 'Alba') Zones 4-7. Blooms early May.

Wayside Gardens (address above) Container shipped spring and fall.

***

Peony 'Gold Standard' Zones 3-6. May bloom.

White Flower Farm (address above) Fall shipment only.

Double Blood-Root (*Sanguinaria canadensis* 'Flore Pleno' or 'Multiplex'). Zones 3-6 Blooms April-early May.

Fall shipment only: White Flower Farm
Wayside Gardens
Andre Viette Farm & Nursery

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Viola odorata ('White Czar') Zones 3-8. May blooms.

Andre Viette Farm and Nursery
Wayside Gardens

***

White Foxglove (*Digitalis purpurea* 'Alba') Zones 4-7. Blooms May-June.

Wayside Gardens
White Flower Farm (offers an exceptionally fine variety)

***

Rhododendron (*Rhododendron maximum album*) Zones 3-8 Late bloomer in southern Ohio: June-early July.

We-Du Nursery
Route 5, Box 724
Marion, NC 28752
Catalog: $.50

The Cummins Garden
22 Robertsville Rd.
Marlboro, NJ 07746
Catalog: $1.00

Carroll Gardens
444 East Main Street
Box 310
Westminster, MD 21157 (Catalog: $2.00)

***

Trillium (*Trillium grandiflorum*) Zones 3-7. Blooms April-May.

Vick's Wildgardens (address above)
Andre Viette Farm & Nursery (address above)
Wayside Gardens (address above)

Recreating A Colonial Garden

by Adra Fairman

There is a profound difference between **restoring** an historic garden and **recreating** one. When restoring, old plans or evidence in the ground, such as old walls or old foundations, are the essential factor. The Paca House in Annapolis, Maryland, is a fine example of restoration: there, excavation of a parking lot uncovered walls, garden bed outlines and former grade levels. By the same token, Monticello, Jefferson's home outside Charlottesville, Virginia, has been the scene of discoveries of old orchards, fence post holes and other unmistakable signs of the exact location of many parts of the original gardens.

Historic Rockingham, George Washington's Headquarters (August to November, 1783), had no such records. Indeed, the house has been in three different locations near Rocky Hill, New Jersey, since the General spent three months there waiting for the news of the signing of the Treaty of Paris to end the American Revolution. The Congress, meeting in Nassau Hall in nearby Princeton, had pushed that small town to the limits of its capacity to house the delegates. When the General and Martha Washington accepted the invitation to come to Princeton, a home was found for them by renting the Widow Berrian's farmhouse in Rocky Hill.

Originally, this house sat on a knoll above the Millstone River where Route 518 crosses the Delaware and Raritan Canal. Needless to say, neither the Canal nor 518 were there in 1783. Quarrying near the site in 1897 forced the first move part way up a nearby hill, and further encroachment in 1957 made the Kingston Trap Rock Company agree to move it to the top of the same hill onto State property. When this final move was made, the State installed concrete and macadam walks, a parking area and paved driveways and placed the house on a rather unattractive fake stone foundation.

An active committee was already at work reconstituting the interior of the house and furnishing it with authentic pieces of the period. The Stony Brook Garden Club of Princeton, of which I am a member, was persuaded to undertake all the landscaping. The State cooperated by sending convicts on a work release program to rip up the macadam and concrete. Research was undertaken to decide the form the gardens should take. It became obvious that our first effort should be to build an 18th Century parterre garden with herbs at the kitchen end of the house. Plans were drawn using the traditional form of a center bed surrounded by four knot gardens, pebble paths and a wide border enclosed by a picket fence. The plant list was meticulously researched for authenticity for the period and proved not difficult to acquire. Herbs were limited to those that had been used for medicinal, cosmetic or culinary purposes.

Clove pinks were used to perfume linens, wine and vinegar, and hyssop tea with honey was used in pulmonary "afflications" and applied to bruises. It was also used as a substitute for real tea when the British began to levy unfair taxes on the imports. No one ever threw hyssop tea into Boston Harbor.

Three kinds of mint (peppermint, spearmint and apple mint) were planted under a Dolgo crabapple in the corner nearest the house. A bed of aconite, sage, lavender, artemesia and lily of the valley runs along the back fence. Against the stone wall of the separate kitchen building we espaliered two Beurre D'Anjou pears. With their exposure to early morning sunshine, the walls retain the day's heat and the pears have borne heavily for over 20 years. They are beautiful in blossom, but even more spectacular to our visitors when laden with golden, ripening fruit. At their feet, a bed of Stachys byzatina or woolly lamb's ears make a velvety, green-blue spread. This plant is a favorite of the school children who visit the garden. They love to pick its soft leaves. rub them against their cheeks, and pretend that they really have a woolly lamb to fondle.

The center bed features a sun dial. Autumn crocus (*Colchicum autumnale*) bears its flowers in September. The yellow anthers of the pale lavender blooms are the source of the saffron powder of commerce. Pot marigold (*Calendula officinalis*), we explain to visitors, was used "in the pot" for flavor and color in stews and soups. A germander hedge (*Teucrium canadense*) shorn to about 18 inches surrounds this center bed and gives it definition.

On the east fence, wild sweet pea (*Lathyrus latifolius*) climbs to make a sheet of mauve pink against which purple foxglove (*Digitalis purpurea*) contrast dramatically. Yellow tansy in the end of this bed next to the entrance gate gives good color contrast. Tansy is invasive, and although we know it was used extensively as a bug

repellant in Colonial days, there are times when we wish we had never planted it. It is a constant battle to keep it in bounds. Costmary (*Chrysanthemum balsamita*), clove pinks (*Dianthus caryophyllus*) and hyssop (*Hyssopus officinalis*) fill out this end of the garden. Clove pinks were used to perfume linens, wine and vinegar, and hyssop tea with honey was used in pulmonary "afflications" and applied to bruises. It was also used as a substitute for real tea when the British began to levy unfair taxes on the imports. No one ever threw hyssop tea into Boston Harbor.

At the end of the house, a bed of bayberry (*Myrica pensylvanica*) throws the waxy gray berries that were incorporated into

continued

Costmary, hyssop and valerian (heliotrope) are backed by three old fashioned roses outside the east fence: *Rosa centifolia* 'muscosa' (moss rose); *Rosa gallica* 'Charles de Mills' and *Rosa damascena* 'Celsiana.'

photos by Frederick van Wetering

Espalier of Beurre d'Anjou pears on kitchen building. Lady's-mantle, with chartreuse blossoms on right, wooly lamb's ears and marjoram in background, and yellow bloom of tansy near sundial.

photos by Frederick van Wetering

Closeup of bloom on common comfrey (*Symphytum officinale*) used to heal wounds in colonial times.

Lady's-mantle leaf showing it holds the dew drops. The water was collected and used in the old churches as holy water.

candles to give them their distinctive scent. The corner bed by the kitchen building holds three plants that provoke the most interest from visitors. The first plant is the tall rather awkward elecampane (*Inula helenium*) with huge yellow flowers now seen only in restored gardens. John Gerard, the noted Colonial herbalist, said, "its vertues are against shortness of breath, old coughs, and the roots chewed will fasten the teeth." Another recommended it for "divers passions of the hucklebones, called Sciatica." Next to the elecampane grows Fuller's teasel (*Dipsacus sativus*), a coarse, thistle-like plant whose heads bear hooked bristles. These were used to tease and dress wool cloth so as to raise the nap. The man who worked the cloth was a fuller. The third plant is Dyer's woad (*Isatis tinctoria*) whose leaves when powdered and fermented make a blue dye. When the Romans invaded Britain, they found to their horror that the ancient natives dyed their bodies a deep indigo blue — that blue was from Woad.

The plants described are perennials, but we also plant a few annuals such as nasturtium, still used as flavoring in salads. Sweet basil has also come down to us today used just as the Colonial housewife did. Tarragon, popular then as now as flavoring in chicken or lamb dishes, does not survive our winters, and we replace it yearly. Dill grown easily from seed, and its feathery plumes add variety and texture to the garden. Early American settlers called dill "meeting house seeds" as they were munched during the long church services.

Behind the outdoor kitchen, a long allee of old fashioned apple trees leads from a well to a laundry building. Ribston Pippin, Winesap and Gilliflower apples, which we have used here, are listed by General Washington as material he ordered for his gardens at Mount Vernon.

During his three months residence at Rockingham, the General wrote longingly of his passionate desire to retire to Mount Vernon and resume his peaceful life. He stayed dutifully in the Princeton area as long as the Congress needed him. After that he did have a few, but only a few years as the gentleman farmer he always wanted to be. The gardens have recreated an atmosphere that we think he would have enjoyed in his brief stay in this authentic and charming house, now a small museum.

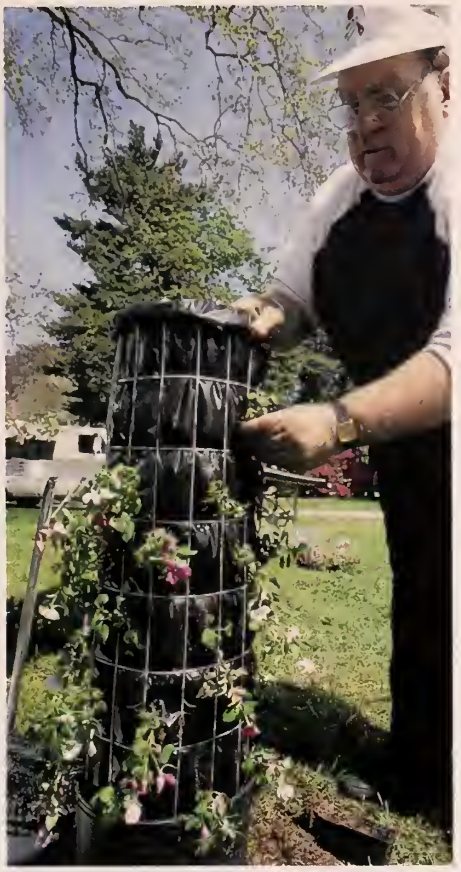
Rockingham, Route 518, Rocky Hill, New Jersey. Open to the public year-round without charge, Wednesday through Saturday 9 to 12 and 1 to 6. Sunday 1 to 6. Closed Monday and Tuesday.

●

Adra Fairman is the president of the Board of Trustees of the Rockingham Association, which has acquired most of the furnishings in the Museum. Her main hobby is growing daffodils, and she is president of the New Jersey Daffodil Society. She received the Horticultural Award of Zone IV of the Garden Club of America in 1982 and is an accredited GCA Horticultural judge. She is also a past president of the Stony Brook Garden Club of Princeton, which installed the gardens at Rockingham and maintains them.

FLOWER TOWER

by Jim LaRosa



A unique and beautiful tower of flowers, well suited to a small garden with limited space, on either side of an entrance door, or on a patio, can be accomplished for very little money and effort. All you need is a 12" clay or plastic pot, a few pebbles, a large plastic trash bag, a 36" square piece of chicken wire mesh, topsoil, and approximately 40 seedlings.

First roll the chicken wire into a cylinder so that it will fit tightly down into the pot. Line the cylinder with a large plastic trash bag. Fill the pot and the cylinder with topsoil having lined the bottom of the pot with some pebbles for good drainage. The column of wire will be anchored into the pot with the weight of the soil.

With a sharp object punch holes in the plastic at regular intervals (every other opening of the screening) and plant with seedlings. Impatiens and petunias or begonias have made stunningly effective columns for me. Whatever you choose you will be planting in the top opening as well as in the holes you have made in the sides of the column.

Over the years of repeating this project, I have found it best to insert the small plants or seedlings into the openings as I layer the topsoil into the cylinder.

I've had fun with this and you can, too. To achieve a barber pole effect, I have spiraled red and white impatiens. Equally delightful and just as successful were petunias in layers of blue (at the bottom), white (in the middle) and red (at the top). Also smashing were begonias of various colors on the sides and white petunias on top with a geranium in the center. In another season I topped off a column with a small Pandanus palm for an amusing Victorian look.

Take your time and with a gentle flow of water from a hose, throughly soak down through the column.

Flower Towers at Harvest Show
Flower Towers incorporating impatiens and begonia will be on display as a Challenge Class at the Harvest Show. Come with your sketch pad for some inspiring planting ideas.

●

Jim LaRosa's lovely little garden in South Philadlephia was featured in *Green Scene*, July 1986. He works on the Pennsylvania Horticultural Society's City Garden Contest Committee and is a judge. His own garden, (judged by a different panel of judges, of course) won second place in the Small Garden category six times and first place once.

photos by John Gouker

Jim LaRosa shows a group of potential exhibitors how to prepare a Flower Tower for the Harvest Show Challenge Class. They collected their materials at Philadelpia Green's Garden Day at the Horticulture Center in Fairmount Park in May.

GROWING INTERESTS

photo by John Gouker

Black Prince Pepper - *Capsicum annuum* 'Black Prince' is an exquisite ornamental pepper with deep purple almost black leaves. Tiny lavender flowers appear in early July followed by tiny cone shaped black peppers that turn a brilliant red in late August to mid-September. The plant is easy to grow, pest-free and disease resistant. Black Prince pepper plants won bronze medals in the Pennsylvania Horticultural Society's Harvest Show for three consecutive years.

Begin seeds indoors in a sunny window, greenhouse or under flourescent lights. Be sure to use a sterilized seed starting mix and plant seeds about 1/8" deep. Be patient — seedlings often do not appear for three weeks. When seedlings reach a height of one in., begin feeding weekly with Miracle Gro or a similar liquid fertilizer.

When plants reach a height of 3 in., transplant to 6 in. or 8 in. pots filled with a mixture of Pro Mix and good topsoil. Harden off properly and move to full sun in the garden in late May. Fertilize weekly throughout the summer.

●

Frank Kieser, a community gardener in West Philadelphia, has for a number of years been a member of the advisory board of Philadelphia Green. In that capacity, he served as co-chair of the Community Garden's Division Horticultural Class annual Harvest Show. He is co-chair of the Herb Division for the 1988 Harvest Show.

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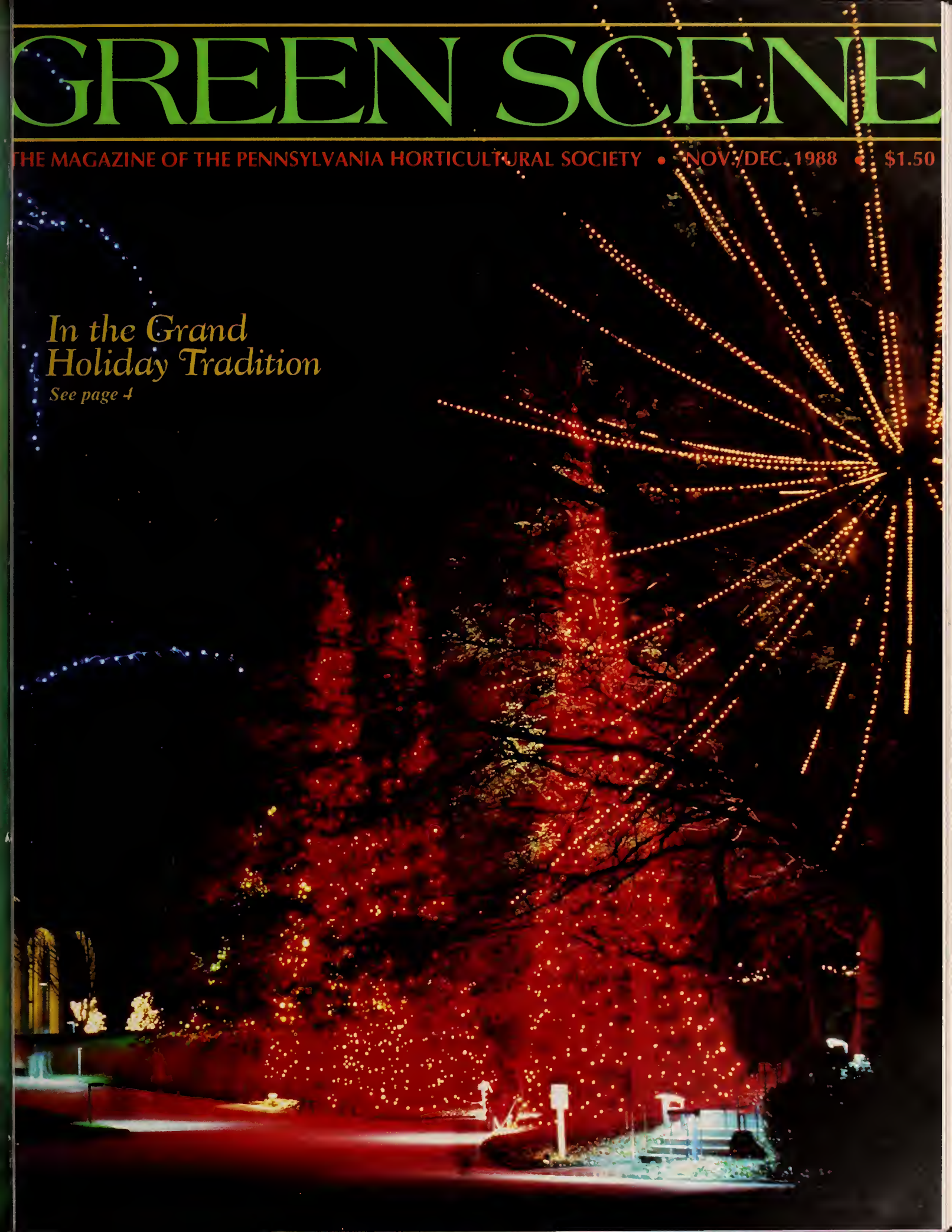
White foxglove
(Digitalis purpurea
'Alba') See page 26

GREEN SCENE

THE MAGAZINE OF THE PENNSYLVANIA HORTICULTURAL SOCIETY • NOV./DEC. 1988 • $1.50



In the Grand Holiday Tradition

See page 4

6

18

23

Front and Back Covers: In the Grand Holiday Tradition at Longwood Gardens. See page 4.

Photo by Larry Albee

in this issue

CORRECTION:
The photos in the September issue of *Green Scene* on page 16, 17 and 18 were taken by Lisa Dahlbeck, not Andrew Ducsik.

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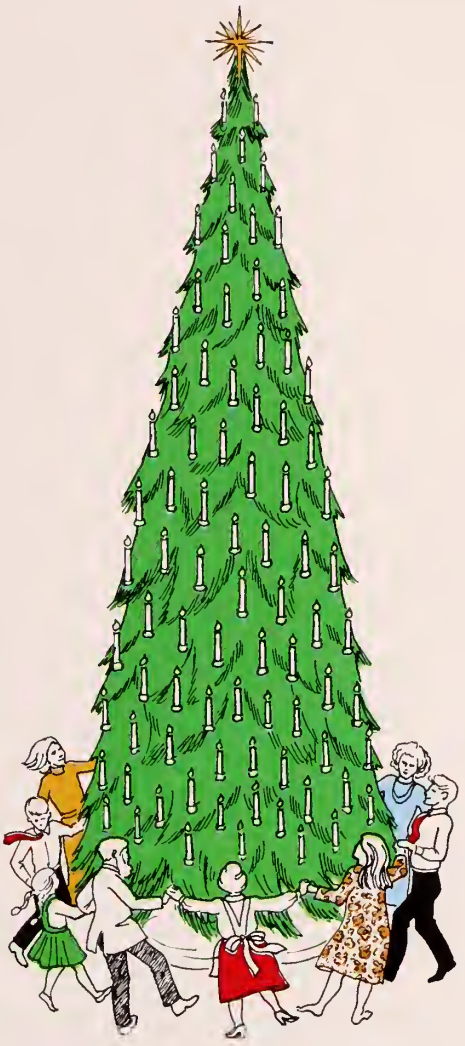
TREES AROUND WHICH TO DANCE

by Jean Byrne



Ingmar Bergman's movie "Fannie and Alexander" opens with an extraordinary sequence depicting Christmas preparations at the turn of the century in the home of a Swedish theatrical family. Aunts, uncles, fathers, mothers, children and servants busy themselves with hampers full of food and gifts for the celebration. The star of the event was, of course, the enormous tree, exquisitely ornamented and lit with candles. Everyone clasped hands and joyously danced around the tree and through the house. When I saw that movie several years ago, I went limp with nostalgia, thinking to take out an ad somewhere to see if anyone planned such a tree to dance around. Count me in.

Well, I satisfied some of that longing to reclaim the past great holiday tradition last year as I slipped over from my office to the PHS Holiday Exhibit often and on the slimmest pretexts to stare at the charmingly ornamented trees. Finally, I gathered up three friends from out of town to tour the lovely exhibits at Brandywine Museum, Longwood Gardens and Winterthur Museum. My friends had never been to these places before, so I timed our exit from Longwood Gardens Conservatory to happen at late dusk; we all gasped at the trees, lit on the hills. We linked arms and felt that surely the present was as good as the past. I felt silently grateful to all those people in organizations and stores who take the trouble and care to create a season of warmth and pleasure; who help visually to evoke the intimacy, real or imagined, of the extended families of the past. We felt it that day; of course we did not dance around the trees, but I have my eye on the big tree in Rittenhouse Square. Maybe after the carols this year.....

The PHS Holiday Exhibit is open Monday, December 12 through Wednesday, December 28, 9 am to 5 pm. Closed for Christmas December 23 through 26.

Poinsettia Tree Standards

by Colvin Randall

Nearly two dozen poinsettia tree standards are a spectacular addition to the Christmas displays at Longwood Gardens. Longwood's John Testorf has been growing them for years, aided by the grafting skills of Dave Cox. Here's how they do it:

Longwood's tree standards are grafted using poinsettia 'Eckespoint C-1 Red' as the rootstock. This cultivar grows upright with minimal side branching. Cuttings are taken in May for a standard that ultimately will be 6 feet tall, two and a half years later, or in June for an eventual height of 5 feet. They start in a 5" pot and move later into an 8" pot, soil is slightly acid (pH 6-6.5).

The cutting grows into a tall, central leader. Staking is not yet required. The flower buds and bracts that appear late in the year are removed and the plant allowed to rest beginning in January. The soil is kept slightly moist, all fertilizers withheld and temperatures maintained at 70° F day, 60° night.

In March, the straight stem produces new growth at the top. Just below this area, around the stem, a half-dozen or so T-bud grafts are made about June 1, inserting buds from a pendulous poinsettia cultivar. Longwood uses, among others, the red 'Annette Hegg Brilliant Diamond.' Its slightly weeping habit makes it ideal for hanging baskets or for the top part of a standard.

We remove all understock top growth in August after the grafts are well established. Sometimes all six grafts will have taken, other times only four. We pinch the grafted top growth back to two or three sets of leaves (the only pinch that season). Don't pinch after September 20 if you want Christmas color.

Although the new standard can be displayed after just a year and a half of growth, Longwood Gardens waits an additional year to ensure a fully developed top.

After the holidays, cut to remove both flowers and bracts, and let the standards rest for three to four months (little water, no fertilizer, 70° F day, 60° night). In March nearly two years after the initial rootstock cuttings were made, the standard is transplanted into a 10" pot holding a metal support long enough to reach into the top growth. Longwood's stakes are secured to an "X" foot sitting in the bottom of the pot. The stem is tied to the stake.

In April we cut back two nodes or so into the most recent growth. As this grows out, it's pinched again and weaker stems thinned out. After that, two more pinchings and more thinning each time.

In the fall, the standards are given additional stability by tying the top growth to the metal stake using long pieces of string. This anchoring lessens the chances of the branches breaking off, especially while moving the standards into the display site.

Longwood currently maintains standards begun in 1976, 1982, and 1984 in 12" pots; the older ones require substantial thinning to keep the bracts large throughout.

(Note: These directions assume you are familiar with conventional poinsettia culture, including the need for complete darkness all night long during the flower initiation process.)

●

Colvin Randall is publicity coordinator and publications editor of Longwood Gardens.

Photo by Larry Albee

Poinsettias trained as standards add imposing formality to Longwood Garden's Conservatory Christmas display. Such training is best left to the skilled amateur or professional horticulturist.

Sources

Local retail greenhouse operations in December sell directly to the public; ask for the specific cultivar as a stock plant from which you would take your own cuttings. Note that most cultivars are protected by plant patents.

Longwood Gardens Annual Holiday Extravaganza

December 1 through January 1. The theme "Christmas Around the World," with eight colorfully decorated trees, portrays international holiday traditions, including a Renaissance repast with "knights" in shining armor. Horticultural highlights indoors include 2,300 poinsettias, paperwhite narcissi, irises, begonias, Christmas cacti, blue coleuses, and cyclamens.

Conservatory hours: 10 am-9 pm every day, with half-hour organ sing-alongs scheduled daily at 1:30, 2:30, 3:30, and 4:30 pm through Jan. 1; from Dec. 1 through Dec. 23, evening choral concerts are scheduled at 7 and 8 pm. Outdoors, from 5-9 pm thousands of lights sparkle on dozens of trees, and weather permitting, the illuminated fountains on the stage of the Open Air Theatre dance to holiday music. Admission is $6 adults, $1.50 children ages 6-14, and free for children under age 6. Group rates are available. For a complete schedule of events, send a stamped self-addressed business envelope (9" x 4") to Schedule, Longwood Gardens, P.O. Box 501, Kennett Square PA 19348. Phone: 215-388-6741.

Longwood Gardens is located on U.S. Route 1, three miles northeast of Kennett Square, PA and 30 miles west of Philadelphia in the historic Brandywine Valley.

The view toward the Music Room tree is enhanced by an allée of poinsettia standards and hanging baskets. (1985 display)

Photo by Dick Keen

The True Christmas Cactus Makes a Comeback at Longwood Gardens

by Dale Lauver

While visiting your grandmother during the holidays years ago you may remember seeing a cactus plant in full bloom on her living room tea stand. It's likely that the plant was the old true Christmas cactus.

The true Christmas cactus (*Schlumbergera bridgesii*) is native to Brazil and blooms with a profusion of magenta pink flowers. Economics has placed on the market more common cultivars of *Schlumbergera truncata*, which actually are Thanksgiving cactus. They can be found in a wide variety of colors and usually flower anywhere from mid to late November given natural light conditions. This permits the grower to have plants on the shelves with flowers showing in advance for Christmas sales.

S. bridgesii was chosen to be in Longwood Garden's Christmas display partially because of its traditional values and also because it can withstand cool temperatures, and would therefore complement our Christmas display in a house that already had permanent plants in a cool dormancy period. Although this species requires warm temperatures such as a Philadelphia summer for growing, it tolerates cool temperatures and shows a good flush of flowers provided the buds are near full development before the onset of cooler temperatures. This species can tolerate 45° F temperatures up to a month with no ill effects.

The plants were scheduled for display December 1. We began our preparations the preceding January. We took cuttings January 21 and placed them in a medium under artificial lights for a 14 hour day with 70° bottom heat. Flats were syringed over once each morning until rooted. This is an easy plant to root from cuttings so we took no unnecessary pains during the rooting process. The rooting medium consisted of one part raw sphagnum moss and one part

Photo by Dick Keen

Schlumbergera bridgesii

cattleya orchid bark mix (equal parts #2 horticulturist charcoal and medium grade redwood chips). Cuttings were at least two to three cladophylls long and "Y" type or branched cuttings were used as much as possible.

On February 23, cuttings were rooted and three were placed in each clay azalea pot. The growing medium was the same as the rooting medium for these epiphytic plants. Using the same mix for rooting and growing minimizes transplant shock and acclimation time. Sphagnum moss alone, while providing an airy and well-drained light growing medium, collapses and becomes anaerobic with overwatering. The redwood chips help to establish a superstructure, which bridges and prevents the mixture's collapse; redwood decomposes slowly. The charcoal adds to the mixture's balance of moisture retention and aeration. Don't overpack the growing mix. Keeping the mix only damp or slightly dry while potting helps avoid that.

After potting, we placed the plants in a 55° house with bottom heat of 60°, supplemented by a "Bio-Therm" root heating system throughout the winter. During the summer a medium coating shading was sprayed over the house to avoid sun scalding. Plants were watered on demand but never allowed to become overly dry. This was done the entire life of the plants although some growers believe the plants must go through a dry period to set flower.

forcing flowering

In our latitude (40°N) *S. bridgesii* would normally flower in late December or early January. Since we needed them for display on December 1, we put the plants under black cloth on September 15 for 30 days until October 15. (If we had chosen *not* to black cloth and relied on nature instead, we wouldn't get the desired short day length until October 15. Flowering occurs 9 or 10 weeks later, which is why many plants don't bloom in time for Christmas, particularly if grown under cool conditions.) The black cloth was pulled over the plants at 5:00 pm and removed at 8:00 am the next morning to simulate a nine-hour day.

In addition to short days for flower initiation, cool night temperatures in the mid-60's are also necessary. If the night temperatures are above 70°, flowers may not form regardless of the short-day photo period.

On October 22 heat in the greenhouse was being run at a night temperature of 55° but bottom heat of 60°-65° was supplied again by "Bio-Therm" root heating. By this date some flower buds could be seen but they were sporadic and few.

We fertilized regularly throughout the growing season using 20-20-20 soluble fertilizer with one treatment of a soluble trace element mix and epsom salt applied in August.

By the end of November most flower buds were almost fully developed and ready for display.

home grown

The home gardener can obtain these same results simply. Although it may be difficult to obtain the material that we used for the potting medium a substitute will work well. Either make your own out of whatever materials are available or buy a ready-mixed medium for epiphytic plants,

Photo by Larry Albee

The true Christmas Cactus (*Schlumbergera bridgesii*)

one high in fibrous organic matter would be best. Be cautious: some soiless mixes are sold today that were intended to replace soil mixes. These are adequate for many plants but they are composed of fine material and in a short time the physical properties of these mixes deteriorate. Try to find a coarse epiphytic mix.

With a good quality mix you should not have to repot that frequenly. Christmas cactus can be severely pot bound and still be healthy. The important thing to remember is that they are shallow rooting plants. Plants over 15 years old are quite vigorous in a 7-inch clay pan style pot. Any container with a depth of about 4-5 inches is acceptable.

In winter keep the plant in a cool but bright area. Temperatures near 55° F would be ideal but not absolutely necessary. The cool temperatures of a home windowsill will do just fine. At this time only water the plant after it has become thoroughly dry. Postpone watering for another day or two if you are not sure.

During spring and summer avoid direct sunlight but allow plenty of bright or filtered light, which is the same length as the natural day. Hanging baskets or setting pots under shade trees with thin canopies works fine. Fertilize monthly with a general house plant fertilizer and water plants whenever they require it.

When fall comes remember it takes two conditions to initiate flower formation: short days and cool temperatures. Keep the plant under natural light so it experiences the onset of short days and avoid interrupting its nights by turning on lights over or near the plants (for example, keep it in a seldom-used bedroom). Also at this time some foliage may drop; don't panic. Extreme changes in temperature seem to cause this to happen. This is the plant's adjustment to new environmental conditions and should affect the plant minimally.

Although I exposed my plants to a short day of nine hours for forcing, it is not necessary for the home gardener to do the same. Since they are a short-day bloomer these plants should respond and begin forming flowers in response to a day that is under 12 hours in length. Day one of the start of short days begins about the day after the fall equinox, September 22. Blooming usually occurs two and a half to three months after the start of short days. Remember, if night temperatures are over 70°F plants may not flower regardless of short-day exposure. Keep the plants in a cool sun porch or on a cool windowsill. Night temperatures around the mid-60° F during short day exposure are best. Once you see flower buds, move the plant where you will display it for the season and enjoy its beauty. Keep in mind cooler temperatures will prolong the life of the flowers (by two to five weeks) while hot, dry air will expend them rapidly.

Sources

California EPI Center
P.O. Box 1431
Vista CA 92083
Catalog $1.; Tel. (619) 758-4290

Altman Specialty Plants
553 Buena Creek Road
San Marcos CA 92069
Tel. (619) 744-8191

Layser's Flowers, Inc.
501 W. Washington Ave.
Meyerstown PA 17067
Tel. (717) 866-5746

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Dale Lauver is section head at Longwood Gardens in charge of the cactus and succulent collection, the fern collection, the cascade chrysanthemums, and the new Silver Garden.

In the Grand Holiday Tradition

at Brandywine River Museum

Photo by Richard Kunkle

An expanded version of Noah's ark, which debuted in 1987, will be featured this year. Two volunteers, Norma Nelson of Wilmington, Delaware, and Estelle Sherman of Woodstock, New Jersey, coordinated this project. A team of volunteers, each made two animals and it took them almost two months to complete their work. The ark was built by W. Y. C. Dean of Chadds Ford, Pennsylvania.

Christmas Critters

by John Sheppard

Throughout the year, hardworking teams of volunteers at the Brandywine River Museum forage in nearby fields and woods for twigs, cones, pods and seeds. These are used to fashion fierce tigers, fanciful angels, glittering stars and hundreds of other charming ornaments for the Museum's holiday trees, wreaths and other exhibits shown throughout the Museum.

"A Brandywine Christmas," is one of the most popular exhibitions at the museum in Chadds Ford, Pennsylvania. The Museum is the showcase of the Brandywine Conservancy, which seeks to conserve the area's natural, historic and artistic heritage.

In 1984 the museum's volunteers were asked to decorate the Christmas tree in the reception area at the White House for President Reagan and the First Lady. In 1986, the original handmade natural White House ornaments were rounded up with hundreds of new ornaments to adorn the Smithsonian Institution's featured tree in its retrospective "Trees of Christmas" exhibition.

A booklet full of ideas and illustrations for making these unusual and beautiful natural ornaments is available through the Brandywine River Museum Shop. More than 10,000 copies of the booklet have been sold since it was written and illustrated by Libby Dean and Anne Scarlett in 1975. Available at the Museum for $2.00; by mail $3.00.

Photo by Richard Kunkle

Another welcome holiday visitor with friends.

A Brandywine Museum Holiday Calendar

Beginning Nov. 25 and continuing through Jan. 8: trees, trains, gold jewelry and antique Christmas ornaments.

Working O-gauge model trains fill a gallery. In addition to the Christmas trees decorated with whimsical ornaments sculpted from natural plant materials by the museum's volunteers, some treasured past Christmas gifts from the Wyeth family's personal collections: Ann Wyeth McCoy's **famous collection of antique dolls and a display of Betsy Wyeth's personal jewelry** collection, custom-made by goldsmith Donald Pywell of Wawa, PA., and inspired by the paintings of her husband, artist Andrew Wyeth.

On Dec. 3-4: **A "Critter" sale**, from 9:30 a.m. to 4:30 p.m. Original Brandywine River Museum "critters, angels and stars" from $5.00 to $15.00, depending on the size and materials of each ornament. Proceeds will benefit Volunteers' Art Acquisition Fund.

"A Brandywine Christmas" open daily, 9:30 to 4:30, from the day after Thanksgiving through the first weekend in January, except Christmas day. Special extended hours Dec. 26-30, when the museum will remain open until 8 p.m.

The museum is located on U.S. Route 1 in Chadds Ford, Pa. The restaurant, will feature special treats for the holiday season: The restaurant's regular hours 11 a.m. to 3 p.m., will be extended to 7 p.m., Dec. 26-30.

Admission is $3.00/adults; $1.50/children 6-12, students with i.d. and senior citizens. Children under six, free. Guided tours available by reservation for adult and school groups. The facility is designed for the physically impaired. For further information, call (215) 388-7601 or (215) 459-1900.

John Sheppard is director of Public Relations for the Brandywine Conservancy and its Museum.

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In the Grand Holiday Tradition at

at Winterthur Museum and Gardens

Reliving America's Past

The Winterthur Christmas tree. An 18-foot evergreen decorated with more than 1,000 tiny white lights and a magnificent array of dried flowers, including cockscomb, thistles, goldenrod, blue salvia, zinnias, Peter's penny, lamb's ear, roses, dahlias, and marigolds, most of which are gathered on the Winterthur estate.

Photos Courtesy of Winterthur Museum & Gardens

Winterthur Museum and Gardens Holiday Tour Relives America's Past

Tour Facts

Description:	75-minute guided tours of rooms that recreate the winter holiday celebrations of early America. Reservations suggested.
Dates:	November 15-December 31, 1988.
Times:	Daytime tours leave every half hour, Tuesday-Saturday 10 a.m. to 3:30 p.m.; Sunday, noon to 5:30 p.m. Evening tours, Tuesdays and Wednesdays only, November 29-December 21, 6 p.m. to 8 p.m. Closed Mondays, Thanksgiving, Christmas Eve, and Christmas.
Admission:	Daytime tours: $8, adults; $7, Winterthur Guild members; $4, children under 17; and $3.50, children of Guild members; Evening tours: $11, adults; $10. Winterthur Guild members; $5.50, children under 17; and $5, children of Guild members.
Group tours:	Discounts for groups of 20 or more available.
Payment:	Tours must be prepaid. American Express, MasterCard, and VISA accepted.
Reservations:	For tour booking and information call (302) 888-4600 or 1-800-448-3883 or write: Yuletide Tours, Winterthur Ticket and Information Office, Winterthur Museum and Gardens, Winterthur, DE 19735.
Location:	Winterthur is located on Route 52, six miles northwest of Wilmington, Delaware.

Kathleen K. Meserve:

The Woman Who Shook the Holly World

by Edwin A. Peeples

Small triumphs won by individuals operating on small budgets seem to get lost in our modern society. Scams like the Iran arms and Wall Street insider trading scandals almost obliterated the lovely and pure adventure of Voyager's nonstop trip around the world, and time has washed over the triumph of Kathleen K. Meserve. Because her triumph continues to be one and continues to be pretty sensational, it is worth looking at periodically.

Kathleen K. Meserve was an amateur hybridizer with little horticultural background who managed to produce the blue hollies, some of the most beautiful and versatile evergreens available.

Such rooting requires a hothouse arrangement to allow winter work and to provide control. Meserve met this need by making a Wardian Case for her kitchen window. The first time she managed to root a cutting, she was so excited she gave a cocktail party to celebrate.

hollies before meserve

To appreciate her story, you must know the state of hollies before her work. Counting all of the hollies, both evergreen and deciduous, with both red berries and black, there were from 300 to 500 species. The only one that had been used extensively for foundation planting was *Ilex crenata* 'Convexa,' the small-leafed holly with black berries.

Most people didn't even think of *I. crenata* when holly was mentioned. They thought of *I. opaca*, the American holly. It was indigenous from Massachusets to Florida and west as far as Missouri and Texas. It was one of nature's loveliest trees. Great masses of it, growing wild, were visible in the woods along highways in New Jersey and Delaware. At Longwod Gardens, near the Pennsylvania/Delaware line, then as now several large American hollies stood on the south terrace of the central conservatory. These trees, more than 30 feet tall, were pruned high enough to allow benches for sitting under their dense shade.

A few people in Zone 6, which contains southeastern Pennsylvania, could grow English holly, *I. aquifolium*. North of Zone 6, most of the northeast, English holly could not survive. For these areas, the only reliable holly that looked like a holly and was evergreen with red berries was *I. opaca*.

No matter how lovely *I. opaca* was, for those who cherished the English holly *I. opaca* did not entirely satisfy. It grew fast and into big trees or bushes. Its leaves, though needle-edged and holly shaped, were largely flat or no more than slightly convex. They were not the narrow, contorted leaves of English holly. More, their color tended toward brown-green and yellow green, not the deep blue green of *I. aquifolium*. And, finally, instead of deep crimson berries, *I. opaca* had berries that were more of a vermilion.

Photo Courtesy Conard-Pyle Co.

Kay Meserve

ancestral memory

Anything difficult to grow is rare and most things rare are desirable, but the yearning for English holly may have been more than a craving for rarity. It may have been atavism, too.

I. aquifolium has a long and superstitious history. The pagans of Europe in the distant past brought sprays of native holly into their dwellings so that tiny, fairy, friendly people of the forest might have a refuge from the frigid winter blasts. Holly was used in pagan rites from Norway to the Mediterranean. During a festival, called saturnalia, in dark December, people gave each other holly branches to betoken friendship. By the 16th Century, every house, church,

continued

Photo by Ed Peeples

'Blue Girl' - Foliage

street corner and market cross was decorated with holly. And all of this holly would have been *I. aquifolium.*

Most of our original east coast colonists, having come from England or from English influences, nourished a strong reverence for English holly. Although some of us, with great care and in a carefully maintained mini-climate, could raise this beautiful holly that our instincts connected with centuries of religious mystery, most of us could not.

Among those who grew impatient with this problem was Meserve. She did not begin by being impatient, because she did not begin as either a botanist or a horticulturist. So long as she and her financier husband, F. Leighton Meserve, lived in New York City, to Meserve, horticulture was the florist at the corner. Sensing, however, that World War II might create shortages that a farm might fill, the Meserves rented a 10-acre rural establishment at Nissequoque, Long Island. "Do anything with it you like," the owner said, "except bring a cow into the dining room."

Soon Meserve was growing, canning and preserving every vegetable the family ate. Her Victory Garden, as such gardens were called, was interesting as education but not so fascinating that she couldn't drop it with great relief as soon as the war ended. The horticultural bug had bitten her enough, however, to draw her to a lecture on hollies soon after the war.

lecture triggers experiments

It had never occurred to her that there could be anything interesting about hollies, save as a material for wreaths. Certainly the thought of cultivating hollies did not quicken the pulse of horticulturists the way growing irises did or peonies or dahlias. Yet that lecture stimulated Meserve to join the American Holly Society and to look into the subject of hollies.

What a shame, she thought, that we had no equivalent of the English holly that could survive our winters. And that there was no holly dwarfed enough to replace privet or box as foundation planting for rose gardens. None, that was, except *I. crenata.*

With no clear idea in mind, she collected hollies that looked promising and studied the way they grew. When local nurseries couldn't supply plants, she got them from Henry Hohman, a well-known hybridizer.

There are two ways to reproduce shrubs like holly. You can plant their seeds, or you can root cuttings. Because flowers are vulnerable to random pollination, plants from seeds are likely to be different from their parent. But rooted cuttings, asexual reproduction, always come true. Such rooting requires a hothouse arrangement to allow winter work and to provide control. Meserve met this need by making a Wardian Case for her kitchen window. The first time she managed to root a cutting, she was so excited she gave a cocktail party to celebrate.

During a festival, called saturnalia, in dark December, people gave each other holly branches to betoken friendship.

Rooting cuttings, though, was the easy part. Cross pollinating ventured into the realm of endless variables, beginning with the fact that hollies, being dioecious, bear male and female blossoms on different plants. Not only were the sexes separate but they didn't bloom at the same time. Nonsynchronized blooming was particularly likely in hollies of different species. Even when the cross was managed by collecting pollen and holding it, so many genetic recombinations were possible that no one could predict the outcome of any one cross. Finally, some crosses were improbable, if not impossible, because different hollies had different chromosome numbers. *I. aquifolium*, with 40 chromosomes, was not likely to cross with *I. opaca*, which had only 36.

It was not surprising that a leading university might be justified in spending thousands on holly hybridizing without any startling results and look askance at a program like Meserve's, which had a budget of $15.00. The secret was that holly crossing was a labor-intensive activity, and Meserve supplied all of her labor at no charge.

Endlessly she crossed holly in her kitchen, harvested the seeds, germinated them in sphagnum moss and planted them in an outdoor plot. Hybridizing was slow going. Hollies took almost 18 months to germinate.

Among the hollies she chose for hybridizing was *I. rugosa*, a small, prostrate shrub that grew on the mountains of northern Japan and looked somewhat like a spreading euonymous. She chose it for its winter

Photo Courtesy Conard-Pyle Co.

'Blue Princess'

hardiness and its tendency to be a runt.

The first few winters that Meserve lined out her holly plants were mild winters. Everything thrived. Then came the inevitable hard winter with sustained low temperatures below zero and sudden freezes and thaws: the kind of weather that plays havoc with broad-leafed evergreens. When Meserve looked out in the spring, all she could see was brown, brown, brown. Four or five years of hard work down the drain. Hopelessly she plodded through the ruins. And stopped. Was it possible? Did she see some green here and there?

the survivor

Yes she did! The holly that survived was a rugosa cross. But what was it? What did she have? She had, as it turned out, males and females of a holly that tended to be dwarf, looked like English holly but was hardy to very low temperatures. The cross was *I. aquifolium* with *I. rugosa*. If the cross could be kept true, these could be very important hollies.

Meserve took the surviving plants through a rigorous program of asexual reproduction. They did keep true. She named these hollies 'Blue Boy' and 'Blue Girl,' patented them and, through Jackson and Perkins, introduced them in 1964. The Arnold Arboretum designated these hollies as a new botanical species and named it meserveae after its discoverer. All further crosses were called *Ilex* x *meserveae*.

After Charles Perkins, the Jackson and Perkins partner who had bought the rights to the hollies, died Meserve moved her patent and the management of her hollies to Conard-Pyle of West Grove, Pennsylvania. With their encouragement, she continued with a parade of new hollies. 'Blue Prince,' introduced in 1972, was truly ornamental and grew to 15 ft. 'Blue Princess,' which followed in 1973, was a 12 to 15 ft. mate for 'Blue Prince.' Finally, in that same year, Meserve achieved in 'Blue Angel' one of the hollies that had been her goal. 'Blue Angel' grew no higher than six to eight feet, had foliage like a miniature English holly, was hardy to –20°F and provided a wonderful foundation planting. 'Blue Maid,' introduced in 1979, was the largest of the blue hollies. It grew higher than 15 feet. 'Blue Stallion,' a male with smooth leaves, bloomed all season and insured good pollination for all female hollies.

My wife and I have bought the blue hollies steadily since 1972. We have a 'Blue Boy,' about six 'Blue Girl,' a 'Blue Maid' and eight 'Blue Princess.' The single male seems to provide enough pollen for all, as all are loaded with berries. We have planted them as Conard-Pyle recommends: in holes with plenty of peat moss mixed with as rich soil as we can find. To give them the steady acidity they like, we mulch them regularly with ground oak leaves. All of our hollies are in full sun or semi-shade, and all are flourishing.

Although the blue hollies grow faster than box, they are still slow growers. They tend to grow thick more rapidly than tall. Our oldest 'Blue Girl,' now about 14 years old, is five feet high and five feet through. This reflects its *I. rugosa* ancestor, which tended to be a low, spreading plant. The spreading gives us a sensational foundation planting, and the denseness allows us to cut plenty of Christmas holly without changing the looks of our plants: holly with deep, blue-green, contorted leaves and blood red berries.

What of K. Meserve? After developing 'China Boy' and 'China Girl,' hollies based on *I. cornuta* crosses with smooth leaves like the burford, she retired to Florida and gave up hybridizing.

She may be gone from this area but the world of hollies will never be the same as it was before Kathleen Meserve took it in hand.

Robert H. Nichols, license manager for Conard-Pyle, says they can't keep up with the demand for the blue hollies; the demand has doubled in the last five years and he expects it will double again in the next five.

SOURCES

The Conard-Pyle Co., West Grove, PA 19390 owns all of the Meserve patents and grows and supplies all of the blue hollies, but not directly. S.B. Hutton, of Conard-Pyle, says blue hollies are carried by most major garden outlets in all areas where they will grow.

Mail order sales available through Wayside Gardens, Hodges, SC, 29695-0001.

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Edwin A. Peeples, author of *A Professional Storywriter's Handbook*, and of the PHS 15 year history, *Summary for a Sesqui*, writes frequently for *Green Scene* and other magazines. He has just completed a new book, *An Inquisitive Eye*, adventures in country living.

BRIGHTEN THE WINTER LANDSCAPE WITH DECIDUOUS HOLLIES

by Andrew Bunting

Ilex 'Sparkleberry' part of the Frorer Holly Collection, Scott Arboretum of Swarthmore college

Photo by Tim Boland

When winter winds sweep away the last leaves of fall, and the first frost shatters the last flowers of Japanese anemones, asters, and mums most gardeners retreat to thumb through seed catalogs, awaiting the first snowdrops and winter aconite of spring. Yet interest in the garden can be extended through the winter months with the deciduous hollies. The deciduous hollies explode with an abundance of red to orange waxy berries, clustered around all available spaces on their naked branches, often accented by a fresh layer of snow.

The deciduous hollies are part of the genus *Ilex*. They are related to the more common evergreen hollies, such as the American holly (*Ilex opaca*), and the English holly (*Ilex aquifolium*), but their leaves are thinner, spineless, and deciduous. Among the deciduous hollies, a number of species are important ornamentally, including the common winterberry (*Ilex verticillata*), possumhaw (*Ilex decidua*), and the finetooth holly (*Ilex serrata*).

the most attractive deciduous hollies

Among the most attractive deciduous hollies are cultivars of *Ilex verticillata* and hybrids of *I. verticillata* and *I. serrata*. This cross combines the orange to red larger berries of *I. verticillata* with the smaller, more abundant, dark red berries of *I. serrata* to produce outstanding heavy fruiting selections. These cultivars and hybrids are extremely adaptable plants. In nature, they grow in low-lying wetland areas, actually sustaining periods of time in standing water, and they are versatile enough to grow and produce ample fruits on a very hot and dry ornamental grass bank at the Scott Arboretum of Swarthmore College, in Swarthmore, Pa. Cold hardiness is another virtue of these plants. Most hollies are only hardy to Zone 5 (-10 to -20 F), but most of these deciduous hollies are hardy to Zone 3 (-30 to -40 F USDA hardiness zone ratings). Deciduous hollies are relatively fast growing shrubs. They expand by stoloniferous growth (underground stems). As they mature they often form thickets requiring removal of old stems to rejuvenate the shrub.

For optimal growth, plant deciduous hollies in partial shade with a soil high in organic matter and a pH of 4.5 to 6. These overlooked, underplayed plants are not subject to any serious pest or disease problems.

combining with other plants

Once the proper growing environment has been selected, the gardener can choose one of several effective ways to display deciduous hollies. In a native garden, the combination of the red berries of *Ilex verticillata* and the bright yellow fall blossoms of the common witch hazel (*Hamamelis virginiana*) make a dramatic combination. Or an intertwining espalier of the brilliant dark red berries of *I.* x 'Sparkleberry' (*serrata* x *verticillata*) with the fragrant, sulfur yellow flowers of *Hamamelis mollis* 'Pallida' against an old stone building would be equally striking. Beautiful fall color combinations are obtained when using deciduous hollies with other plants with ornamental berries, such as sapphire berry (*Symplocos paniculata*), beautyberry (*Callicarpa dichotoma* or *japonica*), and the purple chokeberry (*Aronia prunifolia*). Evergreens like *Chamaecyparis*, *Thuja* and *Ilex glabra* provide an effective dark green background for setting off the berries of deciduous hollies. Planted along ponds or streambanks the reflections of berry-laden hollies create a picturesque scene.

Ilex decidua 'Byer's Golden'

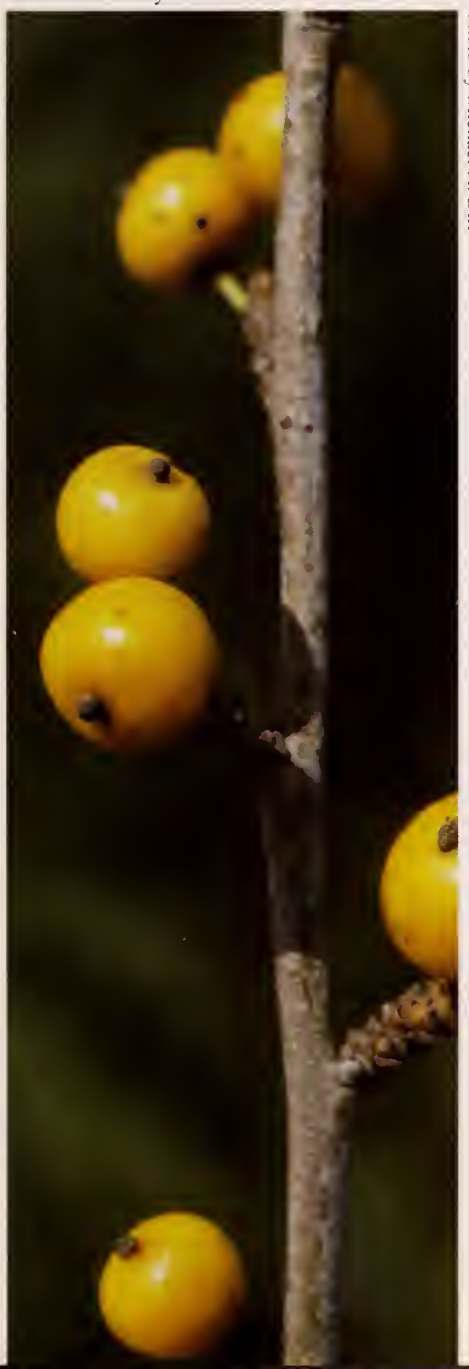

Photo by Michael A. Dirr

dark red fruit

In selecting deciduous hollies, my favorites are any of the dark red, heavy fruiting selections such as the outstanding *I.* x 'Sparkleberry.' Its branches are covered with glossy dark red berries that contrast nicely with its dark green foliage as the berries turn from green to red in September. 'Sparkleberry' has an effective display well into March, which is as long, if not longer, than most deciduous holly cultivars. Because of its merits, this holly has received the 1988 Styer Award of Garden Merit from the Pennsylvania Horticultural Society.

I. verticillata 'Winter Red' is another excellent, dark red fruiting cultivar. Compared to most other *I. verticillata* and *I. serrata* x *verticillata* selections that reach up to12 feet, 'Winter Red' may be more suitable for the smaller garden since it reaches only six to eight feet. An even smaller deciduous holly, only reaching three feet, with large red berries is *I. verticillata* 'Red Sprite' (syn. 'Nana'). At the Scott Arboretum, we have planted several plants of 'Red Sprite' at the base of the white-barked *Betula pendula*. The red to white contrast is quite showy in what would otherwise be a rather gray winter landscape. *Ilex* x 'Harvest Red' is a good bright red, long lasting, medium-sized berry cultivar. *I. verticillata* 'Tiasquam' is a large red-berried selection, which is accentuated in September by its very dark green leaves. A good heavy

continued

fruiting, upright form is *I. verticillata* 'Cacapon.' For the smallest, darkest red berries, of all the deciduous hollies, *I. serrata* is the best choice. Perhaps, the heaviest and largest fruiting of the true reds is *I. verticillata* 'Shaver.' For outstanding stem qualities, *I. decidua* 'Warren's Red' has arching silver stems, laden with glossy red fruits.

orange red fruit

If you don't like the true reds, a number of deciduous hollies with orange-red fruit might suit your garden. *I. verticillata* 'Earlibright' is a very large fruiting selection with 1/2 inch diameter fruits, but often sparse fruiting. *I. verticillata* 'Bright Horizon' is a large-berried, abundant fruiting form, which contrasts well with its dark green leaves. *I. verticillata* 'Fairfax' is a heavy fruiter with purple fall foliage. *I. verticillata* 'Afterglow' is a small form with glossy leaves, reaching three to six feet. *I. decidua* 'Sundance' is a tall, up to 15 foot, rather willowy, nearly weeping, abundant orange-red cultivar. *I. verticillata* 'Aurantiaca' was selected for its true orange colored berries. Although the orange-red forms are not as vibrant as the true red forms, these selections do add an unusual color to the winter garden.

If the traditional red and orange-red fruited types don't suit your winter garden, other color forms of deciduous hollies are available. Yellow-fruited cultivars include, *I. decidua* 'Byers Golden,' *I. serrata* 'Xanthocarpa' and *I. verticillata* 'Xanthocarpa.' *I. serrata* 'Leucocarpa' is a rarely seen white-fruited cultivar.

pollination

All hollies are dioecious, which means that plants bear either male or female flowers. Only female plants will produce fruit, but for fruiting to occur there must be a male in the vicinity (within several blocks of the female holly). For the hybrids resulting from the crosses of *I. serrata* and *I. verticillata* either *I.* x 'Apollo' or *I.* x 'Raritan Chief' are good pollinators. For selections of *I. decidua* and *I. serrata* unnamed males of each of these species can be used for pollination. For *Ilex verticillata* and its cultivars, two outstanding male cultivars exist. *I. verticillata* 'Quansoo' sets heavy amounts of pollen, as does *I. verticillata* 'Jackson.' 'Jackson' has purple fall foliage making it a more desirable choice. Also, males of *I. opaca* are capable of pollinating cultivars of *I. verticillata*.

Deciduous hollies are easiest to propagate from cuttings. Softwood cuttings, four to five inches long, taken from June through July, treated with Hormodin #3 or Rootone, will root under mist in a peat/perlite mix in six to eight weeks. Rooting percentages will vary from 75 to 100 percent. Propagation from seed is impractical, with germination taking up to a year, and even then, percentages may be low.

These ripe, scarlet and orange berries of deciduous hollies mark the end of the growing season, a lure to the garden to enjoy a winter landscape ablaze with a different color and texture.

Photo by Tim Boland

Photo by Tim Boland

Left, *Ilex verticillata* 'Tiasquam,' a Polly Hill introduction, part of the Frorer Holly Collection.

Right, the low red berried *Ilex verticillata* 'Fairfax' stands in the foreground against a 20 ft. high *Ilex opaca* in the Frorer Holly Collection.

Below, *Ilex serrata* 'Leucocarpa'

SOURCES

Carroll Gardens
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444 East Main St.
Westminster, MD 21157
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Andrew Bunting is in charge of plant records and propagation at Scott Arboretum. He has written and lectured about trees and shrubs and has a keen interest in perennials as well. He has written for *Hybrid*, the newsletter for the Scott Arboretum and *American Nurseryman* and *The Public Garden.*

Photo by Michael A. Dirr

varsity gardeners

by Anne S. Cunningham

"I quit." The cry rises above the cacophony ricocheting through the crowded greenhouse.

The visitor swivels to see where the cry came from and spots a young woman staring at three dried flowers fallen before her. She hangs her head and sighs deeply with frustration.

"Wait," the teacher whispers with gentle encouragement, "You can do it. Come on, try again." The student returns to work, and after two more tries puts dried flowers in a bunch without breaking the stems.

"Look at mine," a young man calls, energetically waving several purple flowers at the teacher. Another chant, "Come see what I made," breaks in on his demand. A young woman, in her early 30s, dressed in a pink pastel dress, white socks and shiny patent leather shoes, beckons the visitor, obviously proud of her bunch of dried flowers.

"Even we are amazed at how well the gardening program has worked," says Joy Pott, Adult Director at The Melmark Home. "We've provided an abundance of real work and real methods to achieve success. That's what's usually unavailable to retarded people. But gardening is so repetitive, the work is never done."

Melmark Home, in Berwyn, Pennsylvania, has 188 retarded residents, most with Down Syndrome. Mary's story is indicative of Melmark's unique success with the individual greenhouse and garden students.

Mary was an unusually difficult Down Syndrome child. A report written a few years ago read, "Mary (not her real name) daydreams in class, and when she is called upon in this state of being, her behavior is marked by incoherent babblings, grunts, and rocking. She attends to a lesson only when threatened that her educational activity time will be taken away from her.

"She is particularly fond of a jigsaw puzzle which she continually retrieves from the closet during her free time. She does not attempt to put the puzzle pieces together, she merely takes one piece at a time out of one lid and puts it into the other and vice versa. Any attempt on the part of a staff member to remove Mary from this activity to something else results in a tantrum characterized by yelling, screaming sobs, slamming doors, and at times striking other children and staff....Mary is the class isolate. She never seeks companionship from her peers, nor does she seem particularly enthused when staff members seek her company."

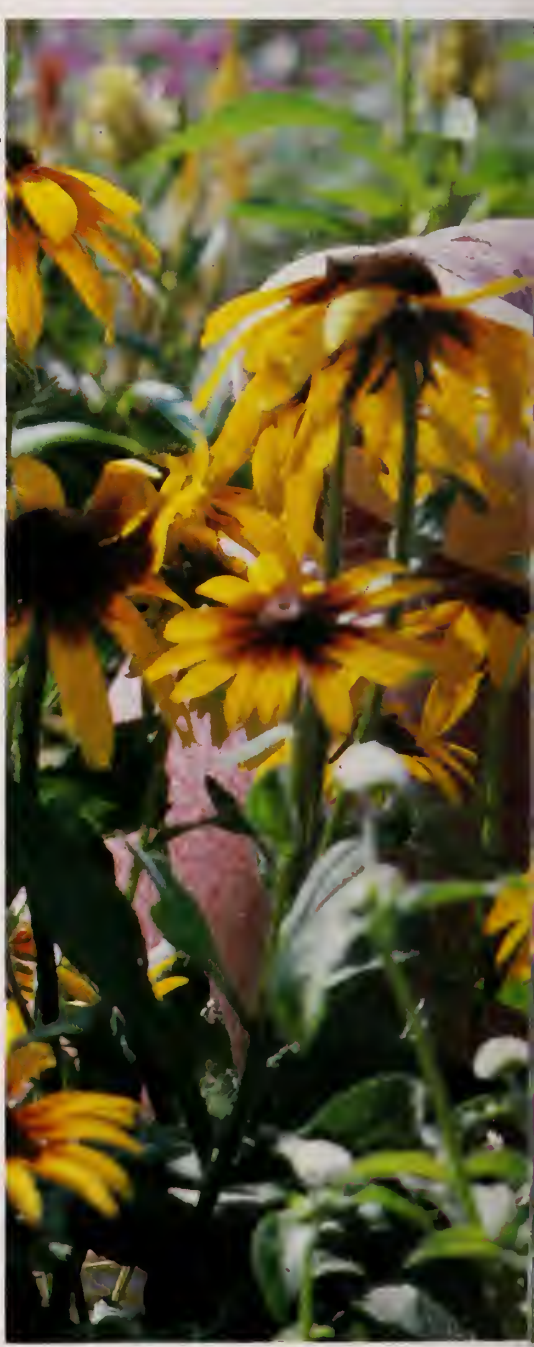
But the day she turned 21, Mary belligerently sat down on the bench in front of the greenhouse and announced she was ready to join the adult gardening program. She hadn't worked in the greenhouse before, but she knew that's where people were busy and had things to do, and she was determined to become part of it. The staff recognized a special characteristic in her compulsive play with puzzle pieces — repetition and *having* to be busy — and they were eager to let her try. They took her out to the garden and taught her how to harvest flowers for drying.

The first flower Mary focused on was blue sage. She loved the plant and was allowed to harvest it alone. She learned to cut the stems carefully, strip the lower leaves and bunch the flowers together, securing them with a rubber band so they could be hung for drying. She developed the confidence of "I know where to go in the garden, and I know how to do it." Mary became part of the group and the pride that followed was exceeded only by her desire to be busy with flowers all day, every day.

The rubber band trick was the result of frustration (both students' and teachers') after trying to tie cut flowers in bunches for drying. The short stubby fingers of Down Syndrome made tying a difficult, if not impossible, task. So the staff adapted the process to help student achieve success by teaching them how to secure the bunches with rubber bands. Then, as the stems dry out, the flowers hung upside down don't fall from the bunch, the rubber bands tighten and hold the stems snugly together.

continued

Photo by Joe Cocozza



Melmark gardeners approach each task with enthusiasm and intense concentration. At harvest time, every flower stalk is cut to a precise length before it's hung up in the drying shed.

Melmark Home, an educational and residential community of mentally and physically handicapped persons in Berwyn, proves "life gets better and better when you have something to do each and every day that is stimulating and interesting."

Photo by Joe Cocozza

Cooperation and joy in achievement extend beyond the greenhouse, to Melmark's orchard, the source of cider, applesauce and frequent snacks.

varsity gardeners

Photo by Fran Kinney

While some gardeners might wilt when faced with the massive task of drying thousands of flowers, these gardeners approach one flower at a time, determined to make it the best in the bunch.

no master plan

The gardening program appears brilliantly simple now, but at the beginning, no one was quite sure how it was going to take shape or how much the students could learn.

About 10 years ago, an unused greenhouse on the Melmark property was renovated into a 'Creative Workshop.' A few people donated scraggly spider plants to occupy the space, but that was about all that happened. Then Gwynne Ormsby, a recent graduate of the Barnes Arboretum, quietly volunteered to help the students learn to grow plants. The first day, she arrived with her complete cactus collection, explaining that cactus would be just right because "they're non-neurotic, slow growing and tolerant of abuse and neglect." The next week she brought a few dried straw flowers from home for the students to make things. Adult director Joy Pott asked if they could grow them at Melmark or if it would be too difficult. "Let's give it a go," replied Gwynne, and the program started.

Their early garden grew mostly weeds and tender shoots consumed by rabbits, but each year the gardeners and plants improved. Gwynne's horticultural knowledge, quiet encouragement and compassionate nature became the catalyst for a new way of life at Melmark. Today more than 140 adults and young people work in the garden program, led by Gwynne, Joy Pott and Lane Travis working full time, aided by part-time volunteers.

hand tools, hand-watering

Using only hand tools and hand-watering every plant, Melmark residents today cultivate a huge garden that measures 66 by 150 feet. Their plant list reads like a catalog, with more than 40 different flowers. They grow stately perennials and colorful annuals from seed, individually harvest and dry each flower, then make hundreds of lovely dried arrangements, wreaths and decorations. From seed to finished product, each step has been adapted to guarantee success. They even hold the dried flowers along a ruler when they're cutting, to make sure the stems are the right length.

In the fall, the students gather mountains of leaves from the Melmark property and spread a thick blanket of leaf mulch over the garden for winter. When spring comes, Gwynne reminds the gardeners where the rows should be, then it's up to them to get down on their knees and scrape the heavy leaf mulch aside, making just enough room for a row of seeds or for young plants they've raised from seeds in the greenhouse. The remaining mulch acts as a visual marker, delineating space between rows of seeds. The mulch discourages weeds and therefore helps the students, for even the most experienced gardeners have trouble discerning new flower shoots and young plants from emerging weeds. Because the giant garden is hand-watered, the mulch also is important for its water-retaining value.

With a decade of experience behind them, the teachers now watch for those tenancious qualities needed to be a good gardener. Lower School children who display interest and ability garden each week, as a pre-vocational activity. Combined with small landscaping tasks throughout the property, they learn good work habits and watch 'their' plants flourish.

At first most Down Syndrome children are squeamish, hesitant to get down and mess around in dirt. The hygiene training they've learned so well contradicts the idea of deliberately putting their hands in dirt and getting their clothes muddy. Just like all beginning young gardeners, they struggle to dig a straight row, and they require continual prompting with verbal cues and gestures. The educational word is 'modelling,' but it is clearly just as hard work for the teachers as it is for the students.

Eventually, often years later, the talented gardeners emerge from the group. They have patience for detailed labor, stamina to stay outside and sweat until a teacher says the job is done, and they have well-deserved pride in their outstanding accomplishments. These varsity gardeners join Gwynne's group as full time workers. They work together each morning in the garden or in the plant rooms, eat lunch together in the workroom adjacent to the greenhouse, then continue to work in the afternoon, with scheduled breaks for music and other varied activities. They look forward to field trips, such as the annual trek to harvest

yarrow from fields in New Jersey, working all day stripping and putting rubber bands around bunches to hang in the bus rigged with coat hangers for drying hooks.

"They love gardening. They feel confident," says Joy Pott. "They know how and are happy to do it over and over again. At the beginning we did everything hand over hand, but now we organize, plan their activities and constantly encourage them. Now they know what they're doing. We can be their coach and cheerleader. We initiate and enable by matching their tasks with their abilities. They can't initiate or plan, but they work so well when given direction."

Today Mary is a model gardener with more flower vocabulary than almost any other participant. She knows and readily identifies *Gomphrena*, *Celosia* and dozens of other plants in addition to her favorite blue sage. One day she made up her mind to do a dried arrangement in a basket, went over and did it. The result was helter-skelter, but the desire was there. Joy and Gwynne showed her how to make the small bunches of flowers that go into creating a larger basket of flowers. They showed her how the completed baskets and wreaths serve as patterns for future dried arrangements. Mary picked it up quickly, repeating each task over and over until the job was done.

Occasionally the old rigid Mary emerges, and her teachers step back in amazement at how much they've accomplished. At first they couldn't get her to shift from task to task, because she had no repertoire of activities, only 'puzzle pieces,' so Mary was afraid they were taking her new activity away. When she worked with dried flowers and they said it was time to go to the garden, she wouldn't budge. Now she knows in order to make dried flower arrangements she has to work in the garden to get the flowers.

Once a gardening group has gone through a whole year, they realize the reasons for getting hot and dirty. Before a growing season is completed, they can't intellectualize the process; they have to physically work in the garden and see the seed-to-flower-to-dried arrangement cycle before they fully understand what they are doing and why they have to do it a certain way. Some students have to see it several years in a row to comprehend.

Photo by Joe Cocozza

Copying an established pattern is the key to success. Here a student puts a small bunch of flowers into the basket, working until the segments resemble the whole basket in front of her.

Today the gardening program works so well, it is difficult to tell if the students or the teachers are more filled with richly deserved pride. A huge drying shed is packed each fall with enough meticulously cut and hung flowers to provide materials for hundreds of dried flower crafts. November's Fall Art Show features a magnificent display of colorful, flower-filled baskets, wreaths and arrangements.

A new Adult Program Center is under construction, centered entirely around the flowers and the gardening program. It will have a larger greenhouse, flower workshop, and tea room so families and guests can enjoy tea or a small lunch with their visit. Downstairs will be wood and ceramic workshops where residents can continue to make crafts that enhance the horticulture program — clay pebble pots become cache pots, carefully stenciled wooden ducks and geese become garden ornaments. Flower vases for their flowers on the cafe tables and place mats created in the weaving workshop downstairs tie in with the horticulture upstairs.

Each Friday is Open-House day when people visit to see the garden, the students at work, their dried flowers and to see how they do it. And there's no doubt visitors can learn a trick or two from a visit to Melmark. The student are so careful with their flowers, that even the tiniest speck of bright, dried flower on the floor is swept up with loving care, delicately dropped into a glass bubble, then tied with ribbon to become a holiday ornament.

"We've given them real tasks that they enjoy all year around. That's why this program works so well," says adult director Pott. "Retarded means slow, it doesn't mean can't. It only becomes 'can't' when nobody is willing to take the time."

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Anne S. Cunningham is co-author of *Philadelphia with Children*, Starhill Press, Washington, D.C., September 1988 ($8.95). She is a frequent contributor to *Green Scene* and has written about gardening for the *Philadelphia Inquirer* and several national magazines.

Illustrations by Barbara Bruno

A Tale of Seeding Trees

by Barbara Bruno

Birds come earlier each year to my yellow crab tree. They come to feast on its apples that I always want to call berries. The frozen fruit by now has turned a rich rusty orange. The apples *are* small, but they make up for a lack of size with plenty. Most crab apple cultivars are biennial bearers. My tree is showy every year, and festoons of bright apples hold on almost until the next flowering. At least they did before birds developed a taste for them.

The first were robins, early arrivals finding little to eat in a still wintry landscape. After they stripped the multiflora roses of what hips the mockingbirds missed, the flock gravitated to the bountiful larder of my crab tree. Their appearance each year signifies lengthening days, first sweet aromas of sun warmed earth—and sometimes a whopping blizzard. Or maybe just a powder of flakes softly fallen overnight.

The view is especially fine from my bedroom window. I planted the homegrown crab apple seedling a few yards from the house, and now I look out into its mature topmost branches. On mornings when I think of it I take a casual census. One snowy sunrise a lively flock of striped finches fed two by two, the males gorgeous in their rosy hue, the females brightly stripped like extra showy song sparrows. On other days there have been cedar waxwings, bluejays, cardinals, mockingbirds, and woodpeckers.

I seldom have time to linger with binoculars, so I'm not sure which birds eat the frozen apples and which are just searching for hibernating insects. Some visitors covet the apple seeds since the ground beneath is littered with pieces of spongy pulp. Will there be any apples left for spring robins this year?

My gardener's tale of seeds and trees really starts over two decades ago on a warm fall day at the Philadelphia Zoo. The crab apple trees ornamenting the grounds were at their best that afternoon, overhanging the walk in great canopies, fountains of shiny fruit. The variety of color and size astonished me. I found it impossible not to pocket a few of the prettiest. Once home I removed the seeds and planted them communally in a coldframe row. To my novice delight they sprouted the following spring, and then I longed to pair the sprouts with the parent apples. (I have since learned to keep careful records of such momentous events.) In the light of possible hybridization this comparing might not have meant much scientifically, but it would have been fun. I did find a general resemblance to the pocketed kinds when the trees finally fruited.

From the beginning the seedlings were quite different in appearance. They varied in leaf color and growth habit. When I transplanted them to a vegetable row nursery, I counted 20 plants of four sorts. There was a lax branching type divided between those with burgundy or with deep green leaves, an intermediate green variety, and one pale green, stiffly upright seedling.

Rabbits decimated the young whips that first winter, cropping three quarters of the tender-stemmed trees just above ground level. Come spring about half regenerated with lusty and multistemmed new growth. After pruning, a single healthy new trunk was growing from most stumps. By season's end the survivors' growth almost matched their unhampered siblings. The only signs of mishap were dimples in the young bark.

Moderating temperatures announced a third spring. It was time to permanently place the young trees. Heady with grand possibilities, I thought a crab *allée* might be nice, so I planted several similar seedlings to edge a cart road passing just beyond the garden and behind a stark outbuilding. Another tree was positioned close by the building to soften and tie in the structure. Two other trees that I judged the best of the lot were destined to shade my new terrace of pink brick salvaged from a demolished town garden. When I had exhausted all my visions and given away all I could, one sapling remained. I transplanted that stiff, pale green seedling hastily without much thought to an out-of-the-way border opposite my bedroom window.

The crab apple adventure took place when I was not long owner of an ill-used old farm. At first barren fields rolled away in all directions from a gardenless dooryard. I suffered the emptiness of the prairie. Trees loomed large in my garden plans. The crab apples were the first attempt at seeding trees. This idea of growing trees from seed appealed to me in many ways. Economy was impotant at the time, and the opportunity for intimate involvement in such a grand piece of natural work enthralled me. Then too there was the mystery of just what a small handful of seed would amount to. No reason to be discouraged at the specter of time to maturity. After all, time passes whether one plants or not. I read somewhere that the best time to plant a tree was 20 years ago and that the second best is today. I'm not so sure that today isn't the best time. This primeval unfolding toward gnarled grandeur seems as thrilling, as re-

continued

Illustrations by Barbara Bruno

A coldframe is an ideal spot for overwintering seed.

warding for the gardener as for parents watching children grow.

Some tree seedlngs came unbidden. Haphazardly composted city leaves provided volunteers. One of the first was a flowering peach tree that germinated among the quiet harmonies of heirloom flowers. It flourished surpassingly, and in its third year burst precociously into bloom, favoring me with gobs of flamingo pink flowers. Each year it grew more flaunting and out of synch, in deeper conflict with its seemingly fading companions. In those days I was not yet hardened to acts of horticultural homicide. I could only look on disapprovingly, like an unhappy parent at its flamboyant behavior. Nature, taking pity it seemed, intervened. A stem borer performed the deed, and shortly the flowering peach was no more.

Composting as I practice it is imperfect art. Ingredients are varied, often scavanged, and usually do not add up to the ideal of self heating, self sterilizing heap. Rhubarb, raspberry, and horseradish have sprung from recent piled imported flotsam. Iris, lily of the valley, and even the odd exotic lily have crept aboard incognito in black plastic leaf bags. Seedling trees emerging from such vital rubble have a purposefulness unobserved in their coddled cousins. No wispy tenderleaf, this! Only two inches high and already a tiny titan on its titan's business. I'm methodical master at weed extermination by now, but eradicating a new sprung sapling, a tiny gift of such arboreal promise, still comes hard.

The hollow maple that each spring harbored a nest of sparrow hawks just outside my front door is gone. It crashed mightily in a night of icy gale. It has been replaced with a tulip tree that rose auspiciously in rich, raspberry row mulch the preceding spring. I miss the summer morning shade and the calls of fierce young bird, but in their place grows this slender sapling already taller than me by a foot. Its upward reach holds a peculiar tension for a tree with no close competitors. I anticipate with great pleasure the long stretch to maturity and full flower. Will someone give silent thanks for it someday, as I now do for high canopied summer avenues and for solitary, windswept giants that give comfort and distinction to our landscapes?

Around the periphery of my three acres grows my forest in the making. Dogwoods came first as transplants from a relative's scrubby fencerow. Now there are a dozen volunteers each spring to plant along my eventually to be woodland path. Hollies sprang from Christmas berries broadcast in flower beds. Now, like Johnny Appleseed, I spread berries along the path where I'd like trees to stand. Black walnut trees standing 20 feet high along the path began life as many years ago as nuts planted in the vegetable garden.

Walnut trees began life as nuts planted in the vegetable garden.

Seeding trees can be as casual or as careful as you care to make it. It is best to plant or stratify seed in the fall. The passage of winter naturally conditions the seed for spring germination. Protect valuable or particularly vulnerable seed; cover the garden sown seed with a wire mesh such as hardware cloth to foil seed eaters. A coldframe is an ideal protected spot for overwintering seed. Alternatively the seed may be layered with a slightly moist mixture of sand and peat in a rodent-proof container and left in an unheated outbuilding or to the alternate freeze and thaw of winter at work. Plant the seed before warm weather arrives.

Seed grown trees are not right for every purpose. Started from scratch specimens will probably not equal the professionally propagated product in their excellent uniformity, and seed from hybrids or dwarfs will likely give poor results. Yields from fruit trees may not equal parent's eating quality. A carefully planned landscape could be set awry by a wild card whip. (Heed my tale of the flowering peach.) But for the gardener with curiosity and an informal corner to fill, seeding trees may perfectly fit the bill. Chances are the seedling you produce will closely enough resemble a typical species form. You can look forward to its splendid maturity, when you can say with just pride, "I grew this from seed."

●

Barbara Bruno divides her time between art, writing and gardening. She has several books to her credit and has written and illustrated more than 80 magazine articles for adults and children.

Dogwood

Photo by Barbara Bruno

A Pocketful of Seeds for Unusual Trees

by Toni Brinton

Almost every pocket that I have gets filled with seeds and identifying notes (i.e. *C. kousa*, mine, 1987). Special seed packets are sold at stationery stores but I never have them when I need them. Newspaper, facial tissue, paper towels: I have folded all to use as seed carriers. You can bring back seeds from your worldwide travels, from a walk in the woods or fields, or from your friend's garden. Lightweight, easily packed, portable, seeds are not against USDA import rules, and most gardeners are happy to share.

The most exciting and enduring seeds to collect are those of trees. Most are not hard to germinate, and they are not unduly long in rewarding the grower. Unusual trees that are not often for sale at your local nursery, can thus be easily obtained.

We have started a Kentucky coffee tree allée (*Gymnocladus dioica*) from seed gathered the winter of '80 at the Birmingham Friends Meeting ground. The seed pods are similar to oversized lima beans with black shiny "limas" inside. My husband filed the hard seed coat, scarring it till the embryo, a speck of white, showed. We placed them in a plastic baggie with slightly dampened Pro-mix in the refrigerator. The following spring these were planted, sprouted and moved, with warm weather, to a nursery area. A year later they were planted permanently along our upper drive where they now are 12 ft. tall.

We have started a Kentucky coffee tree allée* (Gymnocladus dioica) *from seed gathered the winter of '80 at the Birmingham Friends Meeting ground.

A new coffee tree is now hibernating in our refrigerator. Theodore R. Dudley of the National Arboretum sent them to PHS member Sally Reath, and she has shared them with us. No description has yet been found of this *Gymnocladus chinensis*. We know the seed was collected in the wild. We can hardly wait to see what differences there will be from the Chadds Ford variety.

When I worked as a volunteer propagator at Winterthur, we received seed sent by other botanical gardens and horticultural organizations. From the Arnold Arboretum, Polly Hill sent seed of *Davidia involucrata*, called either the dove or handkerchief tree because the 6 inch long white lower bract of this dogwood-like tree flutters in the breezes. Plant explorer E. H. Wilson gave this tree rave reviews. We hope it's worth waiting for, as it may take 20 years to bloom. We have 14 more to go.

The National Arboretum sent *Idesia polycarpa*. Germinated in 1981 the *Idesia* grove at Winterthur is above the Quarry and now over 15 feet tall. The runt of the litter, which I was allowed to bring home has grown as tall, but none of this seed lot has produced the panicles of fall red berries for which *Idesia* is famous. This tree has strange sex habits. Male and female flowers are sometimes found on the same tree, or sometimes on different trees. Joanna Reed's *Idesia* has achieved some fame: Its picture, complete with abundant fruit, is featured in the book, *The American Woman's Garden*.* Given to Joanna by Laura Barnes of the Arboretum of the Barnes Foundation in the early 1950's at about 5 ft., Joanna's tree is now 25-80 ft. tall and the nearest other *Idesia* is one mile away at Barnes' Ker-Feal. Is Joanna's tree self fertile? She found a seedling, which she gave to me. Now 7 ft. tall, we hope pollination takes place with two very close trees and that soon fall fruit will appear. Meanwhile the heart-shaped leaves on red petioles, and the architectural habit of growth, make these interesting small trees for our landscape.

Like the Kentucky coffee tree, you rarely find the Empress tree (*Paulownia tomentosa*) for sale at your local nursery. It is big, bold and messy, but also very beautiful. If you have a corner you wish to embellish or an alleé like the one at Longwood Gardens you wish to create, the Empress tree is extremely easy to grow from seed. With its long fragile tap root it must be put in place at one year and therefore it cannot be containerized successfully. Mice, rabbits and deer love its succulent bark, so surround it with wire till the bark toughens with age. Yet, the upright panicles of bright purple against a blue spring sky make all this struggle worthwhile. It grows an amazing three feet or more a year, so you have a fair sized canopy quickly. The Japanese prize the wood of *Paulownia* for making dower chests and coffins. Because of this popularity few Empress trees are left in Japan, and Americans are shipping the wood to Japan. The large seed pods have a balsa wood lightness and were used by the Chinese to pack their export china much as we use styrofoam chips today. The old seed pods were thrown away when china was unpacked and subsequently the dumps sprouted *Paulownia*. Members of the duPont family call these "Dump" trees. From the dump or not, *Paulownia* has many uses as well as ornamental value.

A good magnolia not often seen is M. *ashei*. *Hortus* III describes this as a native of Texas and Florida. Growing very well in the Delaware Valley, it is a restrained smaller version of *M. macrophylla*, but

**The American Woman's Garden*, Rosemary Verey and Ellen Samuel, New York Graphic Society, Little Brown, Boston, 1984.

Photo by Nancy Baldwin Long

Idesia polycarpa at Joanna Reed's.

more like a deciduous *M. grandiflora* with a similar pink tinged porcelain white blossom. The height here is about two and a half stories. In spring and summer the leaves are 6-8" long, lustrous green on top, soft silver underneath. In fall the leaves turn dark brown on top, light grey beneath. They twist as they dry into interesting shapes, which are stunning used in fall dried arrangements. My seeds were obtained from M. M. Brubaker and now are his living memorials.

Evodia daniellii is a summer flowering medium size tree with white blossoms that attract honey bees. The whole perfumed tree vibrates with their buzzing. This grows quickly from seed.

Hovenia dulcis has fruit that resembles gnarled raisins that the Japanese apparently eat with relish. We don't have to eat them, just plant them and up they come to make a big tall sturdy unusual shade tree. The Arboretum of the Barnes Foundation and the National Arboretum both have raisin trees.

Pinus bungeana, the lace-bark pine, with its interesting exfoliating bark and restrained growth habit is an ideal evergreen for the small home landscape. It is expensive to buy when you can find it. Seed from a cone picked up near a local arboretum's parking lot produced a bumper crop.

But our favorite tree that can easily be grown from seed is the four season, four star oriental dogwood, *Cornus kousa.* In October of 1980 red strawberry fruit of *Cornus kousa* were picked from M. M. Brubaker's grove of these lovely trees. The fruit was macerated, separating the seed from the pulp, then stratified in the refrigerator and germinated in the spring of 1981. In the spring of 1987 five of these trees grown from this havest bloomed floriferously. Curving down our hillside drive their white starry bracts illuminate our forest surroundings. October '87 I picked my own fruit. In November the *kousa* still retained their vivid red leaves to brighten a somber day. As they age their trunks will acquire exfoliating bark, a grey, brown, white mosaic which will give dead-of-winter interest. Seven and a half years from seed to flower. That is rewarding.

So begin to fill your pockets with seed. Yes, pick up the pawpaws and put them in your pocket. They, too, come readily from seed. Read books on propagation. For as easy as trees are to raise from seed, they all have different requirements. *Franklinia* needs to be sown in the ground as soon as its seeds ripen in the fall. Some seeds like the *Gymnocladus* require that their hard seed coats be mechanically scarred. Some trees have double dormancy but there are ways of speeding up even this process. All the pertinent information is readily available. Start with borrowing a book from the PHS library. Buy seed packets to hold those small treasures that you gather. Begin your own forest, or at least a grove.

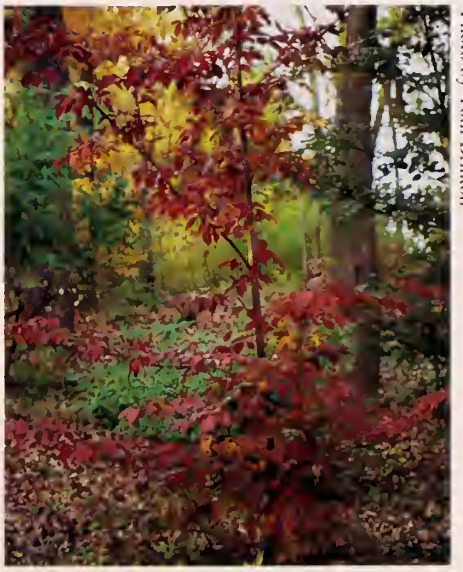
Books about Propagation

The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture, Michael A. Dirr and Charles W. Heuser, Jr., Varsity Press Inc., Athens, Ga., 1987

Seeds of Woody Plants in the United States, Forest Service, U.S. Department of Agriculture, Agricultural Handbook #450, 1974

Both books available at the PHS Library.

Photo by Toni Brinton



Cornus kousa

●

Toni Brinton has a woodland gathering of native and exotic plants on the south-facing slope of Brinton's Run, north of Chadd's Ford, Pa. Toni Brinton is a former member of the PHS Council and former chair of PHS Library committee, as well as a hard-working Flower Show volunteer. She volunteers as a plant propagator for Winterthur Museum and Gardens, and the Garden Club of America's Zone V Plant Sale. Her present #1 priority is all aspects of the restoration of America's oldest Garden — John Bartram's.

OASIS:

Indispensible for flower arrangers, this brick was born out of life raft research and now shares the spotlight with podiatrists and NASA.

by Kristi Jalics

The scene was intensely "hi tech"; before a hushed crowd the technician heated and vibrated his chemicals, extracted a minute flask of dark liquid, and rapidly poured the contents into a large transparent rectangle. Instantly the liquid foamed into a solid, expanding to fill the container. But would it be contained? A murmur broke out in the front row; the visitors pushed their seats back, fearing the worst.

But all was well. Before it could engulf the faint-hearted among us, the phenolic resin had completely expanded into a brick of Oasis floral foam. This razzle dazzle demonstration was put on by the Smithers Oasis Company. I was impressed, but left with more quesitons than answers about this product whose name is as generic for floral foam as Kleenex is for facial tissue. For as long as I've been arranging flowers, Oasis has been available. I never questioned what it was or how it developed.

The story of Oasis is a fascinating mix of a solution in search of a problem, product refinement in response to user need and tehcnological possibility, and marvelous salesmanship. It's the Horatio Alger story of the floral industry.

In the early 50's, V. L. Smithers was president of Smithers Scientific, a company that did research for Akron's giant rubber industry, which had been moving full steam ahead during the war years. Smithers was fascinated by some of the intriguing new products developed for life rafts. This "interesting" buoyant foam must have other commercial possibilities. But what were they?

Discovery has been defined as, "looking at what everyone has been looking at and seeing what no one else has seen." But if Oasis's actual "eureka" moment occurred when someone suddenly shouted out, "Gotcha! We can use it for flower arranging!", the memory has been lost in time. It does seem to be true that Smithers had friends in the Akron area florist trade to whom he showed his foam quite early on, to see whether they thought it had a future in their business.

Betting that it did, the 63-year old entrepreneur sold Smithers Scientific to launch his new venture. And though initially slow to catch on, this raw resin, an oil industry by-product foamed up by an acid, has revolutionized the floral industry by providing the simplest and most foolproof solution to the problems of keeping arranged flowers in good condition and allowing designers to put and keep them where they want them.

The secret of Oasis was how to make the foam wettable, a process they patented for 17 years. But it took most of the first 10 years to solve some of the minor problems and sell the stuff to the industry.

From the very beginning the foam could hold the same impressive amount of water it does now. Today a nine inch by four inch by three inch Oasis block holds about 50 times its own weight in water (about two quarts or four pounds of liquid) and saturates in less than a minute—a far cry from the beginning when bricks took almost an hour to wet. They stayed good for about five days as long as they were never allowed to dry out. They had to either be kept in water or sealed carefully in polythene bags. Once dry, they were not rewettable. Today we simply drop a brick into water for the 60 second saturation.

Still, when lifted from its bath it always possessed the desirable quality of being full of "non-spillable" water that would not drip, splash, or drain out. Jack Savarese, the company's first spokesman, always wanted to be on the T.V. show, "What's My Line?" as a salesman of non-spillable water. For florists this quality gave them one less disaster to worry about. Jim Bridenbaugh, director of Educational Services recalled such a catastrophe from his early days as a florist. Entering a Catholic Church in Defiance, Ohio with a large urn arrangement supported with the old chicken wire and newspaper in water, he stopped to genuflect. The boy behind crashed into him; Jim, urn, flowers, and gallons of water were awash on the stone floor. The pastor was amused. The florist was not.

five type of Oasis

Nowadays, the foam is not only much simpler to use, but five types are available. Working with those original bricks of Oasis, florists preferred the lighter density bricks for use with soft-stemmed flowers such as daffodils and tulips. Now these cell density differences are controlled by computer. The softer foam is sold as "Springtime"; the

continued

Discovery has been defined as, "looking at what everyone has been looking at and seeing what no one else has seen."

heavier, "Delux," supports weightier plants such as bird of paradise or gladiolus. "Instant" saturates in seconds, and is the best seller in the northeast where perhaps we are less patient. Or busier? "Instant Delux" combines both qualities. The original standard Oasis is, of course, still available. Interestingly, the southeast favors the arrangements with heavy-stemmed plants, while out west "Springtime" is the best seller. Is this a case of opposites attracting?

Besides overcoming technical problems the new company had to win acceptance from the older florists who were used to

Podiatrists take foot impressions with it, and since an early space program disaster when a launchpad fire involving urethane foam caused a death from toxic fume inhalation, NASA has preferred to use phenolic foam which does not give off toxic gases if burnt.

chicken wire and who like most of us, resist change. In the early 50's Smithers found two floral designers, Ethel Brite and Bill Hixson, who together with Mrs. Brite's sister Hazel, traveled to wholesale houses all over demonstrating and explaining what could be done with this new product. One of Hixson's memories of those early days concerns taking some foam into Mexico. The customs inspector wanted to know what this strange material was. Hixson who felt it probably would not be allowed into the coutnry as flower arranging material told the officer that it was a newly developed soap for people with dermatitis. This delighted the inspector who immediately begged a few pieces for his poor sister with skin problems. We can only hope the placebo effect did her some good.

Bill Hixson recalls suggesting that in addition to the green foam, they develop a brown foam for dry flower arrangements. Thus Sahara was born, which is now made in two types, the deep brown "original" dry foam and Sahara II for heavier plant material. Hixson also proposed finding companies that would manufacture containers in sizes and shapes compatible with the product.

Smithers Oasis has long since expanded beyond our national borders; they not only have plants in Kent, Ohio, and Bakersfield, California, but Japan, Australia, Great Britain, Denmark, Africa, and West Germany. The plant in Ajax, Ontario just celebrated its twenty-fifth anniversary. Millions of cases are shipped out every year; one can find Oasis virtually everywhere. Since it is even sent into Singapore and Hong Kong, some certainly finds its way into mainland China. Yes, it's everywhere, except possibly in the home of company president Charles Walton. When I met his wife April at the Great Lakes Herb Symposium in Hiram, Ohio, this summer, she compared herself to the barefoot cobbler's wife. "When I want to do arrangements," she lamented, "there's no foam at home.'

Photo Courtesy of Smith Oasis Co.

Oasis Rootcubes Growing Medium Strip with geranium cuttings.

truckers, podiatrists and NASA

This versatile foam is used for more than floral design, however. A California trucking company uses it to develop prototype dashboards, and it provides insulation around containers of hazardous chemicals. Podiatrists take foot impressions with it, and since an early space program disaster when a launchpad fire involving urethane foam caused a death from toxic fume inhalation, NASA has preferred to use phenolic foam, which does not give off toxic gases if burnt. Gardeners can also recycle crumbled up old Oasis foam into potting soil mixes as a soil lightener, and commercial growers are more and more using specially formulated Oasis growing medium plugs as rooting media.

Garden clubs needing fund raisers are able to purchase special kits such as the European designer collection at reduced prices for resale. For more information about Oasis, contact Smithers Oasis: P.O. Box 118; Kent, OH 44240.

●

Kristi Jalics is garden editor of the *Bath Country Journal*. She gardens in Bath, Ohio and Point Chautauqua, NY. She is a member of the Medina County Herb Society and British Cottage Garden Society and is indiscriminately enchanted by all plants of cottage gardens and hedgerows.

Primula allionii

By Roxie Gevjan

Photo by Armen Gevjan

Primula allionii 'Crowsley Variety'

After attending The International Rock Garden Conference in Nottingham, England in 1971, I visited a well-known English nursery to buy some treasures for my garden.

The proprietor, Mr. Elliott, told me that most of his choice plants had been sold **before** the conference, and that he could not supply me with many of the plants I had checked in his catalog. Not wanting to go home empty handed, I simply used my "penny candy store" technique, going around the nursery and selecting "one of these" and "one of those." It wasn't long before I sensed that my choices were really not special. I stopped and asked Mr. Elliott "Do you have some special plant that you might recommend?" I can never thank him enough for his answer. "Yes," he replied. "*Primula allionii*." I had never heard of the plant and hoped that my ignorance was not evident.

Primula allionii came home with me. (I have an import license.) I learned that it needed perfect drainage and no overhead water. I carefully potted it up and put it in the alpine house at the end of April. As time went on the plant seemed very content. By the end of the year, the small rosette had grown and produced more rosettes. By January, it produced its magnificent bloom. The leaves are ovate, fleshy, and very sticky. The plant forms a tight bun of gray-green, evergreen rosettes, topped by usually rose to deep rose flowers with a white eye, almost covering the entire plant. There are white flowered forms.

This lovely plant has a very limited distribution in nature, existing in only a few stations in a 150 mile radius in the French and Italian Maritime Alps. In this natural habitat, it blooms from March to April. It is found in small grottoes, in shady caves where there is neither sun nor rain, according to plant explorer Reginald Farrer. In those areas it forms enormous cushions three to four feet or more, across; the growth is more luxuriant and the masses larger than plants grown on the open rock formations where they are exposed to sun. For some reason, *Primula allionii* has the reputation of being difficult in cultivation. Not true. Certainly, not for me.

As I mentioned earlier, my original plant grew rather quickly and well. I potted it into soil amended with dolomitic lime, some humus, and a generous portion of small limestone chips. I placed small pieces of tuff* around the crown of the plant and dressed it with limestone chippings. Where I live in the Delaware Valley, it will grow indoors or outdoors, in sun or shade, and possibly just as well in either of those situations in colder climates.

indoor culture

I suggest using a clay pot, in proportionate size to the plant, not too large, not too small. I think it likes some crowding. When it fills the pot completely, it is time either to repot or to propagate. The soil should be limey, gritty, and fairly loamy. I saw an article recommending **no** sun, but all my plants enjoy a southwest exposure in the alpine house, plunged in sand (in clay pots). Bloom continues from Christmas — sometimes earlier — until the end of April. Occasionally, I do enjoy sporadic blooms as late as the first week of May. Beginning in October I fertilize my plants with a weak solution, Seaborn or fish emulsion, or whatever is handy. Sometimes I forget, so I really do not know if fertilizing is essential because I almost always enjoy a beautiful extravaganza of bloom with this primula. I remove all withered or decayed leaves carefully. I top dress all the pots with small pieces of tuff and cover any exposed areas of soil with pea-sized pieces of tuff or small lime chips being careful to surround the crown completely. This procedure provides lime, keeps the soil moist, and discourages slugs, which can quickly destroy the plant. Fortunately, I have not had any of these problems with *Primula allionii*. The plants are kept moist also by watering the sand into which the pots are plunged. Most texts, and growers, caution against overhead watering.** But I do it all the time using a watering can with an excellent, thin spout, enabling me to water around the cushion. I also water the sand. If any water does get on the leaves or flower, I simply soak it up with a paper towel or a bit of tissue. I do not believe that these few drops will damage the plant, however, nor will overhead watering unless it comes in the form of a cloudburst. It is excessive wet that destroys *Primula allionii*.

outdoor culture

Prepare a tight crevice in hard limestone rock, in either sun or shade, with **perfect** drainage. About June or July, remove a rosette, or rosettes, from the mother plant and insert into moist sand. Rooting should take place in three or four weeks. When the very fine roots develop, place the plant in the prepared crevice and pack it in firmly. It should bloom the following year.

propagation on a larger scale

This is quite easy, using the method just described. For propagation on a larger scale, wait until the plant is out of bloom and remove it from the pot. Shake off all the

*tuff — stone of volcanic origin

**They may also be watered by plunging the pot to the rim in a suitable container of water. This method is usually the most popularly recommended for watering potted plants that are sensitive to overhead watering.

continued

soil. Remove any yellowed leaves. Carefully divide the plant, separating each rosette wherever possible with a thin blade, — a razor blade will do well. Insert each rosette around the edge of an azalea pot and plunge the entire pot into a sand bed, protected, of course, from overhead wet, slugs, birds, etc. Keep the sand moist, but not wet. The cuttings should root in three or four weeks, and some may even bloom in December or January, indoors. You should have 100% success.

Primula allionii has many lovely color forms. The plant develops large cushions in a relatively short time. The blooms almost completely cover these cushions with almost sessile flowers. Because of its extended period of bloom, as well as its evergreen gray green leaves, it is a rewarding plant throughout the entire year.

●

Roxie Gevjan has a show garden featuring native and exotic wild flowers, alpines and unusual conifers. She grows many of her plants from seed. She has won a number of awards for her plants at the Philadelphia Flower Show, including one Best of Show and 15 blues for her *Primula allionii*.

Photo by Armen Gevjan

Overview of *Primula allionii* bench in Alpine House

Ruellia makoyana

By Martha B. Darlington

I bought my first *Ruellia makoyana* without knowing anything about the tempting little stranger. The plant had no label, so I had no idea what its cultural requirements might be, but it was obviously healthy and making growth, and tiny, so the price was small. And I thought it would make a pretty foliage plant. The leaves are covered with hairs so fine that it is more like suede than velvet. Each small oval leaf has a maroon reverse, and the rich green upper surface is accented by a regular silvery pattern at the mid-rib.

Imagine how pleased I was when my "foliage" plant—grown to respectable size—covered itself with small rosy-carmine trumpet flowers, just as short days and cold weather really set in, in late November, and growth, never mind bloom, was hardly the order of the day on my window sill. Now I was able to identify my new find.

Ruellia makoyana has no real common

Photo by T. Stephan Thompson

name. It is called "trailing velvet plant," an excellent description, but also used for *Rubus reflexus*. Also "monkey plant," for no very obvious reason. The genus was named in honor of a Frenchman, Jean de la Ruelle of Soissons, who wrote *De Natura Plantarum* in 1536. A member of the *Acanthaceae* family, *Ruellia* was once a genus of over 200 species, but has now been reduced by taxonomists' reclassification to five, mostly sub-shrubs and mostly from Brazil. The other *Ruellia* are greenhouse plants, but I have found *R. makoyana* to be quite happy as a house plant.

The stems of *Ruellia makoyana* are weak and branching, a growth pattern perfect for a basket plant. Hung so it can be turned it will balance itself and not need pinching. It should be kept evenly moist, never soggy, in a typical potting soil — for example equal parts of loam, sand, and peat. Humusy soils are preferred, as they make a lighter pot to hang and dry out more slowly, as well as suiting the plant. It likes a high humidity, as do most house plants, and likes warmth— that is 60° F. at night and not above 80° by day.

As to light, the *Ruellia* will be happiest with full winter sun, but the rest of the year it needs some shade but still a bright spot. Technically 1000 to 3000 foot candles. The plant will tell the grower when the light is right; the more light, the more color, but full summer sun will stunt the plant and growth will stop. *Ruellia* enjoys a summer outside hung under a porch or tree canopy.

R. makoyana does not need heavy fertilizer, but requires a regular program. I use the time-release Osmocote as recommended.

Ruellia is such a prolific bloomer that it sets some seed, and this seed is very easy to sprout. I discovered this when I found a few seedlings, in the damp pebbles and the soil of other plants, that were under the hanging basket of *Ruellia*. Now I have learned to look for the seeds whenever I want to start a new pot for myself or friends, and have never been without fresh young plants coming along, at no expense whatever. After the flowers drop, the styles remain, hair-like and over an inch long. This makes it easy to check for any ovaries that were fertilized and are swelling to maturity. After a few months the capsule will drop away and open, spilling dark, disc-shaped seeds. Other *Ruellia* are reproduced by cuttings, and *R. makoyana* probably could be also, but I have never had occasion to try. Spring and summer would be the season to start them.

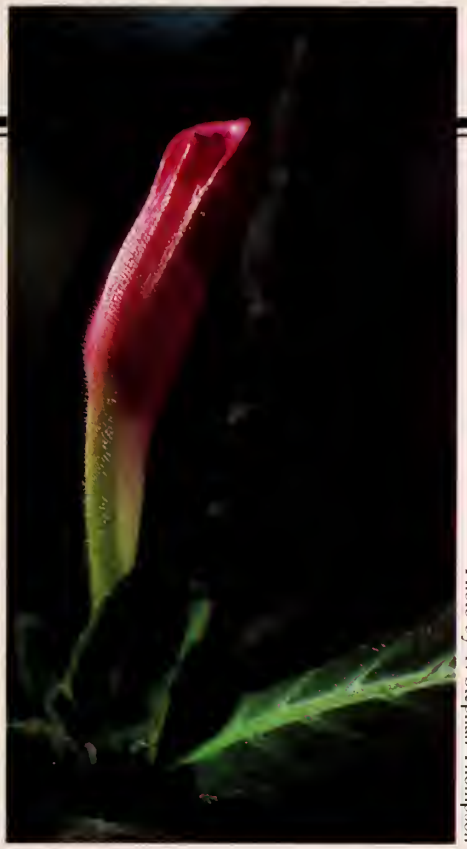


Photo by T. Stephan Thompson

I have never had any insect or disease problem except mealy bug, which I treat with alcohol if I find it early enough— otherwise Malathion or Orthene. It is said to spot if chilled and to be susceptible to red spider. Like any heavy bloomer, *Ruellia* does litter, dropping spent flowers and leaves. But look for the silver lining: those free seeds.

Ruellia makoyana is a gem of a house plant. The plant itself has a natural full graceful shape, each leaf an ornament. It blooms with no prompting over an extended period, at a time of year when bloom is scarce. And the flowers glow in the light as the sun comes low in the winter and streams into my south window—a color so bright and cheerful it makes it a little easier to wait the long months until spring. The plant is adaptable and vigorous and easy to please. I hope more people will make the acquantance of my tempting little stranger. It has earned a place as an old friend of mine.

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GREEN SCENE

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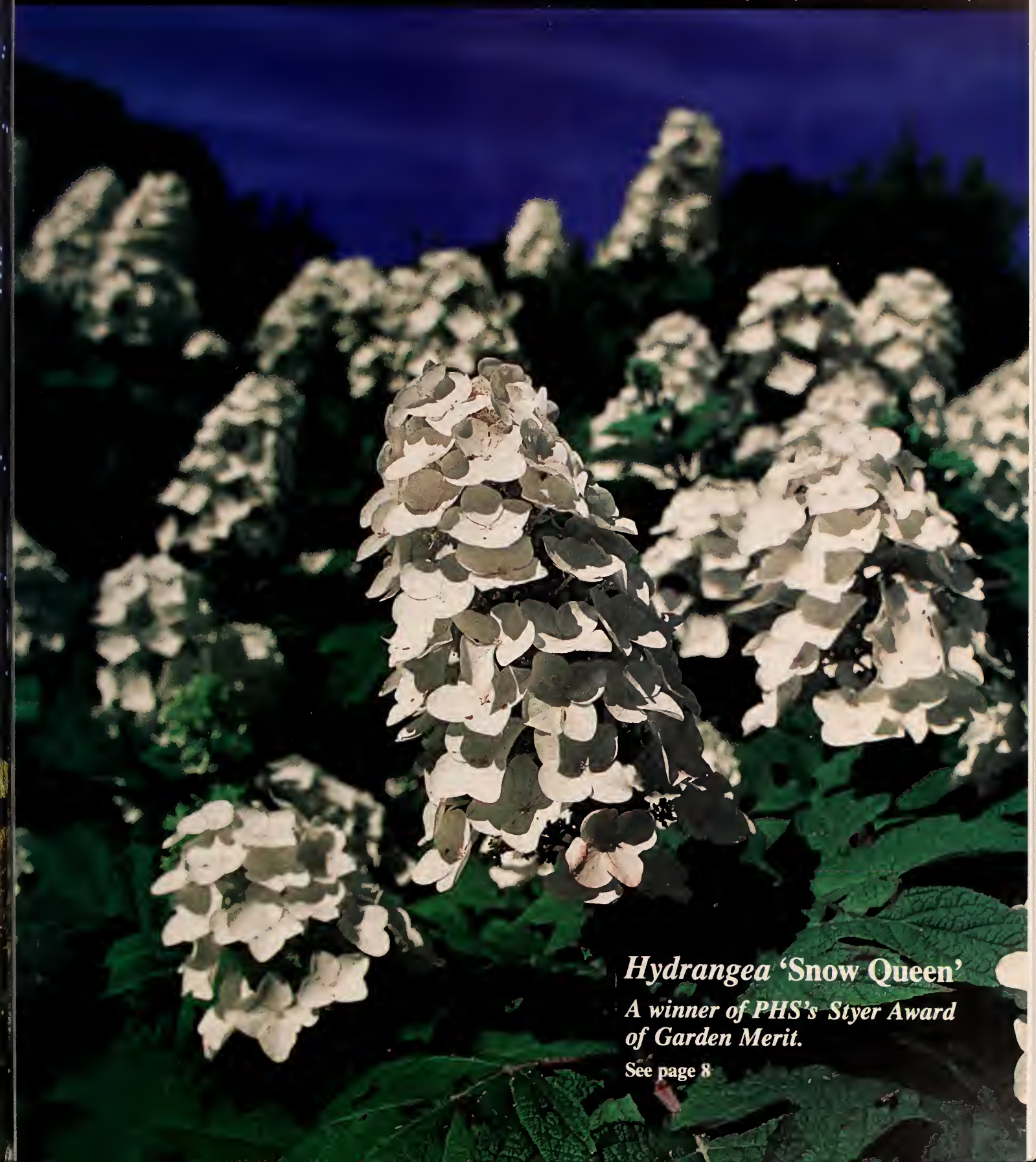

Hydrangea 'Snow Queen'

A winner of PHS's Styer Award of Garden Merit.

See page 8

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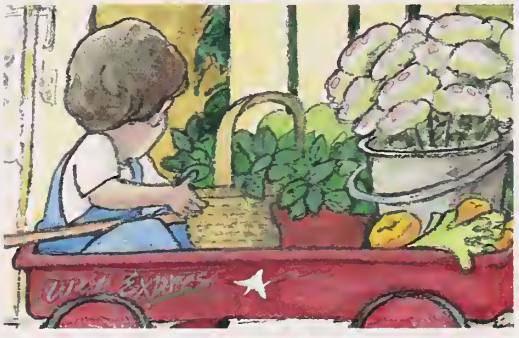

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Front Cover
Hydrangea 'Snow Queen' photographed in June.
photo by Larry Albee

Back Cover
Malus 'Donald Wyman' photographed in October.
photo by Larry Albee

in this issue

OOOOOPS. CORRECTION: November/December *Green Scene* Page 13, column 1. Thanks to Judy Zuk for spotting incorrect reference to *Ilex* x *meserveae,* the blue hollies, as a new species. They are new hybrids. Judy Zuk is the director of The Scott Arboretum of Swarthmore College.

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MAINTAINING THE VICTORY OVER DECAY AND NEGLECT

by Jean Byrne

"With the passing of the Route 66s from the map of America most of us are forced to drive the fast lanes and believe that the world of the individual garden has vanished forever. It hasn't."
Peter Loewer, *The American Garden,* Simon & Schuster, New York, 1988

"Community gardens are oases in a city, valuable in so many ways. We are working to preserve them as a permanent part of the city."
Bruce Wiggins, Executive Director, Neighborhood Gardens Association - A Philadelphia Land Trust

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This past September, the PHS Council was invited to visit several established community gardens, and I relished the interchanges between the experienced city and suburban gardeners. I heard one Council member muse aloud as he looked at a beautiful, 4-foot high snow-on-the-mountain shrub encircling roses at the Sun Circle Garden at 17th and Westmoreland, "I wonder why I never thought to plant it that way." Notebooks were out as gardeners exchanged information on when to collect seeds for this and when to prune that.

Over the last decade more than 1,300 community flower and vegetable gardens along with other gardening projects have been established in Philadelphia. In 1987, more than 4,000 families cultivated vegetable gardens growing almost $3 million in produce. Philadelphia has one of the most concentrated community greening efforts in an American city.

On page 16 of this issue Florence Ann Roberts tells the story of her son Jake's first gardening experience in a community garden, which was bulldozed when he was three years old. He did not like losing his garden, but his mother found a spot on the parking lot and a tiny spot to plant behind her home. Not every city child is so fortunate to experience the joys of picking fresh raspberries and tomatoes.

When you talk to the Philadelphia Green garden coordinators about the community gardens, they will tell you that the gardens are the lives of many of these people. They heal body and spirit; it's where the young first learn cooperation and the older reclaim a sense of community; the gardens create an opportunity to pass on traditions from homelands (Korea, Puerto Rico, Poland, Italy, for example) and generations cross over to learn from each other.

The beauty of these gardens are a mixed blessing. They improve property and increase real estate values. Yet what the people struggled to create engenders the possibility of losing the gardens to builders.

Recently the Neighborhood Gardens Association - A Philadelphia Land Trust, was established to preserve the community gardens and other community managed open space, primarily in low-to-moderate income neighborhoods in Philadelphia. This non-profit organization was founded with funding from the Pew Charitable Trusts and PHS. The board of directors includes community gardeners and leaders, along with representatives from PHS, from the business community and government. Named in honor of Louise Bush-Brown's window box program of the '60s, The Neighborhood Gardens Association is working with gardeners, landowners, the community and City agencies to preserve several established gardens threatened by development.

NGA executive director Bruce Wiggins says "NGA hopes to acquire properties and work with the gardening groups to preserve them over the long term." They are seeking funding, gifts of land as well as experienced help on committees.

If you are interested in learning more about the program, please contact Bruce Wiggins, Executive Director; NGA, 325 Chestnut Street, Suite 800, Philadelphia, PA 19106-2777 (phone 215-625-8264).

photos by Ken Radeloff

JIMMY PAOLINI:
A Prince Among Green & Growing Subjects

by Ken Radeloff

After a lifetime of dedication to growing plants, the founder of Waterloo Gardens continues to experiment. He still has a few projects on the boards.

"I once grew a fuchsia five feet wide. It wouldn't fit through the greenhouse door. I wish you had eyes — if I could give you eyes — to go back then and see it. You wouldn't believe it."

"I believe you, Jim," I said. "How'd you do it?"

The nurseryman looked stealthfully from side to side, past the prize-winning *Carissa* standards and around the elegant Roman topiary *Eugenia.* Maybe there were hostile ears among the bonsai, eager to hear and steal away his lifelong cache of gardening secrets.

"I fertilized with urine," he said, "mixed with water, one part to sixteen."

"What?" I shouted, astonished.

"You don't believe me," Kennet'? That's what I fed that fuchsia with. I tried lots of different dilution rates."*

"I believe you," I laughed. I loved talking to Jimmy Paolini. Being with him.

The brilliant February sunshine, diffused by the greenhouse's double glazing, fell upon us and upon the hundreds of bonsai, topiaries and standards. I had seen many of these dozens of times before — had even repotted some of them when I worked for Jimmy on Saturdays, hoping to learn something, to be infected a little by his horticultural savvy. Still, looking with one eye at the pair of twisted olive trees he has been training for 30 years, and with the other at this simple, round man standing among the trophies of his genius, I felt once again that strange sense of awe, a palpable perception of loving care, of self-discipline and hard, hard work.

"Kennet'," he said. "I want two more years. I wanna make one t'ousand topiary and standard, and, maybe two t'ousand bonsai, you know — nice! — and then I'll say, 'Thank you, God, for letting me finish my work. I'm ready to go now, wherever you wanna send me.' "

I turned away. My old friend's honesty, his directness, the strength of his will once again touched me deeply.

James Paolini was born at Windgap, Pennsylvania, on December 13, 1906. When he was six years old, his father, Joseph, returned to his native Italy, taking Jimmy and his younger sister and brother with him. World War I was brewing in Europe. When Joseph was drafted into the Italian army, James was placed in the care of his great uncle, a wealthy land owner. The child began working on his guardian's farm, cleaning the horse barns. His great uncle's daughter was betrothed to an enterprising and parsimonious fellow, a nurseryman. Soon after the marriage, little Jim was invited to go to work full time pulling weeds and watering at the new family nursery. He soon discovered that he greatly preferred tending his second cousin's nursery stock to sweeping out his great uncle's stables. Jimmy was seven years old.

an entrepreneur gets his start

By the age of 14, Jim had become foreman on the landscape crew, supervising workers twice and three times his age, but earning a wage that didn't provide him enough to buy his girlfriend a water ice. He quit the family business, worked briefly in the public park in the town of Viterbo, then borrowed some money and began selling

*Urine is high in nitrogen and has been used for centuries in gardening and farming.

(Left) A strawberry jar full of flowers and the beloved poodle 'Tina' provide the perfect setting for Jimmy's conversation about his plans for next spring's garden.

(Right) Is Jimmy Paolini proud of his prize-winning *Carissa* standard? What do you think?

citrus fruit trees and fancy palm trees on his own. He was 18 years old.

When James discovered that his silent business partner was stealing all their profits from the strongbox for which they both owned a key, he decided to take his sister's offer to facilitate his return to the United States. Settling in Bethlehem, Pennsylvania, Jimmy went to work at a concrete plant. "It was hell," he remembers. "You breathed in concrete dust, and when you spit, you spit bullets! If I had the money, I'da gone back to Italy in a second!"

Roberts LeBoutillier, Jimmy's son-in-law and the present owner of Waterloo Gardens, has purchased the rights to this new plant and expects to make it commercially available within two years.

Instead he moved to Philadelphia and went to work in Fairmount Park, propagating shrubs and trees and supervising 10 men. Jim could speak no English.

When Sarah Ausenried, a Delancey Street resident with a country home in Devon, Pennsylvania, advertised for an "Italian gardener," Jim triumphed over hundreds of applicants and landed the job. It was in that estate's greenhouse that he grew those gigantic fuchsias, using the earthy, Old World fertilizing technique he rarely has revealed.

When the Devon job ended, Jimmy moved briefly to Litchfield, Connecticut. In spite of instant success that summer, landscaping 10 new homes in that affluent section of the country, he decided to return to Devon. "Kennet'," he tells me, "somehow I knew: Devon is my place!"

The year was 1941. Ronald Greinberg, a German dahlia grower and hybridizer, was running a tiny greenhouse business out of a rented property on the 30-acre Parker Estate in Strafford. When Herr Greinberg became ill, he asked his friend, James Paolini, to take over the operation for him. Soon thereafter, the German floriculturist died. His widow and James decided to carry on the small business, naming it "Waterloo Gardens" after Jimmy's little greenhouse and garden on Waterloo Road in Devon. Jim soon bought the business (selling price

continued

photos by Ken Radeloff

$1,000) and moved it to his newly acquired property at the corner of Lancaster Pike and Devon Boulevard. A humble origin for what is now one of the largest and surely one of the most horticulturally sophisticated nurseries and garden centers on the East Coast.

Jimmy introduces a new plant

Jim retired from the retail nursery business in 1971. Since then he has attended to growing and training bonsai and topiary specimens in the five greenhouses behind his home on Waterloo Road, and to propagating rare plants. Among these is a brand new *Taxus* — tentatively named 'J.P. Prostrata' — which Jim discovered growing as a sport on a 'Capitata' yew in his Exton nursery nearly 20 years ago. It is a low-growing shrub similar in habit to *T. baccata* 'Repandens' but much, much hardier. The parent plant is about 30 inches high by 10 feet wide after 20 years. Roberts LeBoutillier, Jimmy's son-in-law and the present owner of Waterloo Gardens, has purchased the rights to this new plant and expects to make it commercially available within two years. In addition to serving as a ground cover for large areas and embankments, 'J.P. Prostrata' would also function nicely as a specimen plant in the home landscape or as a beautiful, hardy and disease-resistant low hedge. I look forward to the yew bearing James Paolini's initials becoming part of our landscape palette.

At the age of 82, a nurseryman who began working at the age of seven still puts in a full, vigorous day. His extraordinary competence and record of accomplishment has not dulled the daily experience of wonderment and delight he finds among his plants. He is like a father among his children, like a child among his teachers, like a prince among his green and growing subjects.

I've been "interviewing" Jimmy for 20 years. I wish I had a dollar for every question I've asked him to which he has responded with honesty and spontaneity, with passion and humor.

The other day during a conversation he

◄ (Left) A section of the garden wall in summer. (Right) Jimmy says, "I'm Italian, and I know how to grow tomatoes. Big deal!" Jimmy moves on to the next challenge. ▼

told me, "I didn't worry about my business. I went in business with this as my intention —to work hard, to be honest, and to have knowledge. I had no opportunity to finish first grade either in Italy or in this country, so I had to get that knowledge another way, by insistent ambition, step by step. That's what I did, and I'm still doing it."

He is, too. I hope he can continue doing it until he's a hundred.

•

After working for a large Chester County landscape firm for eight years, Ken Radeloff launched his own company, No Bull Landscaping, an elusive professional gardening entity operating somewhere within the environs of Philadelphia.

SIX SUPERIOR PLANTS

1989 Winners of the Pennsylvania Horticultural Society's Styer Award of Garden Merit

by Jane G. Pepper and Judith Zuk

Beautyberry *(C. dichotoma)* fruits and flowers late summer. Flowering proceeds down the branch toward the tip.

photo by Larry Albee

STYER AWARD OF GARDEN MERIT
THE PENNSYLVANIA HORTICULTURAL SOCIETY

Callicarpa dichotoma

photo by Larry Albee

For every garden situation the range of possible plants, if you visit a nursery or check a number of catalogs, may seem endless and confusing. With the Styer Award of Garden Merit the Pennsylvania Horticultural Society aims to introduce gardeners to superior plants that our evaluators believe will make valuable additions to your landscapes. These evaluators, listed on page 15, are horticulturists, nursery professionals and landscape architects who meet twice each year to discuss the entries. With their combined wisdom as your guide we hope to assist you in making wise plant selections.

Last year we introduced our first award winners, six outstanding woody plants selected from some 60 entries that our evaluators had tested over a 10-year period for their garden merits. This year a compact crabapple, a fragrant winter-blooming witch hazel, and a low-growing deutzia are among the plants honored by the 1989 Pennsylvania Horticultural Society's Styer Award of Garden Merit.

At the end of this article we've listed last year's Award winners, where to find information on purchasing Styer Award winners, and also how you can enter a plant for a Styer Award. Please join us in letting other gardeners know of these good plants.

The 1989 Winners

Callicarpa dichotoma

This beautyberry is an adaptable shrub, whose outstanding feature is its clusters of striking lavender-colored berries in September. Since most fall fruits are yellow, orange or red, *Callicarpa* offers a guaranteed eye-catching color alternative for the garden. At the Scott Arboretum, where this plant has been growing for over 50 years, it never fails to draw comments in the autumn.

Callicarpa is a three- to five-foot tall deciduous shrub, with graceful arching branches. Since it flowers and fruits on new wood it can be pruned hard in the spring and therefore kept to a manageable size. Paul Meyer, director of horticulture at the Morris Arboretum, recommends cutting plants close to the ground in March or April to remove winter deadwood and to keep them compact.

Not a shrub prone to pests or diseases, *C. dichotoma* grows best in full sun to part shade, making it a useful plant for the shrub or mixed border. It roots readily from softwood cuttings, and grows rapidly to a landscape-sized plant.

continued

Deutzia gracilis 'Nikko'

photo by Larry Albee

May blooms at Longwood Gardens in Kennett Square, Pa.

photo by Larry Albee

Here is a plant to challenge most people's image of deutzia. Unlike the good old-fashioned deutzias of our grandmother's gardens, 'Nikko' is a compact, fine-textured shrub suited to the small garden. A rapid grower, this cultivar makes an excellent groundcover or facer shrub, with abundant small white flowers that open in late May in suburban Philadelphia. The fall color, though not spectacular, is a deep burgundy.

'Nikko' first came to the attention of John Creech and Sylvester March of the National Arboretum in a Japanese nursery in 1976, and was introduced by the National Arboretum under the name of *D. crenata nakaiana.* The original plant at the Arboretum is two feet tall with a five-foot spread after 10 years. March suggests planting these shrubs in a light afternoon shade in areas with high summer temperatures. Propagation methods include layering and softwood cuttings.

Hamamelis mollis 'Pallida'

photo by R.W. Thomas

Winterthur Museum and Gardens, Winterthur, Delaware.

A garden gem, with fragrant lemon yellow flowers. Steve Hutton, president of the Conard-Pyle Company, enthusiastically recommends this particular witch hazel with its long flower petals as 'a number of cuts above other selections of similar color.' Seeing a growing demand from his customers for plants with off-season interest, Hutton says 'Pallida' and the other witch hazels offer 'a warm burst of color at a time of year when everything else, including people, is grey." At the Morris Arboretum 'Pallida' began to bloom in 1988 on February 1, reached its peak during the third week of February, and finished blooming in mid-March.

'Pallida,' as with other witch hazels, can only be propagated by grafting, so it may be difficult to find in nurseries. It is ultimately a large shrub, growing to 15 feet tall. Landscape architect William H. Frederick has very effectively espaliered

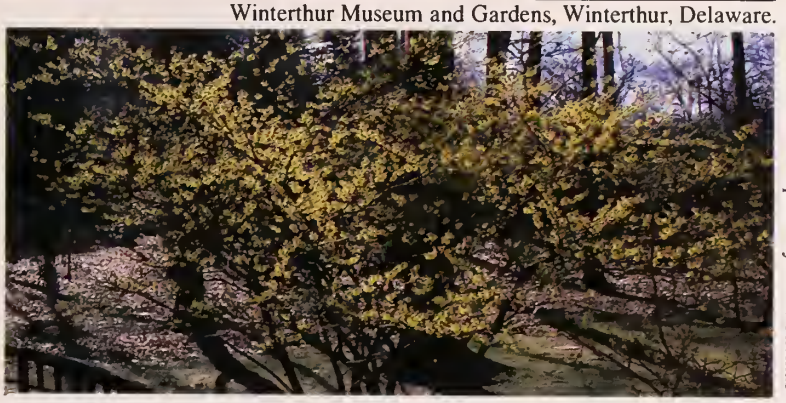

photo by R. W. Thomas

this cultivar on a wall at his Delaware home, where it captures the warmth of the winter sun. If you can't fit one in your garden, take a winter stroll through the Morris Arboretum (Chestnut Hill, Pa.), the Scott Arboretum (Swarthmore, Pa.), Winterthur Museum and Gardens (Wilmington, De.), or the National Arboretum (Washington, D.C.) and enjoy its fragrant display.

continued

Hydrangea quercifolia 'Snow Queen'

photo by Larry Albee

June blooms at Scott Arboretum of Swarthmore College in Swarthmore, Pa.

photo by Larry Albee

In high summer, when many shrubs look as exhausted as their owners, the oakleaf hydrangeas appear sleek and elegant, with deep green foliage and panicles of white flowers that remain showy for weeks in June and July. The old flower heads then turn a handsome russet, as a precursor to the plant's spectacular wine-colored fall foliage.

William Flemer, III, president of Princeton Nurseries, selected 'Snow Queen' from a block of oakleaf hydrangea seedlings, for its upright clusters of flowers. In addition to being more showy, Steve Hutton notes that 'Snow Queen' flowers are less likely to be shattered in summer thunder showers than those of the species.

'Snow Queen' will grow five to six feet tall at maturity with equal spread. Plants may appear awkward at the age of two to three years, when you're likely to find them in a nursery, but Hutton recommends that you overlook their young habit, for they quickly grow into an elegant plant. Phil Normandy, curator at Brookside Gardens, says oakleaf hydrangeas will grow in sun or shade, provided you give them good soil, neither too wet or bone dry. At the Scott Arboretum, a mass planting thrives on a sunny south-facing slope, putting on a spectacular flower show each summer.

Winners of 1988 Styer Award of Garden Merit were:

Hedera helix 'Buttercup'
Ilex serrata x *I. verticillata* 'Sparkleberry'
Itea virginica 'Henry's Garnet'
Magnolia acuminata x *M. heptapeta* 'Elizabeth'
Prunus incisa x *P. campanulata* 'Okame'
Zelkova serrata 'Green Vase'

Malus 'Donald Wyman'

photo by Larry Albee

(Above) October; (below) May. *Malus* 'Donald Wyman' at Scott Arboretum of Swarthmore College.

Crabapples

With hundreds of species and cultivars to choose from, gardeners are understandably confused when they want to select just one crabapple for their garden. All too often the most commonly available ones are also the most susceptible to diseases that defoliate trees: fireblight, scab and powdery mildew. Although beautiful in flower, poorer varieties may be leafless by mid-summer.

Thanks to the work of the late Professor Lester Nichols at Penn State and now the International Crabapple Society, many improved crabapples are coming to the forefront — ones with showy flowers and fruits that are resistant to disfiguring diseases. Now, by making the right choice, the gardener can not only have spring flowers and colorful autumn fruits, but also clean foliage on a crabapple all summer long.

The following two crabapples are recommended by the Styer Award evaluators:

For the gardener looking for a medium-sized, roundheaded, flowering tree with winter interest, the Scott Arboretum staff recommends *Malus* 'Donald Wyman'. As an outstanding, disease-resistant crab in the Arboretum's large collection, this tree has pink buds that open to single white flowers in mid- to late April. Its most striking quality is its bright red glossy fruits, which persist well into the winter, often into March. At the Arboretum the tree shows no evidence of powdery mildew or fireblight, and only slight evidence of scab, which is not significant enough to detract from fruit or foliage.

'Donald Wyman' is a fast-growing tree, the Arboretum's 17-year-old plant is 20 feet tall with an equal spread. This cultivar roots readily from summer cuttings, making grafting unnecessary. Cuttings grow quickly into saleable plants, and one-year-old rooted cuttings have flowered and fruited. As a street tree or specimen in the garden, 'Donald Wyman' is a fine landscape plant.

photo by Larry Albee

continued

Malus 'Jewelberry'

photo by Larry Albee

Malus 'Jewelberry' at Morris Arboretum in Chestnut Hill (Philadelphia), Pa. in May.

photo by Larry Albee

For those who want to enjoy the glory of a crabapple's spring bloom and fall fruits without devoting a large amount of garden space to it, the diminutive *Malus* 'Jewelberry' is a good choice. Specimens of this dwarf crab planted in 1973 at Penn State University are only six feet high.

From all reports 'Jewelberry' blooms well each year, even when young, with dark pink flower buds which open to pink and white (in cooler springs flowers are deeper in color). The glossy red fruits are also plentiful on plants from an early age.

Selected in 1962 by Robert Simpson, a notable nurseryman from Vincennes, Indiana, 'Jewelberry' is possibly a seedling of *M. sargentii,* another worthy crabapple. As an accent plant it can be very effective, and unlike the more commonly grown dwarf 'Red Jade', 'Jewelberry' is highly disease resistant.

Grateful thanks to Sally Reath for research. All six plants are hardy to Zone 5, except Deutzia which is hardy to Zone 6.

Jane Pepper is president of the Pennsylvania Horticultural Society; Judith Zuk is director of the Scott Arboretum of Swarthmore College.

HOW TO ENTER A PLANT FOR THE STYER AWARD

We hope you will let the Pennsylvania Horticultural Society know, and encourage your gardening friends to let the Pennsylvania Horticultural Society know about plants that merit a Styer Award. Brochures and entry forms can be obtained by calling the Society at (215) 625-8299.

The schedule for the program is as follows:

December 1st —
Deadline for entrants to submit suggestions with entry form and slides (3-5) to the Society.

January —
Evaluators review entries and select plants for further evaluation in the field during the upcoming months.

Summer —
Evaluators meet to make final award selections. Winners are announced in *Green Scene* at the beginning of the following year.

When making recommendations for the Styer Award, please remember the following specifications:

- for each entry, a minimum of three landscape-size plants must be accessible to evaluators in a botantical 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 ensure that plants are available so growers, retailers and mail order sources can obtain stock for distribution.

WHERE TO BUY STYER AWARD PLANTS

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 Styer Award program, the Society has attempted to make those involved in the production and sale of plants in the areas covered by *Green Scene* readers aware of our activities and we distribute information on the upcoming award winners to the trade.

We hope you will be able to find these plants in your garden centers. If you don't please ask for them and let the person who helps you know about the Styer Award program. If a retail operation would like our list of **WHOLESALE** sources for these plants please call the Society's Horticultural Hotline (215-922-8043 — Monday through Friday, between 9:30 and noon, January through November), or send your request with a stamped, self-addressed, business-size envelope to Styer Award, Pennsylvania Horticultural Society, 325 Walnut Street, Philadelphia, PA 19106. We **cannot** provide lists of **retail** sources.

EVALUATORS

Judith W. Zuk, *Chair*
Darrel Apps
Tom Dilatush
William H. Frederick, Jr.
Richard Hesselein
William Heyser
Steve Hutton
Richard W. Lighty
Paul Meyer
Philip Normandy
Sally Reath
Bradshaw Snipes
J. Franklin Styer
Charles Zafonte


Garden Townhouses
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illustration by Barbara Bruno

Jake loses his garden

In which a three-year-old boy discovers the pleasures of gardening with his neighbors, loses his garden and plots to get it back.

by Florence Ann Roberts

Ever since we lost our urban vegetable garden to construction crews, my three-year-old son Jake has been plotting to get it back. At first, his plans were simple: just tear down the new townhouses covering the site and reclaim the land. After I explained that the people building the houses needed them to live in, he came up with more generous solutions. His latest is a plan to take down the houses and rebuild them — on top of *our* house. At three, anything is possible.

Our garden wasn't large, just a 10 x 15 foot corner of a vacant city lot that had, piece by piece, been claimed by gardening neighbors. Some were reveling in the opportunity to move beyond rooftop and container gardening. Others, like me, were gardening in a full sun location for the first time in years. Getting started required several hours of dedicated pickaxing to tame the compacted and rubble-filled ground. Most of the gardeners poured incredible amounts of energy into their plots, and the results were obvious. One neighbor even grew a market crop, basil, for the local gourmet grocery.

Our own little corner was not so neatly manicured as some, nor so fruitful, but it was filled with things young children love to grow (read "pick and eat"): strawberries, carrots, tomatoes, green peppers and beans, as well as lettuce, parsley, chives, and basil. We'd also grown zucchini, cucumbers, eggplant, and to my astonishment, a few most delicious cantaloupes in the little plot. And our fellow gardeners were generous with their bounty. One seemed always to have a little extra lettuce, or strawberries, or raspberries to share with a young visitor.

The garden was a delight not only to my two young boys, but to neighboring children as well. We often formed a ragtag band, marching the half-block to the garden, towing our noisy red wagon, filled with buckets of water or compost, spades, baskets, or perhaps a child or two. The garden was an adventure, for it attracted things not usually seen by city youngsters. A post on the boundary of our garden supported a praying mantis egg case that rated a daily check by the children. And our parsley held the tiny shimmering eggs of a yellow swallowtail. Goldfinches visited some mornings, and during our evening walks through the garden the crickets gallantly tried to drown out the sounds of SEPTA on the adjoining street.

One of the things my son had some trouble with at first was the distinction I made between "garden dirt" and other dirt, such as that he found between the curb and the sidewalk. But he soon warmed up to the idea of digging at will — at least in the pathways.

Jake celebrated his first three birthdays along with the garden. His passion the first year was strawberries and our neighbor's raspberries. The second year he learned the

continued

Jake loses his garden

Some were reveling in the opportunity to move beyond the rooftop and container gardening. Others, like me, were gardening in a full sun location for the first time in years.

joys of fresh juicy tomatoes, and by last summer, he was becoming an expert at pulling carrots. (Now, weeds were another matter.)

On our final trips to the garden we took the wagon down empty and brought it home full. We dug up strawberry plants, old-fashioned iris and sedum that had bordered the garden, bits of a neighbor's hollyhock, and a parsley plant that would last till early December in a protected spot behind our house (the swallowtail caterpillars had long ago had their share) — all refugees from the bulldozers. The perennial flowers went to neighbors and our church courtyard. The strawberries, the children's favorite, were put in a "holding area" for the winter.

Jake says that after the new people live in their house for awhile they won't mind if he takes it down and builds a garden there. Then he could build their house again "later."

For this gardener, spring begins to beckon just about the time I pack away the last of our holiday decorations. Soon the seed catalogs will be in our mailbox, and we'll be sorely tempted. Blooms on the few potted zinnias that Jake started from seed in October are sweet echoes of our summer efforts. We need a garden, my children and I. There *is* a little space we might be able to turn into a garden . . . a little area behind our parking spot, the one filled with delphiniums and chrysanthemums sadly neglected since the children were born. It's only five by eight and gets just a bit more than half-day of full sun. But it's bounded by a fence for vertical growing, and we can run a hose from the house for watering. The kids won't have to go far to work in it, and maybe, just maybe, a swallowtail or two will find us.

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Florence Ann Roberts left a banking career a year ago to become an at-home mother. A gardener for 40 years and a mother for four, Florence Ann still remembers the sweet joy of harvesting the carrots from her first garden planted withthe help of her dad the summer she turned three. She gardens near the Philadelphia Art Museum in Center City.

Tips for Gardening with Toddlers and Preschoolers

- Little children have little patience. Include some plants that give quick results, such as radishes.
- Children love spectacular results — if you have room, grow some pumpkins or sunflowers.
- Kids love to measure. Grow some big seeded items, like beans, and let preschoolers measure and plant.
- Consumption is half the fun for our youngest gardeners (the other half is getting dirty). Give priority to your youngster's favorite.
- Plan to have some edibles maturing throughout the season.
- Prepare your child ahead of time with books and conversation. There are programs geared to young children at both The Academy of Natural Sciences and Schuylkill Valley Nature Center among others, which focus on plants and seeds. They might enjoy a visit to the Junior Flower Show where they would see horticultural projects created by children — preschoolers through high school — May 18-20 at the First Bank on Third Street between Chestnut and Walnut. (Call 625-8280 for more information.) Like their big brothers and sisters, the more young children learn about a subject, the more interested they become.
- Arrange your garden so there is some space for "anytime" digging.
- Realize that eager young pickers often harvest a bit early — pull out your green tomato recipes!
- Try to invest in some real tools that are your children's size. (I was able to find a set of light tools with interchangeable aluminum handles in three lengths that were perfect for supervised digging and raking by my young helpers.*)
- Finally, relax. Your garden won't be the neat and well-ordered spot you gardened solo in the past. But you'll be harvesting a lot more than vegetables from it.

*Children's Tools
The Animal Town Game Co.
P. O. Box 2002
Santa Barbara, CA 93120
No charge for catalog
(rake & shovel $33, does not include shipping, etc.)

Smith & Hawkins
25 Corte Madera
Mill Valley, CA 94941
(spade, fork & rake $69, does not include shipping, etc.)

Clematis 'Edo Murasaki' from Japan on the wall of the garage.

photo by Frederick van Wetering

A GARDEN OF BROTHERLY LOVE YIELDS REMARKABLE RESULTS

by Adra Fairman

A GARDEN OF BROTHERLY LOVE

photo by Frederick van Wetering

Their lilies, yellow, pink and lavender, are literally seven feet tall and delphiniums in colors ranging from white through pale to royal blue, are of equal height. A rose, explained to a visitor as "just some ordinary hybrid tea" is also pressing nine feet. All of this is the work of two brothers, David and John Jacobus, who love to share their Princeton (N.J.) area garden with friends. A large Fourth of July weekend "lily party" and tours open to the public to benefit the Stony Brook-Millstone Watershed Association are highlights of the season.

Not only is this garden magnificent in the enormous and unusual height of its plants, but it is also planned with an eye to pleasing color contrasts. Blue, white, yellow, pink, lavender, even magenta and red seem to blend well together. Heights, too, have been planned to vary from the alyssum groundcover through dwarf nicotiana and coralbells to the tall lilies and delphinium previously mentioned. Unusual plants such as the West Coast evening primrose *(Oenothera acaulis)* and a fringed gentian in bloom in July make it a fascinating and absorbing tour for any dedicated gardener.

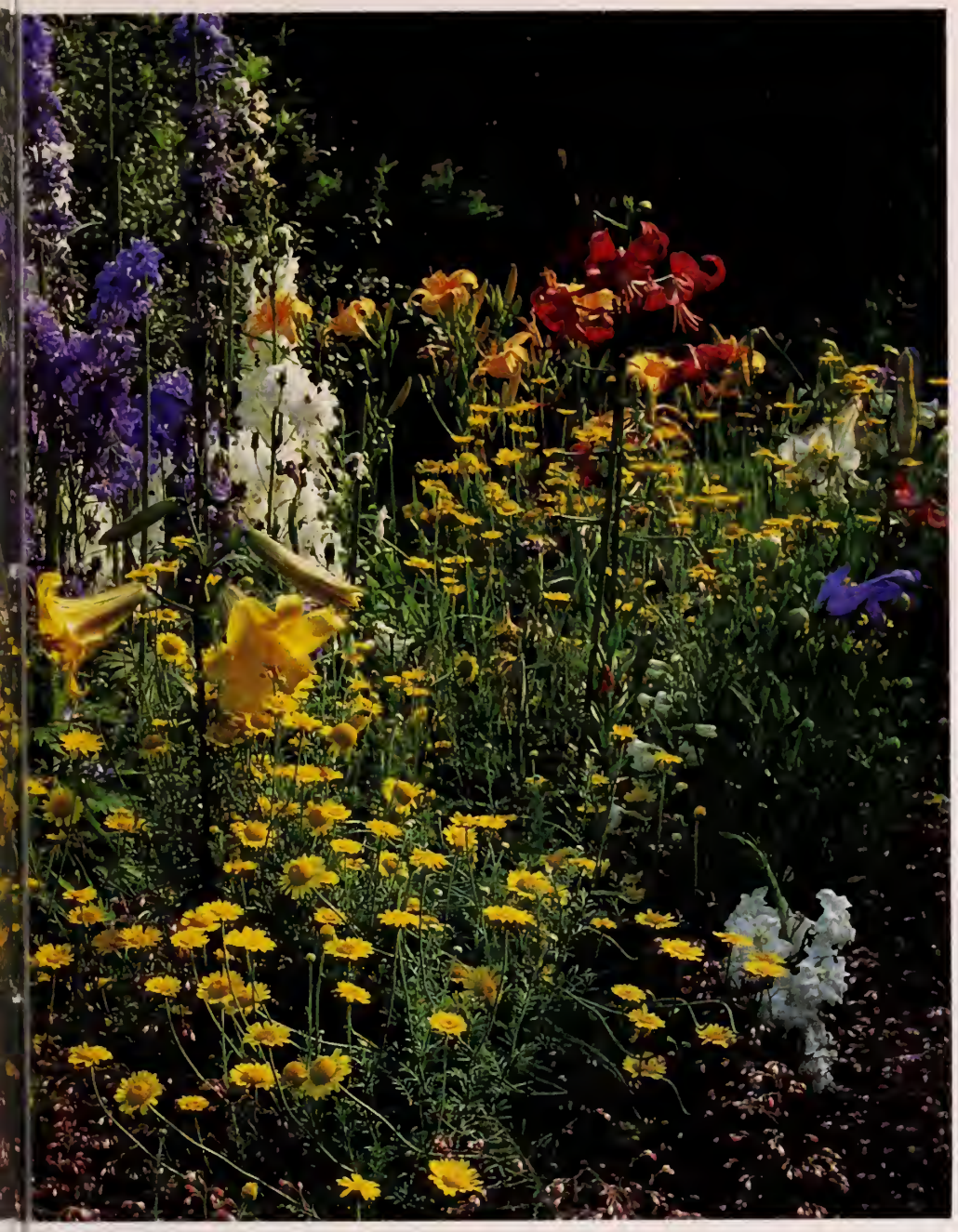
The creators of this grand display must be doing something right to achieve these dramatic results. The question is are they doing something new and different? The answer seems to be that they do indeed have a novel way in which they pursue some of the problems of gardening.

The reason they give for their somewhat unorthodox approach is that they do not have time to garden in the usual way. David is a busy physician and John, a New York insurance company attorney, joins David and Claire at their home in the country only on the weekends, arriving on Friday nights to remain through Sunday. Vigorous workouts in the garden are the way the two brothers escape the tensions of their high pressure work week. Since their time is limited, they set about their chores in a way that is both efficient and scientific.

Successful gardening, especially when it produces such remarkable results, deals with 1) soil, 2) water, 3) fertilizer, 4) exposure i.e. sun/shade, 5) choice of plants. We all confront these factors, and we handle each individually as best we can. The way in which the first two, soil and water, are managed by these unusually thoughtful and knowledgeable gardeners is undoubtedly the secret of their unique accomplishments.

soil

Their garden started out 15 years ago with the usual heavy, reddish clay that



White and purple delphinium, red lilies ('Red Velvet'), anthemis *(Anthemis kelwayi),* all faced down with coral bells *(Heuchera).*

abounds in the Princeton area. During these years they have made constant and rather radical changes. The first thing they did was to go to the town leaf dump where anyone is welcome to cart away the well-rotted leaf mold and bring it back to their garden by the truckload. Railroad ties, two or three deep, create raised beds into which they dump the humus, adding a little sharp builder's sand for additional stability. They have found that the leaf mold continues to break down quite rapidly, so lately they have learned to add a little peat moss as well.

Their next modification is more strenuous than dumping leaf mold on bare ground behind railroad ties. To prepare for the lily bulbs and delphinium, which are planted out in a main border in full sun and admittedly need lots of pampering, holes are dug to a depth of about three feet in this clay-like bed. The soil is removed entirely, and each hole filled with a mix of leaf mold, peat and sand.

water

Obviously, such a light, friable mixture will drain very rapidly, so the gardeners need the second factor — water. They've rigged an elaborate, yet inexpensive system of water pipes along the edges of all the beds. The plastic piping (with nipples that emit a fine spray every two feet) is light and can be lifted aside when the grass is mowed. It is left out all winter and is practically indestructible. A timer inside the house activates the system on whatever schedule is deemed necessary, and in dry periods that means every night. Though it may seem so, this use of water is not extravagant. The sprinkler runs serially for only a few minutes (**maximum** of 10 minutes in each spot), and the water is directed exactly where it is wanted. In a dry season they will water more than once a day. Contrary to the usual wisdom that night watering induces rot or mildew, this does not harm the plants as the nipples are placed so the water never hits stems or leaves. Only the soil is moistened.

Frequent watering does leach out fertilizer, which is compensated for by using an unusual formula: 10-30-20. David and John attribute the height of the delphinium and lilies to the high phosphorus content of this fertilizer.

sun and shade

While the main bed, where the lilies and delphiniums grow, is in full sun, the borders of this garden are in moderate shade cast by two old, gnarled apple trees. Among the accompanying plants in the main bed are phlox, campanula, daylilies, stokesia, feverfew, cranesbill geranium, platycodon, liatris, aquilegia, alyssum and geum. The more shaded borders, which surround the lawn, feature astilbe, cimicifuga, climbing roses and clematis. David and John are interested in rare plants, and such exotics as wall bellflower *(Campanula portenschlagiana)* and wood anemone *(Anemone sylvestris)* appear here.

plants

The delphinium is grown from seed received as a bonus from membership in the British Delphinium Society. They admit that growing lilies from seed obtained from the North American Lily Society is "fun," but they get better results with seeds of good, named varieties such as 'Black Beauty' obtained from reliable sources. Most of the other plants are also from seed grown under lights in their basement, started in January and planted out in May.

David and John Jacobus have achieved a degree of perfection rare in a town renowned for its remarkable gardens. At their party in July, even the most jaded gardener is awestruck by the intial view of the garden from the terrace of the house. The prodigious height of the flowers and the splendor of the show is inspiring, all accomplished by hard work, but principally by manipulating those two essential elements, soil and water.

continued

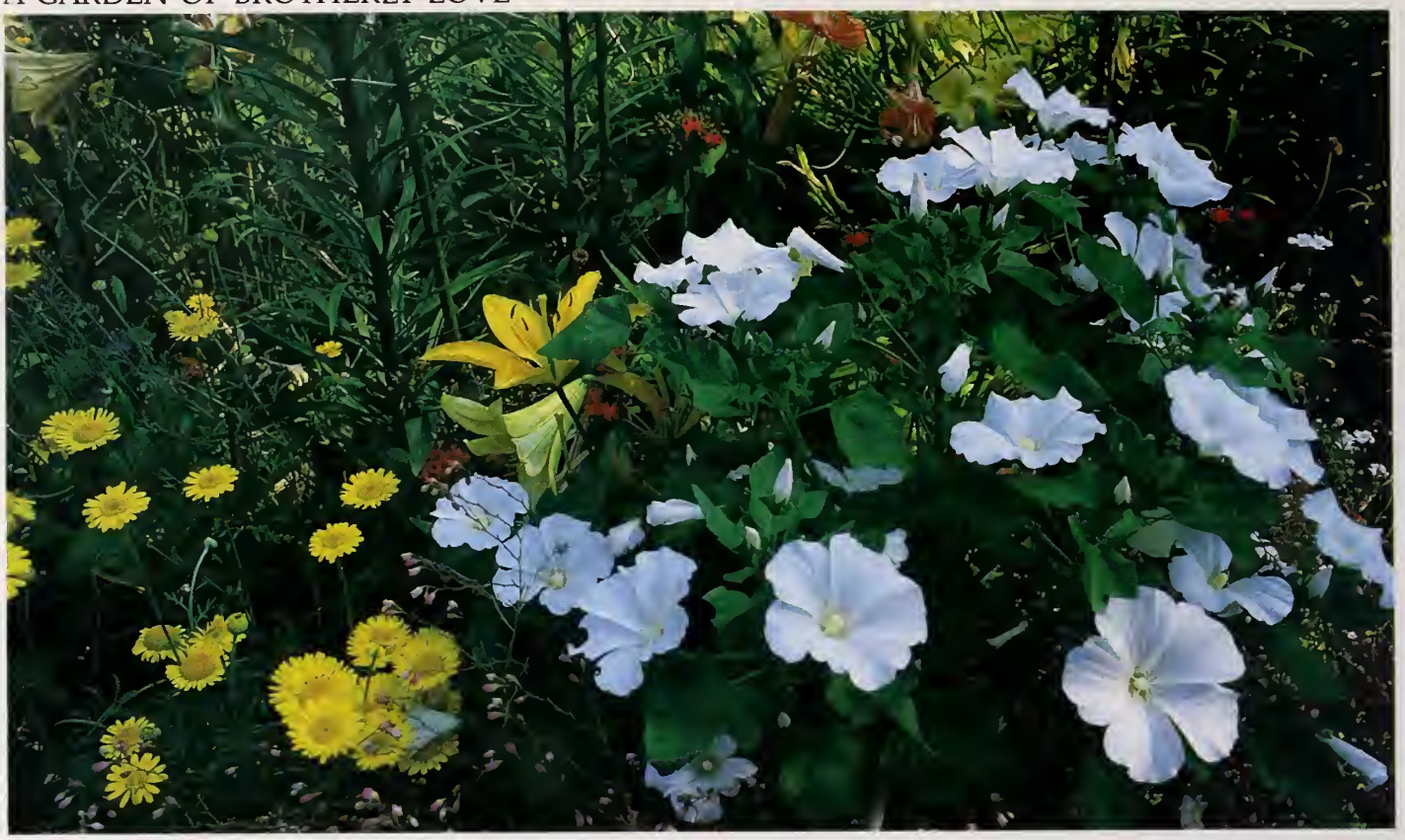
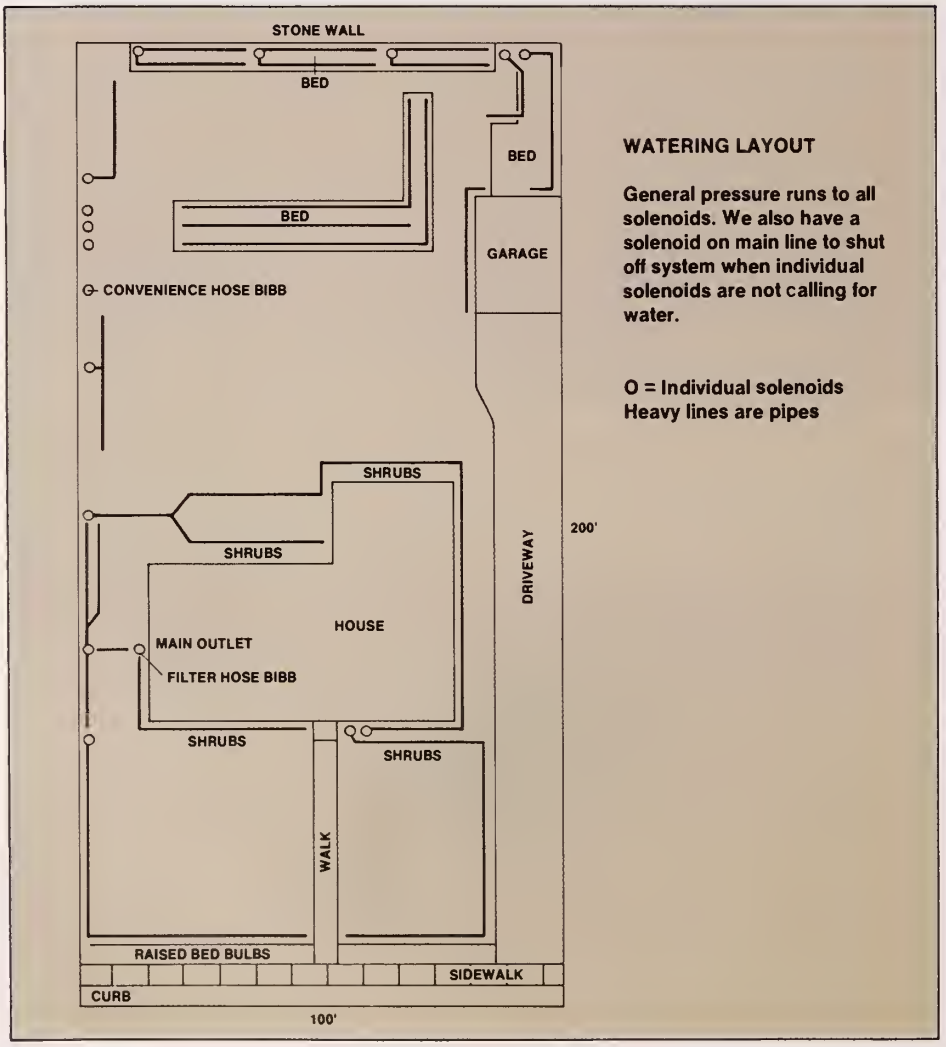


photo by Frederick van Wetering

Left to right, Anthemis *(kelwayi)*, coral bells *(Heuchera)*, lilies ('Red Velvet' and yellow 'Connecticut King'), white tree-mallow *(Lavatera trimestris)* from South Africa.



The Watering System

A sophisticated but inexpensive watering system is essential to this garden. All beds are edged with one-inch polyethylene pipe fed through a filter from the house line. Spaced along the pipe, twelve solenoid valves control groups of tiny spray nozzles. Each nozzle throws a fine spray in a semi-circle with a radius of 24 to 30 inches within its bed. Each solenoid valve, controlled by a timer in the house, activates its group of nozzles in sequence for a pre-set watering period lasting from three to ten minutes. The water is directed only to the beds, so the system is economical and does not waste water. The valves are taken in in the winter.

Supplies: obtained from
E.C. Geiger
Box 285 Rt. 63
Harleysville, Pa. 19438-0332
One-inch polyethylene pipe: 17 cents/foot
Solenoid valves: $18/each
Timer: $217
Bell wire or multi-strand telephone wire
Teflon tape
Spray nozzles: $15/hundred
Main line filter from local plumbing supply

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Adra Fairman is president of the Board of Trustees of Rockingham Association, Rocky Hill, New Jersey. She is also president of the New Jersey Daffodil Society and an accredited Garden Club of America Horticultural judge.

SMALL SEEDLINGS THRIVE IN BUBBLES INDOORS AND OUTDOORS

by Betty Barr Mackey

photo by Ed Mackey

My smallest seedlings took care of themselves last spring. Inside crystal-clear bubbles of plastic, they were safe from heavy rain, insects, dehydration, light frost and, worst of all, gardener neglect.

My intentions are better than my ability to follow through with more difficult seeds. I do well for a while, then something happens. A trip, a deadline, an illness in the family, a party: something pressing and distracting makes me miss watering for a day or two. Plants from the smallest seeds are the most vulnerable, because they take longer to germinate and reach a "safe" size. They dry out and die, and weeks or months of work go right onto the compost heap.

This year I beat the problem with tightly sealed plastic bubbles. You know the kind I mean, those rounded, crystal-clear containers for salad bar orders. (I get mine at the local Acme.) I also use plastic garment boxes, growing systems of six-packs in a tray, fitted with a clear plastic cover, and anything else I can find that will make a watertight mini-greenhouse or coldframe.

For tiny seedlings that will be grown outside, it is especially important that the small seeds in a ightly shut to keep out rain. A heavy rain can break, flatten, or swamp delicate seedlings. In uncovered pots or in ground with good drainage, plantlets from larger seeds may go through the same storm unharmed. Growing tiny ones in bubbles gives them the same outdoor light, but more protection from the elements.

The bubbles create a sealed system, a kind of terrarium.

Indoors a watertight cover is less crucial. Here, the cover serves to hold in humidity, not keep the elements out. But that important protection from gardener neglect is the same.

how to start

You will need seeds, sterile potting or seed-starting soil, plastic or plastic-covered containers, plant labels and an indelible marking pen, and a mild fungicide. The greatest danger to seeds inside sealed containers is damping off fungus that causes wilt at the soil line. That is why soil should be sterile, not too wet, and treated with fungicide. I use a diluted solution of Rootone (which contains fungicide) about a half-teaspoon to a quart of water, to moisten whatever potting soil I have on hand.

Wet the soil to a "chocolate cake" consistency — moist, not soggy. Place it into the containers. For typical container (5½ inches deep and 6½ inches wide), fill soil two and a half inches deep. The larger the seed, the deeper the soil should be.

If seed is extremely small — smaller than poppy seeds on rolls, for example — mix it with a spoonful of dry sand and sprinkle it evenly over the soil. Don't use too many seeds, because in these sealed conditions nearly all of them will germinate. Plantlets should be half an inch apart or so. Do not cover tiniest seed (begonia, for example) at all. Seed that is somewhat larger, statice, impatiens, viola, basil, rosemary, etc., may be barely covered with an eighth of an inch of soil, no more. The larger the seed, the more it can be covered. Mist the top of the soil lightly after planting.

According to directions, decide whether to grow your seed indoors or out. In early spring when there is a strong chance of light frost, it is possible to germinate seeds of perennials and hardy annuals indoors

continued

SMALL SEEDLINGS THRIVE IN BUBBLES

photo by Ed Mackey

and then set the container outside when seedlings are showing. A few examples are ageratum, petunia, shirley poppies, statice, babysbreath, viola, candytuft, aubrieta, daisies, broccoli, and lettuce. Plants that need more warmth, like salvia, peppers and zinnias, can be grown indoors longer, then put out (still in bubbles) two weeks before the frost-free date, or later, when nights are warmer. The bubble will be enough to shield them from light frost if it should occur.

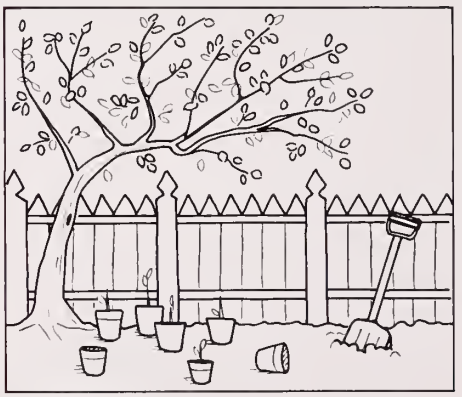
Carefully label the pots as soon as they are planted. I write the planting date, the seed company name, and the variety name on wooden or plastic labels and stick them in soil inside the containers.

The bubbles create a sealed system, a kind of terrarium. Soil moisture must be just right. If your soil is too wet, leave the cover off for a day or two. If it is too dry when moisture condenses on the lid, add a bit more.

when plants appear

As soon as some of the seeds come up, put their bubble in a place where light is strong enough to cast a sharp shadow. Indoors grow seedlings a few inches below fluorescent light fixtures or in bright sunlight from windows in February or March; keep a careful eye on them so they don't cook. Outdoor light is even better. In late winter and throughout spring, most seedlings can take some solar buildup of heat during the day, the condensation on top of the container will help limit it. But outdoors in late spring or summer, heat buildup will be too great unless you remove covers during the day and replace them at night, or keep the containers in partial shade.

If seedlings show signs of damping off,



removing the lid and exposing them to direct sunlight for several hours a day, for a day or two, will probably cure them. But don't forget about them or they'll dehydrate while taking the radiation cure.

When seedlings are up, fertilize sparingly with a gentle liquid (in a home test of several I found Schultz-Instant Liquid Plant Food 10-15-10 did best). Or sprinkle beads of slow-release fertilizer such as Osmocote among them. Most sterile potting mixes contain little fertilizer. Check the seedlings from time to time to see that they are healthy and have the right amount of water. That's about it. Nature does the rest.

When seedlings are large enough to handle, separate them and plant them in the garden or in individual pots. The best tool for pricking out tiny seedlings is an ordinary pencil — use the pointed end. Make holes for the plants, then remove them from their old containers, one by one. Dig one, plant one — immediately. Hold by the leaves, not the easily crushed stem. Drop the roots into the hole, then press soil against them, not too hard. Stems may be covered up to the bottom leaves.

When you are finished with the bubbles wash them out with a bit of chlorine bleach in soapy water, rinse, and dry. You can also run them through the dishwasher. Then they are ready to nurture a new crop.

This system of growing seeds is good, but not as good as greenhouse conditions because of lack of drainage and air circulation. But if you have times when your own neglect of seedlings is their worst enemy, try babying them in plastic bubbles.

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Betty Bar Mackey's articles have appeared in a number of newspapers and magazines including *Organic Gardening* and *Weekend Gardener,* and she has articles pending in *Horticulture* and *Flower & Garden.* While in Florida she wrote a booklet entitled *A Cutting Garden for Florida* and was invited to put in a flower border at Leu Gardens in Orlando.

photo by Molly Adams

Molly Adam's vegetable garden, one of many similar enclosures necessary throughout New Jersey. Wire mesh is five feet high; single strands of non-electrified wire go up to meet top of 8-foot posts.

BAMBI GO HOME

In many rural areas of New Jersey, gardening has become almost impossible. The New Jersey white tail deer herd, estimated at 160,000 by the New Jersey Division of Fish and Game and at close to 300,000 by angry farmers, is forcing homeowners to barricade their gardens behind fences, or give up gardening entirely. Deer fencing has replaced sports and politics as the favorite topic of conversation at cocktail parties.

by Helen Tower Brunet

Even the kids have gotten the message: last summer, at the Fourth of July parade in Mendham Township, the winning float showed a contented papier mâche' deer eating his way through a flower garden. The banner message read "Bambi Go Home!"

A mature deer eats between five and seven pounds of food a day; when it browses through open land it eats a variety of herbaceous material, but when it gets into your garden it gets considerably more selective, for example, only daylily shoots and tulip buds one night in April; all of the rose buds in June and in July, hosta flowers, leaves and stalks.

Until recently, deer damage to ornamental shrubs has been a problem for the homeowner only in winter, when hungry deer eat leaves and branches and bucks injure trees by rubbing their antlers against the bark, now it is almost as bad in summer. Fencing is becoming a necessity year round, forcing gardeners to reduce the size of their gardens to what they are willing to fence in. In many areas of the state where a 5-acre lot is the average, gardens are smaller than those in the suburbs, and surrounded by fences more suitable to the inner city.

Mendham Township has one of the worst deer problems in the state, but complaining doesn't bring much sympathy from folks in more urban areas. Of the township's 11,264 acres, 23 percent are in public lands, which include substantial parts of the 1,300-acre Jockey Hollow National Park and the adjoining 1,000-acre Lewis Morris County Park.

The five-acre property we purchased for our home in 1972 adjoins both parks, and has a swampy area,, with a small stream. Across the road are 60 acres of open fields, so our deer problem is probably among the worst in the area.

Our strategies for coping with deer have changed over the last 16 years as the deer population has increased. To a certain extent, our tactics mirror the strategies of many of our neighbors and gardeners in other parts of the state.

memories like elephants

We built our house, 16 years ago, next to a deer trail. Deer, we've found, are truly creatures of habit with memories at least as

continued

KINDS OF FENCING MOST COMMONLY USED IN NEW JERSEY

electric fences

The Penn State Electric Fence, recommended by the NJ Division of Fish and Game, is six strands of high-tensile wire totaling 56 inches in height. Posts are set 60 feet apart; wire (provided free to New Jersey farmers by the State) costs about $65 a roll of 4,000 feet. It can be powered by a solar charger, about $230, which will run 25 miles of wire. Pressure-treated wooden posts cost $20 each. For more information, (201) 735-8793, Division of Fish and Game, John Piccolo, supervisor of the Wildlife Control Unit.

Electric Seven-Wire Slant Fence. Seven high-tensile wires mounted on hardwood posts, set at a 45-degree slant, with a total height at the back of 48 inches. Cost for materials is $1.00 per foot for five acres. Distributed by Brookside Industries, Tunbridge, VT 05077; a local representative is Bob Smith, (201) 722-4598.

Techfence. Seven-strand upright electric. Total height is 58 inches. $3-4 per linear foot, plus $500 per gate; 6,000 volts runs off house current; Techfence says this is equal to running 25-watt bulb. One homeowner spent $8,000 to fence in two acres with five gates. Techfence, 64 So. Main St., P.O. Box A, Marlboro, New Jersey 07746; (201) 462-6101.

non-electric fences

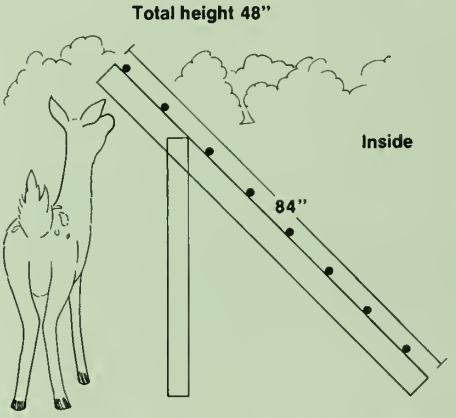
Galvanized wire mesh, 5 feet high is $43 per 50-foot roll; 6 feet high is $55 per 50-foot roll; 8-foot-high steel posts, about $5 each.

Single-strand wire non-electric: $60 per 50-feet razor ribbon. Barbed wire: $48 for 50-feet galvanized; $150 per 50-feet aluminum.

Chain-link fence, 8 feet high, runs about $2.65 per linear foot including section posts. Corner posts are $90 each; gates run $90 for 4-foot opening; $150 for double opening for driveway.

Custom-made wood fencing varies considerably. The Willemsen fence, pictured, was made by Foerster Landscapers (201-895-2444), ran $16 per linear foot, plus $300 for the 10-foot gate. Fence is eight feet high on three sides, seven feet in front. Constructed of 2x2-inch pressurized spindles with eased edges, mounted with aluminum screws on 4x4 posts supported by 2x4 rails.

Stockade fencing costs about $58 for a panel 8 feet high and 8 feet long, 10-foot cedar posts are $11 each; $35 for panels 6 feet high and 8 feet long, with 6-foot cedar posts costing about $5 each.



The seven wire slant fence confuses deer, whose depth perception is poor. Developed by Jay B. McAninch, wildlife biologist of the Cary Arboretum in Millbrook, NY.

how to select a fence

While there are no absolutes in fencing out deer, some generally accepted beliefs can help one decide on the best kind of fencing.

1. When a deer sees a barrier, he tries first to go through or under, then to jump over. This is the theory of the electric fence — that the deer will get zapped and leave it alone rather than realize he can jump it. Electric fences don't form an absolute barrier, but they help re-educate deer by making a particular feeding ground uncomfortable. But sometimes deer will decide the zap is worth it — one farmer notes that deer in his area will not go through the fence in wet weather when the shock is greatest, but will climb through in dry weather.

2. Deer have poor depth perception; the slant fence capitalizes on this problem (see illustration). Double fencing can be effective as well (e.g. running two parallel rows of fencing with five feet of open ground in between).

3. A deer will not jump into an area if he can't see where he will land. That makes solid stockade fencing, 8 feet high and set on level ground, jump proof. The deer will try instead to go under it or if he finds a weak section he'll try to break through or push a section down.

4. Deer do not normally jump when they are feeding, but rather when they are running; they browse with heads down, until they reach a barrier. If they can't easily go through or under the barrier, they will sometimes move off in another direction rather than jump. For this reason, low wire mesh fencing (four or five feet high) sometimes works in summer in areas with low deer pressure because it can re-route browsing deer. But low barriers can't be counted upon, and would never keep deer out of a highly desirable feeding ground such as an apple orchard.

5. Winter fencing has to be much more efficient than summer fencing; there is less fodder available and a snow of more than 6 inches allows deer to jump higher fences.

6. Some areas are almost impossible to keep deer out of, for example a swampy area or a pond or stream.

7. Experts rate the slant fence the most effective of the electric types, but those we talked to agree the most effective of all is 8-10 feet of chain link, providing the ground is relatively flat. If the land goes up hill outside the fence, additional height has to be added in that section.

8. You can't just fence and forget it — constant vigilance is necessary especially in a large area that is fenced in.

9. Keep gates closed at all times. If a deer enters by an open gate and is trapped, he will ram a solid fence he can't jump; in the case of an electric fence, he will jump out, and then discover than jumping in might work just as well.

long as elephants. Their late afternoon migration had for years brought them along the same route beside the area that became our driveway and they stuck to it. A new home, with a lawn and ornamental shrubs just improved the habitat.

Like many of our neighbors, we encased all of the foundation planting in 5-foot-high wire supported by sturdy stakes, all winter. Specimen shrubs around the garden — rhododendron, holly, viburnum, and laurel were enclosed in individual cylindrical wire cages. Even prickly juniper and pyracantha needed protection. The wire went up in October and came down in April, and still does.

But in those days, shrubs and flower borders were safe in summer, although most vegetable gardens in the area had to be fenced in. In our case, the deer were generally content with their woodland habitat, separated from our main perennial border only by a post-and-rail fence. If by chance the deer forgot the summer rules and came on the lawn in summer, they were chased away by our dog Sanka, a shepherd-dane mixed breed.

In those early years after moving to the country, we, like many other ex-suburbanites, thought there was nothing wrong with a dog chasing deer, but we learned otherwise. Once when Sanka chased the deer into the woods she came back badly gouged in the side, possibly from a buck's antlers; another time the skin on her right front leg lay open in a flap, probably she had torn it on barbed wire while in pursuit. But trying to re-train a dog who has been allowed to chase deer is next to impossible. When Sanka died, from intestinal parasites, which the veterinarian thinks came from eating a deer carcass in the woods, we vowed to train our next dog not to chase the deer. Posie, our shepherd-retriever mixed breed, has been trained since she was a puppy to never chase the deer. The deer know this and are much boider than they used to be.

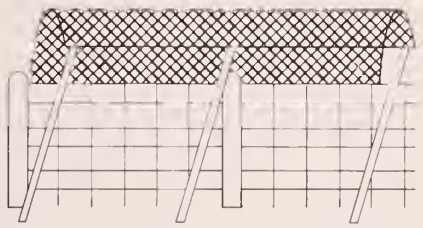
But even without a dog on patrol, for the first five years in our new home, the summer deer pressure was low enough that we were able to grow perennials, annuals and vegetables with little damage. Then gradually over the years, flowers began to disappear. Rose buds never had a chance to open; the new shoots of daylilies in spring looked as if they had been run over by the lawn mower; phlox completely vanished.

Within five years it became so difficult to grow our choice of perennials in that border that we decided to grow only daffodils in spring, and in summer, tomatoes in wire cages, hydrangea, artemesia, feverfew and astilbe, which the deer left alone.

We moved the more vulnerable perennials to a new bed beside the front walk. To protect this area from deer browsing at night, I soaked twine in creosote and strung it around the garden supported by stakes. As long as we stayed home, this worked. Leaving the house for a few weeks of vacation was fatal.

Two years ago we decided to enlarge the lower border and go back to growing what we wanted in the lower perennial border. I asked for deer fencing for my birthday and

Chicken wire attached to top of post & rail



sat down with mail order catalogs, checking everything I liked regardless of whether or not it was "deer proof."

All Easter weekend that year my husband, Stuart, and two grown sons, home from Boston for the weekend, worked installing six-foot-high welded mesh steel fencing, anchored at ten-foot intervals either by steel posts or trees. In two places they overlapped the wire to create gates. When finished, it provided a barrier on two sides of the garden area and connected to the post-and-rail fence already behind the perennial border, which formed most of the third side. The house partially blocked the fourth side.

The six-foot-high wire fence in the woods worked fairly well, but the deer jumped the five-foot-high post-and-rail section regularly.

Worse still, does led fawns in through the openings by the house. When we appeared, the doe would jump the post-and-rail fence, leaving the fawn trapped. The little creature would then start tearing back and forth along the fence bleating in panic, alternately trying to jump it or push it down by hurling its weight against it. The first time it happened, I tried to herd the fawn back toward the opening by the house. But herding a deer, I found, is simply impossible. They dart back and forth, then try all the harder to ram the fence. The only solution turned out to be to open the gates on either side of the perennial border and go inside the house and wait.

Once I watched through the study window while a small herd waited for a trapped fawn, moving back and forth along the fence while the young one bleated for help. Finally it found the opening and danced off to join the herd, tail held high and all terror forgotten.

The first year we never did solve the problem of the deer coming in beside the house, but we raised the height of the post-and-rail fence by adding chicken wire to the top rail and allowing it to loop back in a high roll, which we anchored on the far side with tall tomato stakes. See drawing.

The fencing that first season, although not perfect, had made a great difference in the garden. In a wooded area, native jack-in-the-pulpit appeared everywhere. In the perennial garden, white phlox, one of my favorites, came back and so did a fine stand of yellow daylilies that had never been allowed to bloom. New additions, including thalictrum, asters, rudbeckia, stokesia,

continued

photo by Molly Adams

Chris Willemsen's custom-made wooden fence: 7 feet high in front, 8 feet high on other three sides.

photo by Molly Adams

Techfence version of upright electric fence and gate.

digitalis and platycodon, all survived. Only the malva was never allowed to keep its leaves.

stepping on it

This past spring we continued the fence all the way around the property to the edges of the driveway. We didn't want to install a gate over the driveway that had to be opened to bring the car into the parking area. Instead, Stu laid four sections of 5-foot-wide heavy-gauge wire fencing side by side, slightly overlapped, flat across the gravel driveway, anchoring them at the sides with rocks. The theory being that the deer wouldn't like walking across 16 feet of wire to get into the garden. As far as we know, this has worked.

Our final strategy was to use the deer repellent Hinder, which I diluted and lightly sprinkled on the perennials about every three weeks. The garden was glorious last summer and even the malva flowered, but we weren't sure which was most effective, the Hinder or the fence. We got our answer in late July. We had a nighttime raid; we found hoof marks on the ground where the deer had jumped a section of 6-foot-high fence. But the only plants that were eaten were houseplants under the deck that I hadn't doused with Hinder.

We know our fence, at 6 feet, is only a deterrent, but combined with Hinder it works in summer for now. In winter, of course, we go right back to wire enclosures on the shrubs. In our area, the only alternative to individual shrub fencing in winter (no repellent that we know of has proved effective during the winter months) is permanent, year-round fencing, either wire mesh, chain link or wood at least 8 feet high, or electric fence.

No matter how inconvenient and costly, deer damage to home gardens is minor compared to losses suffered by New Jersey farmers. The half-million acres under the state's Farm Assessment provide a cornucopia of fruits, vegetables, grains and ornamentals — a fraction of which can be harvested because of the numbers of deer.

Helen Heinrich, a landscape architect who serves the New Jersey Farm Bureau as a consultant on the deer population, says that farmers have had to go to fencing to survive. "All farmers are affected by deer damage, but it's farmers growing hay and grain field crops who are hit hardest. Because hay and grain crops have a lower market value than fruits and vegetables, and because these crops are often grown on rented land, the fields are not usually fenced in and losses can be devastating."

Kurt Alstede, New Jersey's 1987 Young Farmer of the Year, estimates a loss of $30,000 a year from deer damage on his 500-acre farm in Chester. Last spring deer destroyed an entire field of sweet corn by eating the tassels, and the following fall they ate 4 acres of pumpkins down to the ground.

Alstede has since fenced in one 30-acre field with electric fencing and is pleased with the results, but he points out: "Fencing that acreage cost $8,000 in labor and materials so I can hardly do the rest any time soon."

Mendham Township nurseryman Steve George estimates his yearly damages at $20,000 from destruction of his pumpkin crop and injury to his Christmas tree farm of pine trees and Frazier firs.

control through hunting

Fencing, homeowners and farmers agree, is not a remedy for the problem, because fences do nothing to control the deer population which is skyrocketing.

Fencing and hunting have to go hand in hand. "Putting up a fence and not allowing hunting on open private land is just sticking you head in the sand," says Heinrich. Many homeowners, however, are reluctant to allow hunters on their land.

Dona Schneider, a member of the Princeton Township Environmental Commission, has spearheaded a campaign in Princeton Township to open more private land to bow hunting. Working with the Division of Fish and Game, Schneider and the environmental commission maintain a list of bow hunters whom residents may call upon to hunt their land. "There is no minimum acreage required for bow hunting," Schneider points out, "but often several property owners get together and pool their land for hunting." The plan has worked well for several years, and road kills (which claim over 5,000 deer statewide each year), were down in the Princeton area, an indication of a smaller herd.

Last spring deer destroyed an entire field of sweet corn by eating the tassels, and the following fall they ate four acres of pumpkins down to the ground.

In 1987, 44,000 deer were killed during hunting season. In 1988, the Division of Fish and Game increased the number of hunting days and the number of days on which doe can be taken in certain deer management zones.

It's essential to reduce the doe population," says Steve George, who estimates the deer herd at close to 300,000, but he points out that hunters prefer buck to doe because of the antlers for the wall of the trophy room.

Heinrich says that's not the only reason hunters are reluctant to take doe: "There is a Bambi syndrome that affects hunters, too. Because many doe born the previous spring are pregnant by the following fall hunting season, hunters are reluctant to shoot them." She estimates the present herd at 200,000, and notes that "where there is no hunting, and there are no natural predators, the deer herd can increase 35-40 percent per year... with good fodder, a mature doe will produce two or three fawn a year."

No one wants to see the white tail deer disappear. The graceful animals and their appealing young are a valuable natural resource and a constant source of aesthetic pleasure. But for man and deer to co-exist in New Jersey, and in many parts of the northeast, and to save thousands of deer from the horrible deaths they suffer on the highway, we have to do much more than simply mend our fences.

•

Helen Tower Brunet writes the weekly column "The Weekend Gardener" for *The Star-Ledger* (Newark, NJ) and free-lance articles on gardening for other publications.

ARRIVALS & DEPARTURES

by Susan W. Plimpton

photo by Susan W. Plimpton

The author's rose garden viewed from the terrace off the living room.

Many lovely houses lack one of the most important attributes of good landscape design: gracious and easy access. This omission is unfortunate because a pleasant arrival can set the tone for the experience within. A house without thought for comfortable parking and clear indication of how to reach the front door can send a message: somebody didn't care enough.

A visitor's experience begins with the driveway, and the driveway itself can be interesting. The driveway on a larger property should feature a gently curving road from which the house gradually becomes visible. Correctly graded, an attractive approach creates a relaxed and peaceful atmosphere. On smaller lots where a straight driveway is mandated by lack of space, careful design is essential. Divert visiting cars away from the garage doors by swinging vehicles into an attractive parking court. If lot dimensions are adequate it is sometimes possible to close off the yawning garage doors and to relocate them to the side of the garage. The feasibility of this course of action will be determined by local ordinances regarding side setback lines as well as existing garage measurements.

At least he will know that he is not being pushed out the door, down the steps and into the darkness of night.

Parking should be big enough to provide sufficient room for the timid driver and easy backing for simple exits. Parking areas with a clearly defined bumper strip are much kinder than circle parking, which creates an inefficient parking pattern, especially awkward for anyone who wants to leave early.

Builders surmise that the interior will carry the day leaving the entrance route to the visitor's imagination. Unhappily the guest often chooses the back door and is treated to a preview of dinner much to the hosts' chagrin.

the front walk

The front walk should be obvious immediately. Provide a landing so that guests aren't forced to alight on to a muddy strip of lawn. Front walks should be at least five feet wide so that two people can walk abreast. Subtle path lighting is friendly and implies that the homeowner cares about guests' safety. Correctly planned lighting adds a pretty and practical note to the surroundings. Never line a front walk with lights staged to resemble an airport runway.

If steps are needed they should have the correct riser/tread proportion for outdoor steps: twice the riser plus the tread should equal 26 to 27 inches. Following this formula avoids steep steps that force people to hurry, creating an uneasy footing. Handrails are a thoughtful addition and will be especially appreciated by older people. A

continued

generous landing outside the door will make guests comfortable while waiting for the door to be opened. A spacious landing will also make the departing guest more secure. At least he will know that he is not being pushed out the door, down the steps and into the darkness of night.

Adding an architecturally suited overhang above the front door can emphasize the entrance and provide shelter on rainy nights.

the back door

Back doors need attention too. This is the door used most frequently by families with small children. It is the preferred entrance for workers and home deliveries. The service walk should be friendly, safe and smaller in scale than the front entry. While the front entrance may feature a curved path, back doors are best accessed in a more direct fashion by means of a straight walk. Steps should have a strong sturdy railing and follow the correct outdoor riser/tread formula. A well-placed bench is a thoughtful convenience providing a place upon which to set grocery bags while opening the door or searching for keys. Foot scrapers for muddy feet are practical additions.

Other entrances and exits from the house should also be considered. Most important of these is the transition from house to terrace. Bear in mind that no outdoor sitting area will ever be used to its full potential if it is not readily accessible.

No outdoor sitting area will ever be used to its full potential if it is not readily accessible.

Typically a terrace door will open out from the living room. It can also lead out from the dining room and/or family room thereby expanding the use of these rooms in warmer months. Wide french doors or sliding doors are most satisfactory and give a nice view of the garden beyond. The steps down to the terrace should be comfortable and wide enough to match the doors they serve.

entry and foundation plantings

Entry plantings should be chosen for their neat growth habit. Evergreen plants are preferred adjacent to steps. Dwarf English boxwood *(Buxus sempervirens* 'Suffruticosa'), small hollies such as *Ilex crenata* 'Helleri' or the graceful dwarf English yew *(Taxus baccata* 'Repandens') are all good choices. Stay away from thorny material such as pyracantha and the barberries. Elsewhere in the foundation planting introduce berried plants such as *Mahonia aquifolium* and *Ilex* x meserveae 'China Girl'. Use deciduous plants to mark the seasons lest spring come along and your monochromatic foundation planting asks "What else is new?" *Hamamelis* x intermedia 'Arnold Promise' (witch hazel) blooms in late February and is sure to catch the eye of even the most jaded winter visitors. Nor should we forget fragrance. A lilac near the back door seems right somehow and its fragrance delights the passerby.

A house is just a house until its exterior receives the love, attention and design it merits. Start with the driveway, walks and doors. Bid welcome to all who come and Godspeed to those that are on their way.

•

Susan W. Plimpton, horticulturist and landscape architect, has been practicing landscape architecture for 27 years. Practicing widely in the northeast, Plimpton Associates specializes in residential design, historic restoration, and waterfront property. She obtained her professional training at the Ambler Campus of Temple University, Ambler, Pa.

photo by Susan W. Plimpton

Handsome courtyard with cobblestone edging and landing complements the front entrance.

photo by John Gyer

Shortia in Gyers' sand bed.

Shortia galacifolia — Oconee Bells

by John and Janet Gyer

People have asked us about the *Shortia* we entered in the Horticultural Class at the Philadelphia Flower Show. They were dug during the January thaw from our north-facing Pine Barrens sand bed. A few years ago we excavated the bed to a depth of three feet and filled it with sand ordered from a construction company in Ocean County, New Jersey. The sand is not quite as fine as Pine Barrens sand, but it contains a lot of charcoal that we regard as the "cleanliness factor" in our experiment. *Shortia* was one of the plants we experimented with, and to our surprise it has done quite well, although there is no supplemental watering in the bed located right next to our front porch.

On the day after the Flower Show we visited Jo Breneman to pay our respects to the mother *Shortia* plant that Jo ordered many years ago from a southern nursery that is no more.* Jo has inspired our interest in wildflowers. The garden she and Herb built has been the source for many of us in the Delaware Valley for wildflowers such as *Shortia*, which she has donated to organizations and given to friends.

Jo attributes her success with *Shortia* to drainage. It is planted high on a dry bank and also on moist banks and lower mounds with good drainage. Some are even planted within spaces between exposed beech roots. It should be sited so that the wind or a helpful gardener can remove excess leaves and expose the beautiful burnished color of its winter foliage.

More than 15 years ago Jo gave us *Shortia* that we planted in a woods edge setting that was subsequently decimated by pine mice. We moved it to a wetter mossy spot we thought the mice would not like, but neither did the *Shortia*. Jo looked at it and murmured "too low." She was right. We finally found a moist bank that we had not been able to see under a tangle of grapevines. After clearing it we planted *Shortia* with laurel seedlings rescued from the construction site of a nearby shopping area. Finally, *Shortia* is at home with us on the bank of a former farm pond, and in an experimental sand bed.

SOURCES

Vicks Wildgardens, Inc.
Box 115
Gladwyne, Pa. 19035
215-525-6773

John & Janet Gyer
Fernhill Farm
P. O. Box 185
Clarksboro, N.J. 08020

•

John and Janet Gyer started their woodland plant garden and vegetable farm about 20 years ago. Through planting native species in several habitat settings they are now beginning to learn the combinations of plants and habitats that are successful on their New Jersey farm.

* *Shortia* cannot be shipped from certain states where it is an endangered species. The fascinating history of this plant can be found in an article entitled "The Elusive Shortia" written by H. Lincoln Foster for the Winter 1984 *Bulletin of the American Rock Garden Society*. Because of Foster's and Charles Moore's efforts, and others dedicated to saving American native plants, we can now enjoy the early spring blooms of this distinctive plant.

HOTLINE

photo by Gina Burnett

Welcome to Hotline.

Every day, Monday through Friday, PHS Hotliners field questions from distressed, concerned or just plain curious gardeners. Often many of our callers are asking the same questions (e.g. what is powdery mildew and how do you treat it or what are wooly aphids and how do you get rid of them). We believe there are lots of gardeners we don't hear from who would be interested in the Hotline questions and answers. This new feature will include some of the many questions the Hotline volunteers at the Pennsylvania Horticultural Society are asked. If you have a horticultural question, please call the Hotline at 215-922-8043, Monday through Friday, 9:30 a.m. to 12 Noon. (Closed in December.)

Kathy Mills
Assistant Horticulturist

Hotline volunteer, Wilbur Zimmerman, answered this frequently asked question on August 8, 1988:

When do I prune deciduous trees and shrubs?

Many factors determine the best time to prune: Why are you pruning? To rejuvenate an old plant? To maximize growth on a young plant? To minimize growth on a plant that is a topiary, espalier, or that has overgrown its alloted space? To remove dead and diseased branches?

What are you pruning? Pruning times and methods vary between deciduous and evergreen plants. Each has specific requirements that merit consideration in your decision about when to prune. Here are some guidelines for when to prune deciduous trees and shrubs.

winter pruning

Prune in late winter when trees and shrubs have reached their period of least activity. Winter damage can be easily seen, pruned, and removed, causing minimal stress to the plant. Late winter pruning maximizes spring growth. Keep in mind that any spring blooming plant that has not been on a strict pruning schedule will have a spring flush of growth that may be at the expense of flower and fruit set. Deciduous hedges pruned at this time can be easily thinned out and cut back. In the spring the plant will respond by quickly filling in and covering the evidence of pruning.

spring pruning

Prune dead and diseased branches whenever they appear, as part of normal garden maintenance. That is the only pruning that should be done in the early spring, because it is a time of heightened activity for trees and shrubs. Sugars are moving from the roots, up through the plant to push out new buds, open up new leaves and begin new growth. Sap in excessive amounts can be lost through pruning wounds created at this time, injuring the plant.

Spring is also a time of high moisture. The wetness of spring coupled with a few warm days creates ideal conditions for growing fungi. Fungus will quickly find a home in a wound opened on a freshly pruned tree or shrub. Waiting until late spring or early summer to prune places the least stress on your woody ornamental plant. By this time, sap flow has stabilized and early spring rains have subsided. The plant has the energy from new growth to quickly heal pruning wounds. Late spring is the ideal time to prune most deciduous trees and shrubs: after they bloom and before they set bud for next year.

summer pruning

Summer pruning restricts the growth of deciduous trees and shrubs. Early summer is the ideal time to shear formal hedges. Mid-summer pruning minimizes the plants' capability for regrowth. This is the time to prune espaliers, topiaries, and any plant that has overgrown its area. Trees such as maples and birches, which are heavy bleeders, should also be pruned at this time because of the diminished nutrient transport from roots to branches.

fall pruning

Pruning in the fall impairs a plant's ability to overwinter. Food flowing from the leaves to the roots is stored as starch in the roots and provides the plant with the energy it needs for winter maintenance and its growth spurt the following spring. Early fall pruning depletes the amount of starch available to the tree for the winter season. Although trees and shrubs appear dormant in the late fall they are still very active. The leaves are gone and the pruning looks easy, but pruning in the late fall can increase winter injury.

Keep in mind that when you prune a tree or shrub you are creating an open wound into which disease and insects can be introduced. To minimize risk, never prune during a hot and/or wet period. Prune all injured, dead and diseased branches as soon as they are visible. Prune to keep the plant open so that air circulates easily through the plant.

Holiday Plants

The holiday season finds many new plants in our homes. Here are a few tips on how to keep some old favorites blooming for as long as possible. For more information about summer growth and reflowering check any of the excellent books on houseplants available at the Pennsylvania Horticultural Society's library.

continued

Poinsettia (Euphorbia pulcherrima)

The poinsettia needs six hours of light, temperatures of 65°-70° during the day and 60°-65° at night to extend the bloom time in your home. Don't let leaves or the colorful bracts touch cold windowpanes, and keep the plant from hot and cold drafts. When the soil is dry to the touch, water the plant until water runs from the bottom of the pot. Be sure to empty the saucer.

Cyclamen (Cyclamen persicum)

The cyclamen likes to be kept cool, especially while in bloom. Temperatures of 55°-60° are ideal. The cyclamen likes a bright spot out of direct sun and a soil that is kept evenly moist. Keep a high humidity around the plant by misting daily or using a pebble tray under the plant while it is in bloom

Amaryllis (Hippeastrum hybrids)

The amaryllis needs a bright spot with some sun while it flowers. Temperatures of 65°-70° will maximize the bloom period. To keep the humidity high, use a pebble tray or mist daily, being careful not to wet the flower. The soil should be kept evenly moist. When the flowers die, cut off the flowering stalk and reduce watering.

Christmas Cactus (Schlumbergera truncata or S. bridgesii)

Your Christmas cactus will perform its best with a day temperature of 65°-75° and a night temperature of 55°-65°. Moderate light and high humidity will keep the cactus blooming. Drafts, sudden temperature changes, and soil drying out in the pot will severely shorten the time you have to enjoy the bloom.

Recommended Reading

Growing Plants Indoors
Ernesta Ballard
Barnes & Noble Books, New York
1971

Indoor Plants — Comprehensive Care & Culture
Doris Hirsch
Chilton Book Co., Radnor, PA
1977

Rodale's Encyclopedia of Indoor Gardening
Anne M. Halpin, ed.
Rodale Press, Emmaus, PA
1980

LETTERS TO THE EDITOR

Dear Editor,

After reading Anne S. Cunningham's article in your September-October issue — "Fairmount Park: A Good Beginning or The Beginning of the End," I felt sad that some of my favorite native trees were not mentioned.

I agree that planting and caring for Center City trees is for knowledgeable people, so I'm happy to hear that this is in the hands of experts.

I am an ordinary citizen — who loves trees. For the last 26 years I've been lucky enough to own a small plot of land almost alongside Pennypack Park.

I can assure you that it costs much less than $150 to plant a tree. It can cost nothing. To care for the tree is, of course, another story.

A stand of tall, straight beech trees near here was recently blown down by a violent storm. Their bodies simply rotted where they fell. However there are still plenty near "Cristal Springs" (Rorsland and Rhawn) and they have been a "sight to see" in their autumn foliage. I don't know whether these are native or European. They seem like those I knew in Ireland (my birthplace) but the mast does not contain live kernels and would never do to "feed hogs" as old books advise. These seems to

propagate by suckers. I grew one which is now disfigured by "utility wire" employees. This is the fate of many "street" trees.

There are still a few white pines which once, apparently, covered this area. I suppose they were annihilated by builders and many crossed the Atlantic many times as the tall masts of American ships. They are easy to grow and mature quickly (20 feet or more in as many years).

I am particularly interested in black walnuts. This is a truly American version and a valuable cabinetmaker's tree. A mature tree is worth thousands of dollars and they seem to be able to look after themselves. I wonder, is there any reason why Fairmount Park should not "harvest" suitable specimens — thereby producing some income? Aside from this they are truly beautiful. I love to look up into their fernlike leaves towering above me in summertime. But I would not grow one near a dwelling.

"Pennypack People" consider "their" park to be more attractive than the Wissahickon area because no public roads traverse its quietude.

A small tree which I dislike on account of the prickly leaves it sheds, but for which I have now become an advocate, is the common American holly. One day I discovered a flock of cedar waxwings devouring the berries. It was my first encounter with these spectacular birds and I will gladly suffer to bring them back again.

There are a few hickory trees nearby but not flourishing — probably crowded out.

Thank you for Anne S. Cunningham's article.

Phyllis H. Stein
Philadelphia

All that and I didn't mention dogwood trees . . . ●

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Caladium humboldtii. *(Mini Caladium) Contact Mario A. DiPuppo, 6527 Girard Avenue, Philadelphia, PA 19151.*

Tilia petiolaris. *Contact W.G. Drake, 45 High Banks Drive, Easton, MD 21601.*

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Malus 'Donald Wyman,' with fall berries. A winner of PHS's Styer Award of Garden Merit.
See page 8

GREEN SCENE

HE MAGAZINE OF THE PENNSYLVANIA HORTICULTURAL SOCIETY • MARCH/APRIL 1989 • $1.50

New Strawberries
All-Male Asparagus and
Chocolate Peppers
n the Garden

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Front Cover
New Strawberries, All-Male Asparagus and Chocolate Peppers in the Garden
photo by Derek Fell

Back Cover
photo by Gina Burnett

CORRECTION: The photographs accompanying the Jimmy Paolini (pages 4-7) story in the January 1989 issue of *Green Scene* were taken by Lynn Radeloff not Ken Radeloff.

in this issue

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From the Flower Show to the Junior Flower Show

By Jean Byrne

March is a lively month at the Pennsylvania Horticultural Society; so many members are involved in the Flower Show, forcing, grooming and exhibiting plants as well as catching up on what their neighbors are growing. At last year's Show, Horticourt exhibitor Dick Both's *Gladiolus tristus* was one of the many topics of conversation because it's lovely, it's not easy to grow, and it's not readily available in this country. For those of you who want to try it, Bonnie Day tells how Dick Both cultivates this hard-to-grow plant. We're looking forward to checking out the aisles at this year's Show to see what other challenges we can find to share with our readers.

One of the reasons experienced gardeners work so hard at the Show is the camaraderie and the chance to learn from other fine growers. Two stories in this issue are about children who are also learning about growing and showing: one about the Junior Flower Show, and one about the young winners in the City Gardens contest.

Natalie Kempner, who chairs the Junior Show, has told elsewhere about how 15 years ago she included the word "field" in a lesson, and not one child in her West Kensington classroom knew what the word meant in relation to plants.

Kempner, concerned with this "dangerous ignorance," went on to found The Norris Square Neighborhood Project Urban Environmental Education Center in the Kensington area so these children could go in groups of six to places like the Morris Arboretum and Fairmount Park. She wanted to teach them how to plant seeds at the same time they learned how to read and write. In her article about the Junior Flower Show, she recalls how teachers back then began to fight this "dangerous plant illiteracy" in the schools, by attending PHS workshops and bringing projects back to the classes. Through classes and the Junior Show, she believes children can discover how plants are our links to survival.

We were exhilarated when we attended the City Gardening Contest Awards ceremonies in September where 148 awards were made for individual and community gardening projects. We cheered loudly in the Children's section for the energetic and dedicated young gardeners who already appreciate on some level Kempner's message "plants must grow or we die." Of course these exuberant gardeners are anything but grim as they dig in. The dirt flies, and a hundred flowers and vegetables contend. Libby Goldstein tells the story of two groups of young gardeners and two talented individuals, all keepers of the gardening flame.

GLADIOLUS TRISTIS

By Bonnie S. Day

Gladiolus tristis, a fragrant, winter-blooming flower that prefers a cool greenhouse, challenges freesia's hold on our minds and senses. Its nodding yellow inflorescence produces an appealing scent rivaling that of any other winter-blooming plant. A South African native, *G. tristis* is an elegant, refined plant.

An elegant winter-blooming plant from South Africa

Its grass-like leaves are cylindrical in shape, about 18 inches tall. Each corm produces one spike of three or four pendulous, trumpet-shaped flowers, which arch gracefully over the leaves. The flower's elongated, pale yellow tube flares into three upper and three lower segments flushed or marked with mauve. In nature, the plant is most fragrant at night; indoors its scent persists when the plant is out of the sun's light. Depending on whom you ask, *G. tristis* is sweetly scented or spicy, like carnations. Richard Both, a Pennsylvania Horticultural Society member and a dedicated gardener, calls it just plain delightful. He should know. Both is one of a very small number of people growing the plant on the East Coast, and probably the first to do so in the Delaware Valley. Since 1982, Both's pots of *G. tristis* have been a regular feature at the Philadelphia Flower Show. So successful has he been in growing the plant that other gardeners have been inspired to try it too.

He has traded and shared G. tristis corms with growers as varied in size and style as Wave Hill, Brooklyn Botanic Garden, Brookside Garden, and many individual growers.

Growing *G. tristis* is not as unusual an activity in other parts of the world. The plant has been in cultivation in Europe since the Dutch and British began importing the corms from South Africa nearly 250 years ago. Growers were initially more interested in its medicinal properties. The first *G. tristis* known to have bloomed in Europe flowered in England's Chelsea Physic Garden in 1745. After it bloomed in the garden at Sweden's Uppsala University in 1759, Linnaeus named it. A description of the plant appears in the first volume of the second edition of Linnaeus' *Species Plantarum,* published in 1762. Linnaeus did not seem to be particularly taken with the plant, calling it a sad-colored flower. Other growers, recognizing its potential as an ornamental plant and source of fragrance for other gladiolus hybrids, were more impressed. By the early nineteenth century, hybridization using *G. tristis* and other gladiolus species was in full swing. A botanical variety of *G. tristis concolor,* was one parent in a cross made by the English firm of James Colville and Sons. *Hortus III* calls the result, *G.* x *Colvillei,* one of the earliest known garden hybrids. Three of the original hybrids, 'Roseus,' 'Ruber,' and 'Albus' are still in the trade today.

More than mere fodder in the gladiolus hybridizing machine, *G. tristis* has also been grown outdoors by gardeners in warmer, temperate parts of the world. Southern California is the place for *G. tristis* in the United States, as is the south and west of England, where the winters are mild. It can only be grown as a greenhouse plant here on our part of the East Coast. In its native habitat, the southwestern part of the South African Cape, *G. tristis* grows in marshy ground near streams and small ponds called vleis. There the rains come in the winter, and the summer is hot and dry. Thus, unlike the familiar garden gladiolus, *G. tristis* grows in the winter and is dormant during the summer, both here and in South Africa.

discovering the plant

Dick Both first learned of *G. tristis* in the course of his business trips to South Africa. As a representative for Hercules' agricultural chemicals, Both travelled all over Africa, South America, and Europe, working with experimental agricultural research centers to develop products to fit their specific needs. When Both's South African friends learned that he was growing Dutch freesia in his greenhouse at home, they introduced him to something even better: *G. tristis,* a plant similar to freesia in culture, but with a stronger, more pleasing fragrance.

That was the beginning of the odyssey of *G. tristis* from South Africa to a prize-winning appearance at the Philadelphia Flower Show. Acquiring the plant was difficult. Importation of the corms to the United States is prohibited, so Both had to settle for seed, which he purchased from South Africa in the early 1970s. Then he began to figure out how to grow it. "I had to do a lot of experimentation at first," he explains. "My soil conditions weren't the same, the climatic conditions were different. I had seen them growing in South Africa and learned through correspondence

continued

with the American Plant Life Society that people on the West Coast were growing them, but there wasn't anyone on the East Coast who was growing them at the time." His correspondence and research eventually did give him the clues he needed to grow the plant successfully.

"After a couple of years of experimentation," Both recalls, "I found that the real challenge was to get them to bloom in time for the Philadelphia Flower Show." Entering the gladioli in the Show was the late Lois Paul's idea. So impressed was Paul, the former director of Education at Longwood Gardens, with the beauty of *G. tristis* that she encouraged Both to show them. There was one problem: at that time, there was no class for non-hardy bulbs in the horticultural competition. Paul helped change that, and in 1982 Both entered his *G. tristis* for the first time. He won a blue ribbon.

how to grow it

Growing *G. tristis* is very much like growing freesia. Both begins planting the corms in mid-September and continues planting every other week for a six- to eight-week period to lengthen the amount of time he has plants in bloom. A soil mixture composed of 1/3 compost, 1/3 coarse sand, and 1/3 soilless mix is the closest Both can get to the gritty humus the plants grow in on the South African Cape. At least 14 of the tiny, 1/2-inch corms go into a seven- or eight-inch clay pot. Both plants the corms fairly shallowly, about 1/2-inch deep, and keeps them on the dry side until the leaves poke out of the soil. From then on, the soil is always moist. After the leaves have appeared, five green 14-gauge wire stakes are inserted around the edge of each pot, parallel to the side of the pot. Both winds green florists' string in a star pattern around the stakes, providing a network of support for the slender leaves and flower stalks. As the leaves grow, he moves the string up the stakes.

Gladiolus tristis grows best for Both when temperatures are 45-50° F at night, and 65-70° F during the day. Both's greenhouse, attached to his house, gets only six hours of good light in the winter. That is an adequate amount of light; however, the plants would grow and flower more quickly if there was more. A weekly fertilization of one half strength 20-20-20 from the time the plants begin actively growing until January is all the additional care *G. tristis* needs until it finishes blooming. A bit of tip burn may appear on the leaves, but that seems to be normal, even in nature.

Once the flowers have died, Both cuts off their stalks and resumes the weekly feedings until the leaves begin to yellow in June. By June 15th, all of the leaves are dead. The pots are placed on their sides, and the soil is allowed to dry out. The corms remain in the soil in Both's hot, dry greenhouse for most of the summer. When Both removes the corms from the soil in mid-August, he separates and grades them. *G. tristis* is a prolific plant, increasing by as much as 50% each growing season. Cormlets smaller than 1/4 inch are too small to bloom the following year. These Both saves and grows on another season, until they reach blooming size, about 3/8 to 1/2 inch. Any container will do for storing the corms until planting time next September, as long as the corms are dry.

Few insects or diseases bother *G. tristis*. Both has had some trouble with aphids, but virus is the biggest threat to the plant's health. To avoid an epidemic, he pitches any plant that looks vaguely suspicious: weak, mottled, distorted or stunted. Another precaution Both takes is to dust the bulbs with an all-purpose fungicide and insecticide mixture before storing them.

other Cape gladioli

G. tristis is not the only Cape gladiolus Dick Both grows. He estimates that he has grown 15 to 20 different species and cultivars, and given away hundreds of corms. He has traded and shared *G. tristis* corms with growers as varied in size and style as Wave Hill, Brooklyn Botanic Garden, Brookside Garden, and many individual growers. His generosity has created competition for his plants in the Philadelphia Flower Show. Other growers have shown their *G. tristis* and won prizes for them. For Both, it is all part of the fun of growing and showing plants. He still has a few tricks up his sleeve, anyway.

Both's most recent acquisition is *Gladiolus* 'Christabel,' a hybrid of *G. tristis* and *G. virescens* made by the late Dr. T. T. Barnard, a twentieth-century English gladiolus breeder. The 'Christabel' flower is yellow, and extremely fragrant both day and night. Both got his from an English acquaintance during a trip to Great Britain. He has been growing it for a few years and has a good supply of corms. But he is not sharing this one, not yet. "I'm not sharing those with anybody until I can show it at the Philadelphia Flower Show," he chuckles. "Once people see it, they're going to ask me for it."

●

Bonnie Day is a graduate of the University of Delaware's Longwood Program, with an M.S. in Ornamental Horticulture. For more than 1½ years she coordinated Longwood Gardens' compliance with Federal and State Right-to-Know laws relating to hazardous chemicals. Starting in January 1989 she began working on Special Projects for the Wilmington Garden Center, and as a writer/editor for E. I. Du Pont de Nemours Co., Inc. Publications Section of the Specialty Services Division.

SOURCES

Indigenous Gladiolus Nursery
44 Nederburgh Street
Welgemoed, Bellville, 7530
Republic of South Africa
(seed only)

International Growers' Exchange
Box 52248
Livonia, MI 48152

Anthony Skittone
1415 Eucalyptus Drive
San Francisco, CA 94116

Guy Wrinkle
11610 Addison Street
North Hollywood, CA 91601

For more information:

The American Plant Life Society
Box 985
National City, CA 92050

Indigenous Bulb Growers Association
of South Africa
Box 141
Woodstock 7915
Republic of South Africa

University of California, Irvine, Gene Bank
University of California, Irvine, Arboretum
Irvine, CA 92711

The Winter-Growing Gladioli of South Africa, G.R. Delpierre and N.M. duPlessis, Tafel-Uitgewers Beperk and Nasionale Boekhandel, 1973.

VERBASCUM, MID-SUMMER STARS

By John P. Swan

photos by John P. Swan

Tall, brilliant yellow *Verbascum olympicum* is sturdy enough to withstand summer squalls without staking.

We all have our favorites. Call them your plant pets, if you wish. But what fun it is to pick a pet plant, then branch out and discover the marvelous diversity among its relatives in the genus. Trying out uncommon and perhaps new-to-you varieties adds zest and excitement to gardening. Not all will work out, but some will surprise you. Anticipation is part of the fun, successes are the reward.

the summer of '88

So at this point, who wants to be reminded of the Summer of '88? The only summer in memory that made gardeners wish for winter. Sort of, that is. For us, it was the proving ground for the great American *Verbascum* experiment.

As we all know, the mid-summer months of July and August are a challenge for Delaware Valley gardeners. It's too hot, too humid, or too dry. Last summer packed it all in at the same time. Plants struggled under the stress. Watering when you could do it, helped the garden to survive, but many plants just hung on unable to show off their true finery. Lawns burned to a crisp.

In addition to weather problems some gardens suffer a mid-summer flowering slump every year, particularly in comparison to the glorious bursts of color in May and June. One plant that's nature-made to conquer all these mid-season blahs is the *Verbascum.* For an uncommon plant, it's uncommonly beautiful. The striking varieties in this genus are too often overlooked, difficult at best to find in garden centers.

the most talked about plants

Yet the little-known *Verbascum* were the most noticed, most talked about plants in our garden. They outshone the perennials that we worked so hard to keep alive, our extensive vegetable garden, and even our pet meadow garden. The huge, statuesque flower spikes of *Verbascum olympicum* and *Verbascum* x *hybridum* caught everyone's eyes. Towering up to seven feet high were shimmering candelabras of hundreds of brilliant yellow flowers, each the size of a quarter.

Only slightly less tall, but a show stopper in its own right, was *V. bombyciferum* 'Silver Lining.' Its larger, purest-of-yellow flowers looking for all the world as if they were pasted on the solitary woolly white spires.

roadside weed to garden beauty

Mention *Verbascum.* Many people will think of the coarse giant mullein sometimes called flannel plant or beggar's blanket. A common roadside sight with its second-year columnar flower stalk, it

continued

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photos by John P. Swan

thrives in waste places under the harshest of conditions. *V. thapsus* is hardly a plant that makes it on anyone's best seller list today.

But it wasn't always that way. The literature reveals that in Roman times the stalk was dipped in suet to make torches for funeral processions. The woolly leaves were valued by the classical Greeks as lamp wicks, while the American colonists stuffed them inside their stockings to keep their feet warm.

Any plant that can stand up to drought and heat while continuing to bloom earns my respect.

The mullein was probably brought to the colonies as a medicinal herb, but it was also used for dyes while the soft, velvety leaves provided dressings for wounds. It is said that, since make-up was forbidden, young Quaker maidens rubbed the leaves on their cheeks to give them a rosy glow. This neglected giant deserves more respect.

From my contemporary view, any plant that can stand up to drought and heat while continuing to bloom earns my respect. It was these qualities that piqued my curiosity and started the search for cultivated species to try in our garden.

My knowledge of these plants was slim indeed, having never grown *Verbascum* and seldom having seen them in other gardens. Yet, there are some 250 species native to Europe and central Asia. A few rank among the oldest of cultivated garden plants. They are predominately yellow flowered, but pink, mauve and white forms also exist. Most have leaf rosettes of considerable decorative value, a few are spectacular.

sources are a challenge

So the great *Verbascum* experiment began. Finding sources of seed presented the greatest challenge because most seed catalogs do not carry it. Thompson and Morgan lists a handful, but the best sources of even the little known, rarer varieties turned out to be plant society seed offerings. Our seeds came from the Royal Horticultural Society, American Rock Garden Society and The Hardy Plant Society listings. Each of these societies has a remarkable and extensive seed exchange. I can't think of better sources to broaden one's horticultural horizons, to find new and unusual varieties to try in your garden.

six Verbascum winners

Of the 12 *Verbascum* varieties we selected, all were interesting, but six turned out to be real winners, not all of them giants either. *V. nigrum* is a 24-inch charmer that bursts into bloom in July. The tidy flower spikes rise out of a rich green rosette of leaves and bear tightly clustered yellow flowers accented with reddish brown centers. It seems to self-seed readily, but we don't have enough experience yet to see if it comes true or hybridizes with the other varieties in our *Verbascum* compound. Our plants bloomed the first year from seed, made it through the winter to rebloom. At this point it is behaving like a perennial. *V. nigrum* has earned a spot in our sunny border.

A close look at 'Silver Lining' in August: pure yellow flower clusters and a wooly white "felt" spike.

While many *Verbascum* boldly call attention to themselves, *V. chaixii* 'Album' is a subtle, refined plant that blends well in a garden composition. It has a neat, well-proportioned appearance. The lower leaves are stalked, the upper ones are stalkless cleverly providing visual balance for the

Background: Candelabras of *V. olympicum* and 7 ft. *V.* x *hybridum.* Midground: *Anthemis tinctoria* 'Kelwayi. Foreground: *Coreopsis grandiflora* 'Baby Sun.'

rising flower spears. Our July blooming plants reached a height of 2 feet and bore soft white flowers with mauve eyes. A smaller perennial *Verbascum* for sunny areas, it probably shouldn't be asked to compete with bright, brassy-flowered plants. We plan to use it as a spiky accent with the softer garden tints of pink, lavender, and blue flowers.

The smallest plant to reach the trial finals was *V. wiedemannianum,* an attractive 18 incher. Its thin stalk topped with a cluster of delicate purplish lilac flowers, emerges above a tight basal rosette of glossy green leaves. I think this biennial species would show off best against a sunny rock wall or planted in groups for mass effect.

A twosome that you can look up to, literally, are the golden garden skyscrapers, *Verbascum olympicum* and *V.* x *hybridum.* Both have great rosettes of grayish leaves their first year. The second season the spikes thrust skyward to 7 feet crowned with branching candelabra-like inflorescences. No identity crisis here. These bold biennials make a statement in the garden that few plants can match. Clearly they are best used as accents for the back of the border, anchors in island beds, or to highlight a corner situation.

They are long-blooming plants spanning most of July and August and when cut back they rebloom on shorter spikes extending the color into September.

If we were to grow only one species, it would be *V. olympicum.* A foot or so shorter, it doesn't depend as much on staking to protect against thunderstorms, and the flowers are a richer yellow.

And finally, a biennial beauty deserving a place in any sunny garden is *V. bombyciferum.* There are several cultivars we grow: 'Arctic Summer,' 'Silver Spires,' and 'Silver Lining.' The strikingly handsome foliage is borne in a 2-foot-wide basal rosette. It looks and feels like silvery-white felt, dramatic during the day, positively luminous in moonlight. Christopher Lloyd, in his book *Foliage Plants,** says you can keep the plant in its stunning first-year juvenile stage by pinching out the flowering shoots when they appear. If you do this, he suggests siting it in the front of the border where the woolly texture of the foliage can

**Foliage Plants,* Christopher Lloyd. (Random House, NY 1973, New and Revised Edition, First American Edition.) Available in PHS Library.

continued

photos by John P. Swan

Tidy, well proportioned *V. chaixii* 'Album' bears soft white flower spears in July.

Twenty-four-inch flower spikes of *V. nigrum* are at their best in July. Fallen florets add a color note on the rich green leaves.

be appreciated.**

Our 'Silver Lining' was allowed to bloom as a back-of-the-border specimen. The 4-foot flower spikes, every bit as beautiful as the silvery leaves, were clothed in the softest white woolly hairs. The clusters of yellow flowers advancing up the white spires created an elegant effect. Here's a plant that could make converts out of gardeners that resist growing biennials.

easy to grow, trouble free

Verbascum seem to have no pest or disease problems and is easy to grow. The seed is fine, so take care to achieve good germination. Its best to start them in early spring under lights so you can control conditions. When the miniature rosettes are about 2 inches wide they can be set out in the garden. Large species should be planted at least 24 inches apart because of the spreading rosettes. Small varieties can be closer. Although *Verbascum* are reputed to be able to grow in almost any soil, we found that enriching it with compost and aged mushroom soil along with a handful of slow-release fertilizer gave better results. The most important requirement is good drainage. They cannot take continuously wet feet particularly when wintering over. *Verbascum* develop strong tap roots, which probably provide them with enough moisture and allows them to hold up so well in summer drought.

If we were to grow only one species, it would be V. olympicum.

A final note that should warm the heart of every good composting gardener. When the time comes to consign your *Verbascum* to the compost pile, they not only provide organic bulk, but contribute sulfur, magnesium, potassium and iron, which they have accumulated in their systems.

So, there you have it. *Verbascum* provide summer color, startling columnar forms, texture, drought resistance and even enriches your compost. What more can you ask of a pet plant!

•

John Swan is a member of the PHS Council, Flower Show Committee and a Volunteer Hotliner. He is a member of the Board of Bartram's Gardens. John and Ann Swan's West Chester garden has been included on PHS Members' Garden Tours.

** Another idea. Use the first-year rosette of *V. bombyciferum* as a patio pot plant. You could even use the wild mullein this way. Its young rosette of silver-gray leaves is a sight to behold in the early morning dew.

The Winning Ways of the Young

By Libby Goldstein

Young gardeners win blue ribbons in the City Gardens Contest

Eight years ago, Blanche Epps told a gardening workshop that the worst pests in her garden were her grandchildren. Last summer nine of those pests won a first prize in the City Gardens Contest, the Harvest Show Junior Section bronze medal and 28 blue ribbons at the Delaware County 4-H Fair. When I asked Blanche how she had turned her "pests" into prize-winners, she said, "They changed themselves.

I'd take them wherever I went, When they saw kids winning and bouncing up and down, they said, 'Hey, let's do that.' " Of course, there's a lot more to it. Whether I talked to the young gardeners themselves or to the people who work with them. I found that behind each prize-winning gardener there's a grownup (sometimes more than one) who is a keen grower. Just as important, these grownups let kids work on their own, even the little ones at ISI Caring Center.

ISI Caring Center

Ruth Chavos began the gardening program at this corporate day care center, and ISI underwrote its development. Each class has its own garden box; although the Toddlers (all 30 of them) and their teachers share one specially long box. According to Kathy Batchelder, the enthusiastic gardener who took over as City Gardens Contest contact after Chavos left, all 122 children from Toddlers through Kindergarten and all 16 grownups are actively involved in the garden, an ongoing part of the Caring Center's educational program.

Kathy says, "We have a real hands-on policy of teaching the children, and all of the staff are involved. Each spring we have a meeting to decide what we're going to plant and how we're going to do it." They use the judges' comments in their planning and decision making. "We do a unit on growth and a whole set of activities around the unit," from planting seeds in glass containers to see the roots, to songs and dances about growing. "They relate their own growth to the plants'. We start our seeds indoors in the spring. Each child plants a pot, waters it and feeds it. Then, when the weather is right, each one plants his/her plant and a stake with his/her name on it in the garden."

Kathy says, "They get to see something live, to nurture something and watch it grow. They get a sense of time: 'When's it going to come up?' and patience and of

photo by Gina Burnett

Barbara Gilmore works with toddlers Christine Hurtubise and Nick Conway to water and rake in the herb garden at the ISI Caring Center garden at 3501 Filbert Street.

continued

how vulnerable life is." Since the children are in charge of the plants' care and check up on them daily, they get a sense of responsibility. In 1988, they carried cups of water from the wading pools to the plants. Often the kids would go right to their plants and get the water on their own without any prompting.

Many of the parents have gardens and, says Kathy, those kids "bring their gardening experience to school with them." All of the parents know about the garden. They all have to walk through it. Some of them take a real interest. After seeing how much basil they had in 1988, one mother gave Kathy a recipe for pesto to use in an international food unit. In return, Kathy gave her some of the basil.

Teachers tell their classes about the City Gardens Contest and about the judges who will be coming. When class and judging schedules work out, the kids join the judges in the garden. In 1987, the whole Caring Center helped plant the rose bush they had won, and each class got some of the prize money to buy seeds. When Ruth Chavos left, Kathy was asked to take over as PHS contact. Contest results are announced to each class, and Kathy posts their certificate, the judges' comments and an explanation on the bulletin board. And then too, there are notices in the Center's newsletter and daily log.

This garden is special. Most agency-related gardening programs I've known are very fragile. There's usually one enthusiastic gardener who brings that energy to the agency . . . and takes it off to the next job. Gardening at ISI isn't affected by exits and entrances.

photos by Gina Burnett

Tonya Tate and children from the five-year-old group water tomatoes and canna in the Center's garden.

Joseph Cendrowski, Jr.

When I first called Joe, he was out distributing campaign literature for his State Representative . . . not surprising since this 16-year-old Central High School student is planning to study political science in college. When he does go off to college, Joe says his parents will probably "take the garden back." Right now, Joe does the vegetables, and his mother does the flowers. Joe started gardening three or four years ago as a Boy Scout merit badge project. He joined the Cub Scouts when he was eight. Since then he has earned more than 30 merit badges.

The Cendrowski garden is the very model of an edible landscape. Flowers, shrubs and vegetables all grow among one another in a fine fanfare, that isn't totally premeditated. Joe explains, "My mother has flowers. The rose bushes have been there since I can remember . . . and the azaleas and hydrangeas. They're all there, so you garden around them."

Joe's favorite vegetables are sorrel *(Rumex acetosa),* green peppers and eggplant. His mother uses the sorrel in soup, and the family usually eat the peppers raw in salads; although sometimes they have home-grown peppers on homemade pizza. Every year he tries one or two new things. In 1988 it was Swiss chard. He also planted tomatoes, string beans, onions, scallions, cucumbers and butternut squash. Joe's strawberries "didn't take" so he wrote the supplier and will be getting a credit. This young gardener is also an educated consumer.

The Cendrowski gardening year starts with the new catalogs. Joe goes through them and orders whatever happens to strike his fancy. The City Gardens Contest is not a factor in his garden planning. In fact, he says that his mother sends in the form before he even sees it. Besides weeding and general clean-up, Joe says that he doesn't do anything special to get ready for the contest. He maintains that the garden pretty much takes care of itself. Maybe that's because he puts down a layer of peat moss after the plants come up. While it's primarily for water retention, it keeps the weeds down too. Joe just "lays it over the top."

In years past, Joe has entered both the Junior Flower Show and the Harvest Show. At the Harvest Show, he captured three blue ribbons: for a pumpkin, a butternut squash and a luffa. He still has one of his Junior Flower Show entries, a sugar cane grown in a container. It lives indoors in the winter, summers outside and just keeps on growing. It's now seven or eight feet tall. "The only thing taller is my mom's bird of paradise." His other exhibits that year were annuals: a pot of cotton and a tobacco plant. Joe still sounds amazed when he says, "The tobacco leaves were huge."

Joe's garden year generally ends with a fall clean up. He doesn't do much winter or container gardening nor does he keep garden records. Unlike many of us non-record keepers, Joe doesn't really feel college, he will have the lands he wants to start another garden.

Joseph Cendrowski's container-grown sugar cane spends its summers outdoors among the tomato plants and bird of paradise. Originally an entry in the Junior Flower Show, the seven-foot sugar cane winters indoors.

Pumpkin, tomato and sorrel share garden space with a flowering patch of sage and a spot of basil beneath a trellised rose bush.

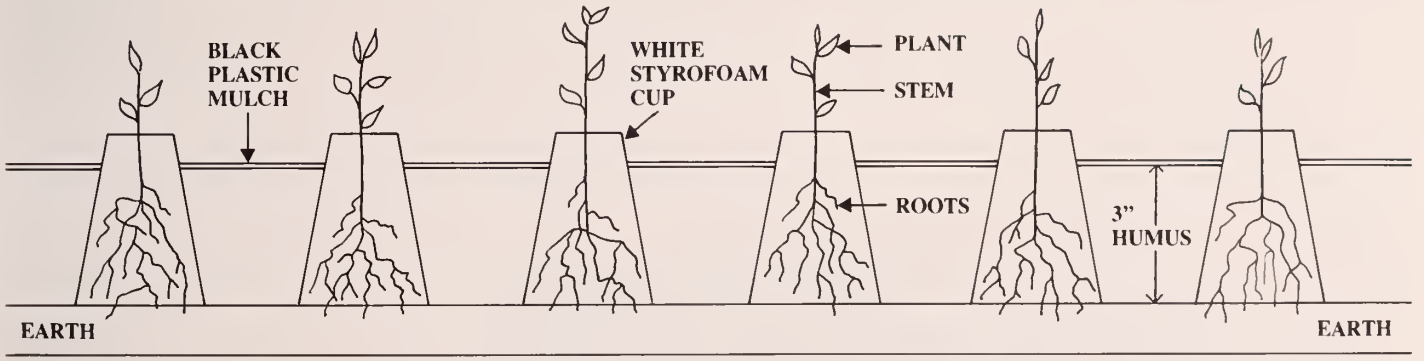
John Trainer, III

The very model of a modern gardener, John Trainer does keep records. He has two years worth on his computer. This LaSalle High School sophomore wants to be a computer engineer, so adding a computer to his gardening tools makes sense. Other people should be good record keepers before trying to include one. (I set up a lovely gardening data base and never used it after entering the first set of seed and plant orders.)

John keeps his records and plans his garden on "Garden Assistant," an IBM-compatible share-ware program from SizzleWare.* As John described it to me, the program takes information about your garden's locale, dimensions, sun, shade and water run-off patterns and tells you which plants should do well in each part of the garden. It also shows what should happen and when and lets you add comments about your own experiences.

John has been gardening for four years and has won a first prize in the City Gardens Contest for the past two years. He says that he got started watching "The Victory Garden" with his father. When John was 10 or 11, his father decided to take a year off, and John took over. Now he grows vegetables for his family and his neighbors in the backyard and flowers all around the sides and in front of the house. But this inventive young gardener seems as interested in developing garden technology as in the plants themselves.

John Trainer harvesting in September



He began using plastic mulch because his father had. Putting plastic cups around the base of his plants to keep the bugs off was his idea. This year he built a leaky hose irrigation and fertilizing system for the whole garden. He told me that his hose beats the plants down whenever he waters and that he had to fertilize each plant with a watering can (and Peters 20-20-20). So he worked out a way to go right to the roots without beating the plants down.

At first John's layout consisted of a trash can and buckets for water (both rain and city water) and a hose with holes punched in it that went all around the garden. John says that it wasn't until the middle of the summer that he realized that he could get water and fertilizer out of his containers with a sump pump and added one. The finished system consists of a trash can and buckets for the water and fertilizer, the pump, a delivery hose and the "leaky" hose that waters and feeds all the plants at once.

Even with "Garden Assistant" to help with his planning, John says he doesn't yet know what new or different things he's going to try in 1989. "I usually think of new stuff when I start to garden. I didn't know how I was going to get the fertilizer out of the barrel until the middle of the summer when I thought of the pump." He intends to keep on gardening, though, and if you're lucky, you may be one of the judges who gets to see his newest invention.

continued

*"The Gardener's Assistant is programmed by Shannon Software, P.O. Box 6126, Falls Church, Virginia 22046. You can get it from Public Brand Software, P.O. Box 51315, Indianapolis, Indiana 46251 and they have a free catalog.

Junior Garden of Gethsemane

In the seven years they've been gardening together, says grandmother and 4-H leader Blanche Epps, the nine Junior Gardeners of Gesthemane, Terry Linn and Elaine (Lainey) Fagen, Audrey, Erica, Kimberly, Kintasha, Tamika and Tracey Epps and Richard Reed have only had one fight. Over a watering can. It was something. After Blanche broke it up, each kid had to use a paper cup for the day's watering chores. "There haven't been any fights since." Audrey and Richard, nine, are the youngest in the group. Erica, the eldest at 19, has a Penn State Master Gardener's certificate on her wall at Drexel University. When she was ten, Erica attended every workshop with her grandmother, earning the certificate and becoming one of the youngest Master Gardeners in the country.

Blanche says the kids often help other youngsters get started on 4-H plant science projects. When Blanche visits a new gardening club, she takes one or more of the kids with her. (She says that they get angry with her if she attends horticultural activities and doesn't take them along.) They actually do workshops with the new group, explaining what they do and how and suggesting, "You could try doing it like this." Blanche contends that they motivate the other kids to compete in horticultural events and to win. She adds, however, (with a hint of glee) that her Junior Gardeners suggest that if the new groups want to win, they'd best choose classes that Gesthemane isn't entering.

It's clear that these kids love contests. Blanche says they they're often a little shy at first, but in 20 minutes or so she can't even find them. "They've moved right on out," to meet new people and get new ideas. And Lainey, who is handicapped "loves to get on the school bus with her ribbons." Whether they win or not, Blanche takes them to McDonald's or Burger King. However, "When they won the bronze medal, they got to go to Baskin-Robbins." The kids bought a "bug collecting box," a work book and $46 worth of fruit trees with the $56 they won at the 4-H Fair. They make additional money by selling worms from their worm farm. Since they get $.05/worm, they've been known to upset the compost pile mining for more.

Each youngster has a favorite phase of gardening. Lainey loves the soil, and Tracey loves flowers especially their colors. With Richard it's fruit trees. Two years ago, Blanche was going to prune them when Richard said, "Don't touch my trees, Grandma. Show me, and I'll do it." He did and still does. Terry is the maintenance engineer. He does the construction, lays wood chips in the walkways, fills the water drums and leaves. Kintasha loves flowers and veggies but is scared of bugs. Audrey is a vegetable person, while Tamika and Kimmy are into herbs and vegetables. Erica, who is studying computer science at Drexel University does all of the record keeping.

Blanche says that the hum of their year-round gardening activities gives the kids a sense of being somebody really special. It's a feeling I got from everyone I talked with in the course of writing this article. Clearly, kids who garden and people who garden with kids are growing a lot more than plants and prize-winning gardens.

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Libby Goldstein is a frequent contributor to *Green Scene* and has written for *National Gardening* and *Organic Gardening.*

photos by Gina Burnett

Each of nine Junior Gardeners of Gethsemane has "adopted" an adult gardener to assist after they complete work in their own garden. Above, Blanche Epps reviews the afternoon's chores with grandchildren Tamika and Chuck Epps in an adopted garden. Below, Tamika and Chuck inspect the Junior Gardeners' flower garden, one of several gardens in their 90 x 50 foot growing area. Last year the Junior Gardeners won a bronze medal in the Harvest Show for their "Bounty by the Wheelbarrow" entry.

HOUSE PLANTS WORK TO CLEAN INDOOR AIR

By Amalie Adler Ascher

Some people maintain houseplants are healthful to have around, if not physically, then certainly psychologically. Scientists now have reached much the same conclusions. Many plants can help folks breathe easier, literally as well as figuratively. Among houseplants, spider plants, peace lily, philodendron and other common types actually thrive on airborne chemicals that threaten our health.

For the last few years, NASA's National Space Technology Laboratories at the Stennis Space Center in southern Mississippi have been researching ways to use plants to lessen air pollution inside homes and office buildings. And in trying to clean up the environment on earth, the scientists hope to turn up technology that could be used to purify the air in space stations and on long journeys to other planets. Dr. B.C. Wolverton heads the plants-as-indoor-air-purifiers project, called "Space Biotechnology in Housing." He is a senior NASA reseacher at NSPL.

As they prepared to launch the Skylab missions in the early 1970s, NASA scientists at the Johnson Space Center in Houston, Texas, put sophisticated instruments into the spacecraft to learn the composition of the air the astronauts would breathe. The results were enlightening, and a bit frightening. During the Skylab 3 mission, for example, more than 300 volatile organic chemicals were found in the air, and among the 107 that could be identified were acetone, benzene and two kinds of freon.

Back on earth, investigators found the situation was just as bad if not worse. Recent Environmental Protection Agency studies showed that hundreds of airborne chemicals are keeping us company inside our homes, schools, office buildings, hospitals and nursing homes. Other agencies and researchers testing for indoor air pollutants are also finding large numbers of trace organics inside modern buildings.

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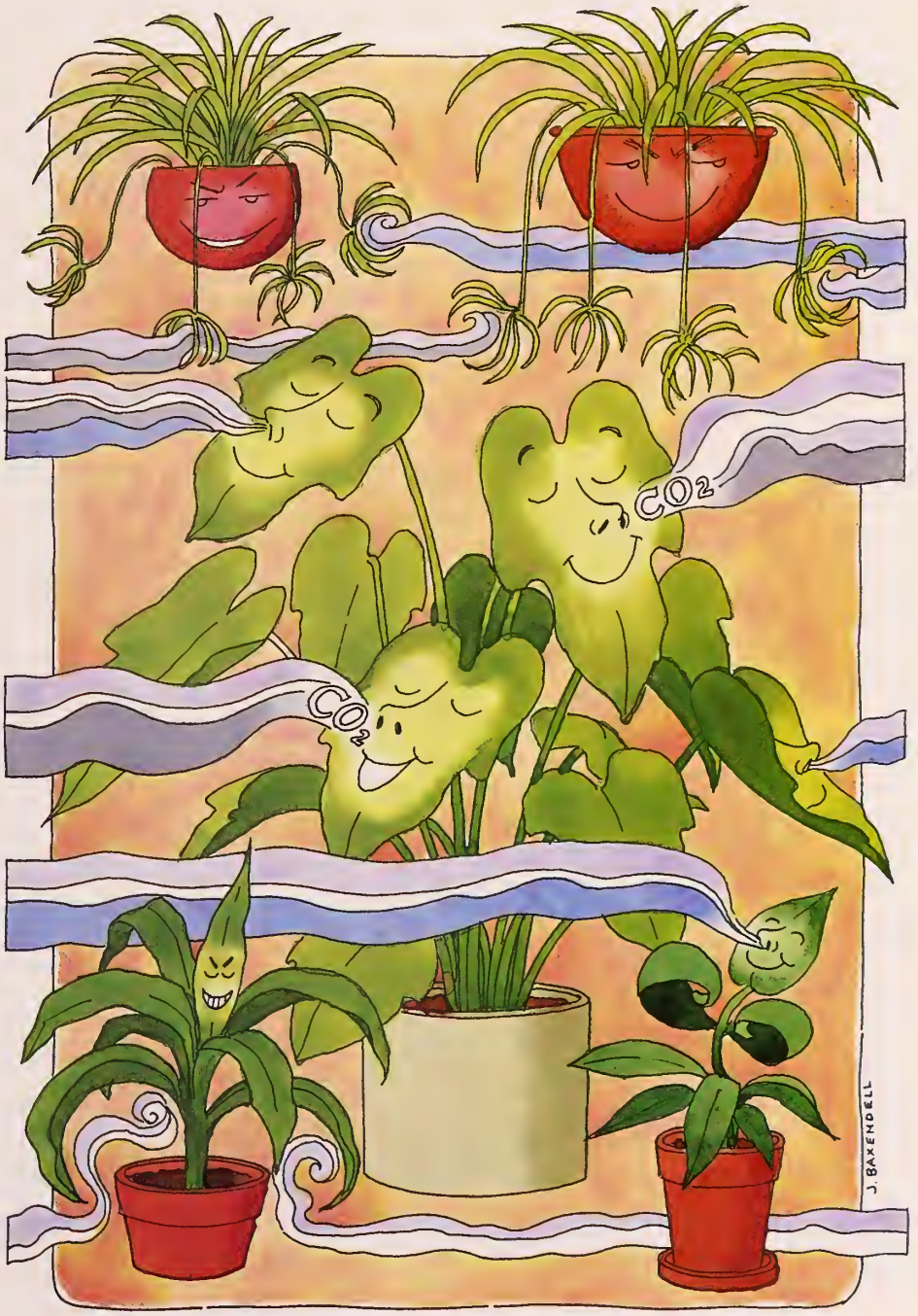


Research shows many common house plants help rid the air of indoor contaminants.

Such substances can lead to allergies, rashes and respiratory infections, and when encountered indoors create a case of "sick building syndrome," as the condition has come to be called.

what causes indoor air pollution and why is it on the rise?

Among the reasons, Dr. Wolverton says, are the dramatic changes in the construction and interior furnishings industries over the last 25 years. While natural woods were commonly used in the past, the preferences today are for pressed wood products and fiberboard, which give off trace levels of organic chemicals and toxic gases like formaldehyde. (Formaldehyde, Wolverton says, is the toxic substance Americans most often encounter because it is used in so many products, from paper bags to wax paper, facial tissues, carpets, adhesives, fire retardants and even permanent-press clothing, to say nothing of natural gas and kerosene used for heating and tobacco smoke.)

Add to that the artificial fibers and plastics making up contemporary furniture, draperies and accessories, and the array of cleaning agents, insecticides, glues and beauty and grooming aids that are part of our daily lives, and you wind up with a not inconsiderable collection of contaminants.

Things might not be so bad if there were some means of relief. But in many modern buildings you can't even open a window. Moreover, to conserve energy in homes and offices, Wolverton says, doors, walls and windows are being tightened up to prevent the loss of heat and air conditioning. Drafty rooms at least allow noxious gases to escape.

Wolverton also has reason to believe plants can also eliminate radon, a radioactive gas that seeps from the ground into buildings and causes cancer.

When the scientists at NASA looked at the evidence and set research priorities, they decided the predicament on the ground was more pressing than the exploration of the heavens. And for the solution, they had to look no further than some of our most common and easily grown houseplants.

Plants grow by the process of photosynthesis, using light to convert water, carbon dioxide and other elements into food. Plant leaves continuously exchange gases with the atmosphere, absorbing carbon dioxide and giving off water vapors and oxygen. Through the tiny openings or stomas in their leaves, plants can also assimilate and destroy various harmful chemicals floating in the surrounding air and in the process use them as food. In so doing, they virtually perform the function of an air purification system. What's more, they seem to be able to do it practically on their own. So the very substances that pose a danger to humans are chocolate candy to plants, spurring them to become lush and vigorous; plants emerge as truly remarkable creations.

In experiments, certain houseplants dramatically lowered the levels of the air pollutants formaldehyde and carbon monoxide inside sealed chambers. The best air cleaner was the common spider plant, but it was removed from the tests because its runners were too messy. Among the others were heart-shaped philodendron *(P. domesticum),* lacy tree philodendron *(P. selloum),* golden pothos *(Epipremnum aureum),* Chinese evergreen *(Aglaonema modestum), Syngonium, Peperomia,* banana plant *(Nymphoides aquatica),* and peace lily or white anthurium, *(Spathiphyllum clevelandii).*

Philodendron (above) and golden pothos (on filing cabinets, right) are among the house plants

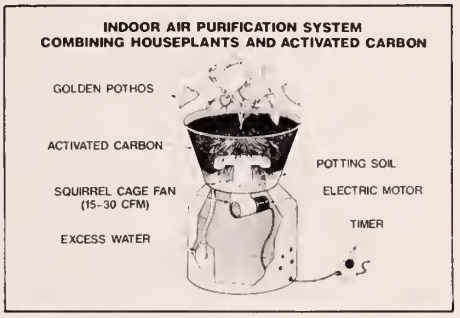
how many plants would be needed to clean up the air in an office full of people?

"As many as you can squeeze in," appreciable difference in the air quality of a 15x20-foot room. In his own home, that number of plants in his solarium has kept the formaldehyde level below the measurable mark.

Besides the lab tests, Wolverton has received reports and evidence from physicians who say that allergy sufferers get substantial relief in the company of houseplants. Data also shows that plants in or near a bathroom rid it of mildew and mold. Wolverton also has reason to believe plants can also eliminate radon, a radioactive gas that seeps from the ground into buildings and causes cancer. Tests being conducted for him by the U.S. Department of Energy's Oak Ridge National Laboratory in Oak Ridge, Texas, are expected to be completed in the near future.

While plants through their leaves can bring about a reduction in the levels of some of the trace organics such as benzene and formaldehyde contained in cigaret smoke, their stoma are just too small to take out the smoke and dust particles they contain. For that task, the plant's roots and soil bacteria must be called into play. So Wolverton developed a device to do it. The apparatus is made up of a charcoal filter system connected to a watertight, motorized fan enclosed in a sort of squirrel cage. It is attached below the pot holding a plant in such a way that the mechanics can't be seen. When plugged into an ordinary electrical outlet, the fan pulls the smoke and toxic chemicals out of the air and sends them through the carbon for filtering to the roots. In a symbiotic relationship with bacteria that break down the harmful chemicals, the roots, Wolverton said, "literally eat the chemicals as a source of food."

With this machine, he adds, one plant can do the work of 15 or 20 plants whose leaves alone are purifying the air. Also, he notes, as plants absorb noxious fumes, they are at the same time taking in carbon dioxide that people breathe out, and in the process freshen a stuffy room.



Recently, NASA signed a jointly funded two-year agreement with the Associated Landscape Contractors of America to test the ability of other foliage plants to rid indoor air of formaldehyde, benzene and trichloroethylene, a chemical used in dry cleaning. The new plants to be studied include bamboo palm, gerbera daisy, *Chrysanthemum* x *morifolium,* a pot mum, and several varieties of dracaena.

Two firms at present, so far as Wolverton knows, are making and marketing indoor air purification systems based on his model. Because Wolverton is not actually engaged in manufacturing them, nor has he seen them in operation, he cannot endorse them. The special decorator pots that also include the necessary filtering system are available in various sizes and may or may not be planted. For further information or to obtain brochures, write to Don Saceman, P.O. Box 20593, Tampa, FL 33622-0593, or phone (813) 839-8617; or Jack Reber of Bio-Safe, Inc., 1450 IH 35 West, New Braunfels, TX 78130, phone (512) 620-1607.

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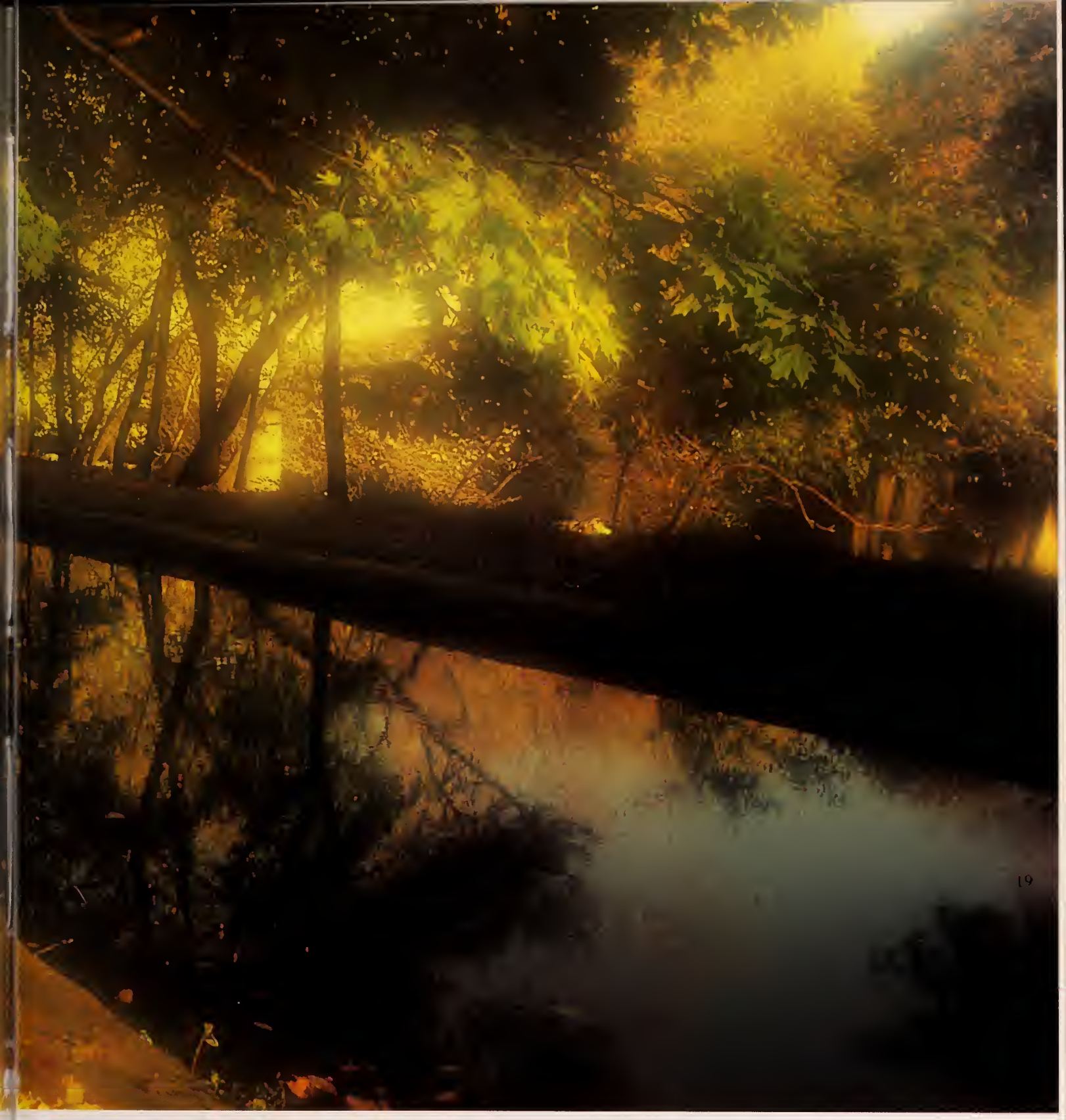
Amalie Adler Ascher is a frequent contributor to *Green Scene.*

that dramatically lower levels of the air pollutants formaldehyde and carbon monoxide indoors.

GRAND PRIZE WINNER IN THE PENNSYLVANIA HORTICULTURAL SOCIETY PHOTO CONTEST

"Best of Show" in the 1988 Competition on exhibit at PHS in November and early December. Forty-two people entered 160 photographs.

Barry Doohan of New Castle, Delaware, took "Best of Show" for "The Brandywine in Autumn," entered in the class "Featuring Water." He also took a blue for another entry in Plant Portraits, "A Viney Plant at Hawk Mountain." Doohan is manager of Financial Systems for Blue Cross/Blue Shield in Wilmington, Delaware. He first started photographing on trips to Ireland in 1982 and 1984. This photo was shot early in the morning with a Canon AE1, 28 mm wide angle lens.



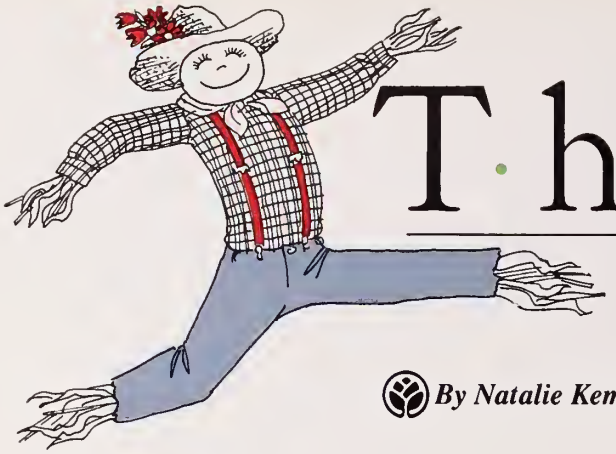
1988 PHOTO CONTEST BLUE RIBBON WINNERS

COLOR

People & Plants ..... Todd Philippi, Philadelphia, PA
Plant Portraits ..... Barry Doohan, New Castle, DE
Featuring Water ..... Barry Doohan, New Castle, DE
Garden of Eating ..... Mario DiPuppio, Philadelphia, PA
Accessories Permitted ..... George Heimbach, Allentown, PA

BLACK & WHITE

People & Plants ..... Mary Lou Wolfe, Conshohocken, PA
Plant Portraits ..... Carole Coyle, Media, PA
Accessories Permitted ..... Aaron Greenberg, Philadelphia, PA



The Junior

By Natalie Kempner

More than a chance for young people to win ribbons, the Junior Flower Show teaches children in a subtle way about the link between plants and our very survival.

Because no Junior Show archive exists, the story of the show must, then, be a personal account, pieced together with assorted recollections from the 14 Shows I worked on, conversations and available clippings.

Maybe it was when I first heard Joni Mitchell singing that they'd paved paradise to make a parking lot. I'm not sure. But sometime, about 20 years ago, schooled as a history teacher, teaching in elementary classrooms, I became convinced that the most valuable knowledge I could impart to students passing my way is the plain fact that our very lives depend entirely, now and forever, on a continuing healthy relationship between green plants and the sun.

I had learned about photosynthesis in school. I had helped my own children diagram the process for homework. But I had not really acknowledged it. It had not startled me as the astonishing miracle it is.

"Hooked" on ecology, an old but newly fashionable word in those days, I spent a graduate summer studying Environmental Education with Anne LaBastille* at Cornell University and worked as an intern in Outdoor Education, preparing to carry my new found insights into classrooms.

In the 1960s, teaching had become a frustrating struggle to sell the "basics." Kids nurtured on TV failed to see the point of books and globes and times tables. By the time I moved to Philadelphia and found myself in a city classroom with 37 fifth graders, only four of whom could read, I had become resigned to the possibility of a student finishing high school unable to read or write. But it was in that Philadelphia classroom that I discovered the probability that city kids are growing up totally alienated from the sources of life — a dangerous new kind of illiteracy.

My innovative principal, in those innovative years for education, freed me from the classroom to devise ways for the students in that school, whose test scores were the lowest in Philadelphia, to improve their "basics" through environmental exploration.

Just then, in 1974 the Pennsylvania Horticultural Society offered Indoor Gardening in the Classroom to Philadelphia Public School teachers. I, along with 299 other teachers from 125 schools, flocked to the after-school workshop sites. PHS staff teachers, Rick Fredette, Carol Sclafani and Blaine Bonham, today's director of Philadelphia Green, demonstrated the lessons outlined in the green, looseleaf curriculum guide provided for the course.

Three hundred classrooms soon overflowed with egg carton seedlings, sprouting avocados and garbage gardens. Sweet potato vines climbed our walls and narcissi bloomed in winter on our sills. I signed for the course again in 1975.

the seed of the show

So, there we were, our students proud of their spaces crowded with horticultural wonders, when Evelyn Hett, PHS Staff Exhibits coordinator, announced The Childrens' Flower Show for November 1975, a benefit to be sponsored by PHS for the 100th birthday of St. Christopher's Hospital for Children.

The show was to be a three-day exhibit at The Galleria at Centre Square at 15th and Market Streets in Philadelphia. Hett recalls the panic around PHS when, just two weeks before the show, only 45 entries had been received to fill the 5000 square feet of exhibit space.

The swell of interest — to 450 entries by show-time — is explained in the December 1975 *PHS News* by Bonham, PHS Education coordinator in those pre-Philadelphia Green days. "The major impetus came from teachers participating in the PHS teachers' training project."

I was of that "impetus." I remember our excitement in preparing entries for the show and the physical complications of delivering them to the Center City location. I also remember the "field trip," by El, with 36 exuberant kids to a new turf: City Hall, dazzling Christmas decorations at the new Galleria and then, displayed around an apple-laden tree centerpiece, their own exhibits, each adorned with a satin ribbon — blue, red, yellow, white or green.

*See *Green Scene,* "In Celebration of Water" by Anne LaBastille, July 1988

Flower Show

photo by Edmund B. Gilchrist

Children and grownups enjoy the Junior Flower Show sponsored by the Pennsylvania Horticultural Society at the First Bank at 3rd & Chestnut Street.

Most memorable, however, was the pride when photos and a story appeared in the local newspaper, *El Hispano,* declaring "Una exhibición muy singular titulado 'Jardines de Asfalto' (Gardens of Asphalt)" — an exhibit that demonstrates what city kids have done to "embellecer" (splendid word for beautify!) their neighborhood. One photo shows David Colon holding his blue ribbon spider plant in the hanging planter he designed from a vacant lot hubcap. Special attention was given "una planta de Bambú" which, the article explains, was planted in Puerto Rico and brought to Philadelphia by Maggie Hernandez. Maggie is a mother now, whose five-year-old daughter will be exhibiting in the 1989 show.

a continuing project

"PHS staff sat up and took notice," concludes the *PHS News* account. "The enthusiasm and excitement of the teachers was unanticipated and heartening. They've asked that the project be done on an annual basis. Their request is being considered by PHS."

The request was approved and the next year the Junior Flower Show was staged in the East Court of the Federal Reserve Bank at 6th and Arch.

That year I worked with two groups of students, one from a public and one from a parochial school, joined through a School District-funded program called Building Bridges. We journeyed by El to the Italian Market to choose suitably shaped produce for creating wobbly, fragile beasts called Food Friends. With careful 'parenting,' we transported them to the awesome space beneath the ever-moving Calder mobile in the East Court.

The Bridge Builders also worked that fall on an exhibit described in *The Sunday Bulletin,* November 14, 1976: "It's called

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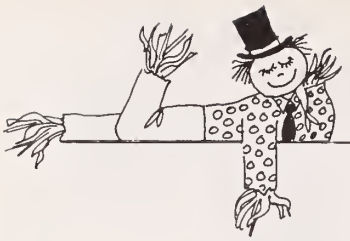

The Junior Flower Show

'A Plea for Trees in the Park'... It shows a map of five-acre Norris Square, in Kensington, with pictures of the square as it looked 40 years ago and as it is now . . . species of trees in the park are identified with notes on their present condition: sick, dying, dead. Copies of letters sent to the Department of Recreation asking for rescue of the trees are on display."

That same *Sunday Bulletin* hails "this bright young show."

The one I recall with most affection is an elegant blue-ribbon arrangement in a worn, black leather, hightop shoe with barely visible marijuana papers tucked into its sole.

In 1978, another change in setting — so far a permanent one — prompted this *PHS News* report: "In new surroundings, the Junior Show took on an elan that has been missing. The Show, now at the First Bank at 3rd and Chestnut . . . soared with inspiration. Short on absolute perfection and long on imagination might be an overall rating."

From the early, spontaneous years under the nurturing of Evelyn Hett, the Junior Show has evolved into an organized enterprise reaching out to the whole Delaware Valley. The middle years were marked by the boundless creative energy of PHS's Carol Sclafani and her volunteer committee chaired by two seasoned show experts, Helene Duncan and Mary Lou Scanlon.

Each year a theme was chosen — circus, magic, zoo — and a carefully designed program book, illustrated with drawings from an area-wide poster contest, explained the guidelines. Artistic Classes, in keeping with the theme, and Horticultural Classes, were divided into five groups: up through 2nd grade, 3rd to 6th, 7th to 9th, 10th to 12th and ungraded classes.

Judging procedures were established. For participants, judging is a mystery that occurs between leaving your exhibits one day and visiting them a day or two later. In fact, a dozen panels of experienced, qualified judges, with a team of clerks, spend a morning examining and evaluating every scarecrow, terrarium and hanging plant, then writing comments on each.

Judging the Junior Show makes special demands. Judges must compare the work of children growing up in gardening families with that of children with a new-found enthusiasm based on sprouting a bean in a plastic cup. They must tread a fine line between acknowledging excellence and encouraging budding creativity.

more than showing: learning on a deeper level

About the time the Junior Show found its current place in PHS as part of the ever-expanding Philadelphia Green, I became chairperson. I discovered then that PHS was considering ending the show unless it could change directions to become a means for integrating horticulture into classrooms in an interdisciplinary way.

Having never thought that it was anything but just that, I was astonished to read reports that perceived the show as an "apprenticeship" for the Harvest and Spring shows, a way for young gardeners "to become familiar with the fine art of showing." That was not at all what I had in mind in my Kensington classroom. I, and I suspect lots of other gardening teachers, knew little of "the fine art of showing." The basics of seed to flower to fruit was what the excitement was about. Showing is, we found out, an art, and learning about its was one more rewarding byproduct of our horticultural endeavors over the years.

The show as a learning tool? Interdisciplinary? Absolutely! At least in elementary classrooms. Let me explain.

When the schedule arrived, my students and I read its 10-12 pages together, discussing the theme for the year, the rules, the classes, the new words (there is a glossary) and the new ideas such as "Table Arrangement": a novel notion to a child whose meals are not a sociable, sitting down together occasion. We brainstormed options: What can be grown in the allotted time in our particular conditions? Decision-making, planning and accurately filling out the forms were all part of the learning.

One fall the kids focused on edible wild plants. They stalked the city lots, collecting, identifying, measuring, classifying. They drew pictures, mounted specimens and researched the myths and sources of their specimens. They wrote essays and reported orally. They cooked, tasted and displayed. Their exhibit, "Where the Wild Things Are in the City," was an impressive educational experience for those who created it and those who came to see it.

Children's imaginative plant portraits are created from leaves, seeds and other natural materials.

A blue ribbon for a table setting for Mary Mapes Dodge, author of *Hans Brinker or The Silver Skates.*

I believe the show needs not so much new directions as a new look at its roots in the Indoor Gardening in the Classroom days when it was clear that the "showing" was the grand finale to the growing, not an end in itself.

Patricia Schrieber, Program Planning manager of Philadelphia Green, also sees the show as "an event — an event related to young people. So often young people," say Schrieber, "get bad press for behavior, and the show is a way for them to get recognition for some of the great things they do."

The task, then, is to find ways to facilitate "the great things they do."

Changing the time of the show from fall to spring — in 1987 — was an obvious first step. With three productive seasons rather than one, a May show can indeed be the culminating celebration of a year of growing.

interdisciplinary

Next, themes to link horticulture with the overall curriculum were explored. "The

Wonderful scarecrows created by the children often bear a suspicious resemblance to family members.

World Is Our Garden" pushed social studies, history and geography. In last year's "Storybook Gardens," a notable Table Arrangement for "dinner with your favorite author" was a flower-filled, silver-painted ice skate for a table set for Mary Mapes Dodge, author of *Hans Brinker: or, The Silver Skates.*

Workshops for the artistic classes and pilot programs for teachers wanting to "dig in" for extended growing projects are being offered in schools and at PHS, a variation of the early Indoor Gardening classes.

This year, the often ingenious but sometimes disastrous Food Friends class has been eliminated. The Friends tended to rot, but discarding them before the show's end caused grief to their creators.

Ten Artistic Classes remain, including the popular fresh and/or dried plant material in a shoe. Among all the ballet slippers, sneakers, clogs, boots and baby shoes, the one I recall with most affection is an elegant blue-ribbon arrangement in a worn, black leather, hightop shoe with barely visible marijuana papers tucked into its sole. The address on the entry form revealed a drug-burdened neighborhood.

Scarecrows are another perennial favorite. Denise Flores, Junior Flower Show assistant manager, tells of the reluctant participant from a school for "behavior problems" who entered a cornstalk scarecrow. He came to view the show and, totally "blown away" by his elaborate satin rosette "Best of Show" award, he took his ribbon and ran.

The 14 Horticultural Classes, open to all age divisions, include "Green 'n' Growin' " for "an established plant propagated by exhibitor" and "Garbage Gardening for sprouting or rooted plants from the kitchen."

The new Challenge Classes came with the change to a spring show. Each participating classroom receives enough materials — different for each age group — to grow several potential entries of which one is selected by the class. Workshops provide teachers with training.

The challenges to growing plants in city classrooms are, of course, both ubiquitous and unique. Varying humidity, heat and light plus too many enthusiastic, unpredictable caretakers are handicaps that combine to teach the needs of plants and all living things. Last year, one classroom dropped out when their Challenge Class Easter Egg Radishes were devoured by mice. One successful class reported: "Our plants were exposed to music."

Each year, clowns, magicians, musicians, performers and storytellers provide lively special attractions. Participatory activity is provided by on-the-spot take-home planting. And this year, for the third time, School Board members, school administrators and teachers will view the accomplishments of their students in a pre-show reception. Two years ago, one District superintendent moved enthusiastically through all the exhibits taking notes. Later, he wroter letters of congratulations to every participant from his district.

"There's a special feeling to the Junior Show," says Show manager, Anne Vallery. "I like it!"

Vallery gives her highest praise to the teachers who involve their students year after year. "It's lots of work. In the classroom — keeping track, supervising. Then the intense few days lugging the entries, bringing the kids to look, picking up, sorting out after the show."

The 1989 theme "It's Academic!" is an unabashed assertion that greening is one of the "basics" — as basic as reading and writing if survival is to be considered.

After 15 years, the Junior Show is still "a bright young show" that needs nurturing year-in, year-out to make it the valuable learning resource it can be.

continued

The Junior Flower Show

An entralled audience hears gardening tips from Aunt Daisy.

A rapt young visitor studies a student's dish garden entry.

photo by Natalie Kempner

Children planting begonia plugs they'll take home from the Show.

1989 JUNIOR FLOWER SHOW
IT'S ACADEMIC

TUESDAY, MAY 16th
1:00 p.m. - 5:00 p.m.
Registration

WEDNESDAY, MAY 17th
10:00 a.m. - noon
Judging

3:00 p.m. - 5:00 p.m.
Reception

THURSDAY, MAY 18th
9:00 a.m. - 5:00 p.m.
Open to public

FRIDAY, MAY 19th
9:00 a.m. - 5:00 p.m.
Open to public

SATURDAY, MAY 20th
10:00 a.m. - 2:00 p.m.
Open to public

2:30 p.m.
Pick up entries

Place: First Bank of United States on Third Street between Chestnut and Walnut Streets. For additional information call Anne Vallery —625-8280.

If you are interested in participating in the Junior Flower Show call 625-8280 for a schedule.

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PHS Council member Natalie Kempner will chair the 15th Annual PHS Junior Flower Show. She is one of the few people who has been with the Show every year. Natalie Kempner is founder of the Norris Square Project in West Kensington, a project that "stemmed from the concern that youngsters there could live their whole lives knowing almost nothing about green and growing things, even though the center of their world is the five-acre Norris Park," *The Philadelphia Inquirer,* December 12, 1988, Section E, p. 1 and 8.

All-Male Asparagus, Chocolate Peppers & All-Season Strawberries Prove Themselves in the Home Garden

By Derek Fell

photos by Derek Fell

All-male asparagus hybrid.

Recent seed introductions prove their mettle

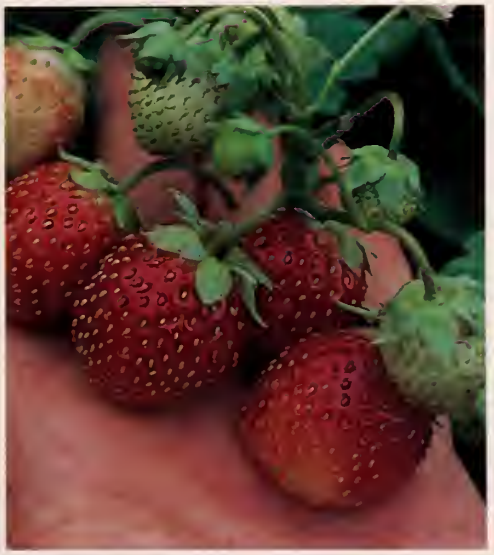
I first became aware of all-male asparagus hybrids during a visit to the vegetable trials at Pennsylvania State University, State College, three years ago. Several varieties from Holland and several others from Rutgers University (NJ) were up to three-times heavier yielding than old varieties such as 'Mary Washington.' The plants in the Penn State asparagus trials had all been grown from eight-week-old seedlings — not roots — and they made strong growth. The health and vigor of these plants made me realize the advantage of transplanting seedlings, rather than roots. When you transplant a root you run the risk of rot and may have nothing to show for your effort. Not so with seedlings: when you transplant a seedling it's already green and viable; its wispy, chlorophyl-rich fronds stay above the soil and shimmer in the breeze. Given fertile, loose, well-drained soil with lime added in heavy soils, the seedlings are capable of fast growth and harvests as early as planting rootstocks of non-hybrid varieties.

Traditionally, rows of asparagus contain succulent stalks compared to the spindly seed-bearing females. Also, the females are not so desirable since they drop their berries in autumn and the seeds inside germinate around the mother plants, acting as weeds.

For generations Amish farmers in Lancaster County have been aware of the value of all-male asparagus beds. They would first grow their asparagus in temporary nursery beds so they could weed out the females, leaving only males for transplanting into permanent rows. The extra-thick asparagus spears produced by this technique commanded highest prices in the markets. Some California commercial asparagus growers also weeded out the females, so a pair of California research scientists studied the genetic make-up of asparagus and worked out a way to produce an all-male asparagus hybrid. They published their conclusions in *HortScience* magazine and expected the asparagus industry to come forward with some funding to complete the project. When none was forthcoming, they abandoned work on asparagus hybrids. But in Holland breeders who had read the article decided to speculate. The result was a series of incredibly high-yielding all-male asparagus hybrids that performed remarkably well in North America. One of these, named 'Ben Franklin,' has been offered to home gardeners by Gardener's Choice for the past three years.

Professor Howard Ellison, an asparagus

continued



'Sweetheart' strawberries bear fruit within 120 days.

breeder at Rutgers University, encouraged by the Dutch success, set about creating his own hybrids with resistance to special problem diseases, particularly rust. One bright sunny morning in May, in 1986, I accompanied Dr. Ellison to his test plots near Vineland (NJ) and saw acres of all-male asparagus varieties developed from his breeding efforts, including 'Jersey Giant' and 'Jersey Centennial,' both of which are available to home gardeners in limited supply. For the future, Dr. Ellison hopes to introduce clones developed by meristem culture with 10-times the production of 'Mary Washington.' Though these super-yielding clones have met with resistance from commercial growers because of cost, Dr. Ellison is hopeful that one or two may be offered to home gardeners willing to pay for such heavy yields.

strawberries

Though classified as a fruit more than a vegetable, strawberries are generally grown in the vegetable garden. The first cultivated varieties of strawberries were called June-Bearing because they bore bumper crops just once a year, in June over most areas of North America. Later, plant breeders developed the so-called Everbearing, a misnomer since they do not crop continuously but bear two crops a year: one in June, the other in September. Everbearers have never really caught on with serious strawberry growers because the crops they bear in spring and fall are not very generous.

It was thought that high heat and humidity caused strawberries to stop fruiting in summer, but in truth they are photoperiodic. They quit bearing in summer because of extended day length.

In Brighton Canyon, near Salt Lake City, a wild strawberry was discovered to be "day neutral," unaffected by day length, bearing continuously all summer. By cross pollinating these wild varieties with cultivated strawberries, breeders at the University of California developed new garden-worthy cultivars with day-neutral qualities. One of these, 'Brighton,' was considered especially good for home gardeners because of its good fruit size and dessert-quality flavor.

Excited by the success of 'Brighton' and its other day-neutral companions, Dr. Gene Galletta, strawberry specialist at the USDA's fruit-breeding research facility at Beltsville, Maryland, picked up on the California research and developed varieties especially suited to the northeast. The best of these, 'Tristar,' is offered by W. Atlee Burpee Co.

Dr. Galletta believes that day-neutrals could revolutionize strawberry-growing in America when enough people have tried them. Not only do they bear a bumper crop in June, they bear in flushes during summer and again in fall. They take temperatures up to 95° F, as long as they are grown in weed-free, fertile soil and watered.

Another incredible breakthrough in the world of strawberries is 'Sweetheart,' a day neutral that will bear fruit within 120 days

photos by Derek Fell

Supersteak VFN.

starting from seed. Though 'Sweetheart' is not so large fruited as other strawberries, it creates a much better groundcover effect than any other strawberry I've seen. 'Sweetheart' is so vigorous it sets an extraordinary number of runners. The plants start running soon after transplanting, creating a dense, weed-suffocating knit when used as a groundcover. The fruits are several times bigger than alpine strawberries, and because it is so inexpensive to grow a large number of plants from seed, large areas can be planted economically.

tomatoes

After plant breeder Oved Shifriss developed the famous 'Big Boy' hybrid tomato while working at Burpee's Fordhook Farm, near Doylestown (PA), Burpee caused another sensation by introducing 'Big Early' hybrid tomato. 'Big Early' remained the earliest large-fruited tomato until 1986 when Burpee released 'Early Pick' hybrid tomato. Not only is 'Early Pick' as large and as early as 'Big Early' (62 days to harvest), it is higher yielding and produces fruit less prone to blemishes and diseases.

If you have room for only two varieties of tomatoes, grow 'Early Pick' and Burpee's 'Supersteak' hybrid. I have grown 'Supersteak' the size of grapefruits. Moreover, they are smooth, meaty and delicious. One slice will cover an entire piece of bread. In appearance and yield, 'Supersteak' is a vast improvement over Burpee's non-hybrid 'Delicious,' which still holds the world record of 6¼ lbs. Lois Stringer, a plant breeder involved in the development of 'Supersteak,' told me that when the world record is broken she expects 'Supersteak' to do it.

zucchini squash

A problem with zucchini squashes is their tendency to be male-dominant. In other words, they produce more male flowers than females, and the males are produced first. It seems to take forever for the fruit-bearing female flowers to arrive. Now, home gardeners have a choice between an all-female yellow ('Goldrush' hybrid) and an all-female green ('Richgreen' hybrid). Both are capable of bearing fruit within 50 days of sowing seed. Start seeds indoors, set out healthy transplants, and you can shorten that time to just 40 days.

Neither Petoseed, the wholesale grower (who developed 'Goldrush'), nor Burpee (who developed 'Richgreen'), call these zucchinis all-female because the plants do produce a small percentage of male flowers, just sufficient to pollinate the females. I find, however, that for the earliest yields it's good to grow at least four plants and as soon as a male blossom appear among any of the plants, pick it to distribute its pollen to as many females as possible. (This is done by rubbing the powdery center of the male flower onto the shiny center of the female.) Once plants are established and flowering increases, bees will pollinate them. I have grown these "all-female" zucchinis in peat pots and transferred them to the garden about May 10, harvesting my first zucchini squashes June 5 after hand pollination.

sweet corn

Almost every year, the seed industry seems to introduce a new sweet corn claimed to be more tender and sweeter than anything tasted before. In my experience, 'Honey & Pearls,' a new bicolor, goes about as far as I would want any sweet corn to go with super sweetness. A 1988 All-America award winner, 'Honey & Pearls' is early maturing (just 76 days) and won the vote for best-flavored sweet corn among seed experts and garden writers invited to a taste test of home garden sweet corns at Penn State University.

watermelon

Seedless watermelons are in the news again — as if they were the latest breeding sensation among vegetables, when actually they have been around for 20 years. A new cultivar called 'Jack of Hearts' is being promoted to home gardeners, but it has the same drawback as all the rest: it needs a regular variety to produce male flowers for pollination. Most home gardeners cannot afford that kind of space, and unless bee activity around them is exceedingly good the chances of successful pollination are remote. Hand pollination of small watermelon flowers is tedious. If you like a watermelon that's relatively free of seeds I recommend 'Yellow Baby' hybrid. It's the earliest to ripen in the Delaware Valley because of its good cold tolerance. The fruits are round with a thin rind, and they contain 50% fewer seeds than comparable fruits like 'Sugar Baby.'

For anyone interested in growing mammoth watermelons try 'Royal Windsor,' available from Twilley Seeds. Amish farmers load the soil with well-rotted manure and consistently produce fruits weighing over 100 lbs., though 20 to 30 lbs. is more normal.

peppers

In peppers it seems everyone wants the giant kinds grown under glass and imported from Holland for American produce counters. They sell even in the supermarkets for $2.00 and more each, particularly the giant golden varieties. For years I've had good success with 'Big Bertha' and 'Gideon,' ripening from green to red, but I have never seen anything to compare with 'Golden Goliath' ripening from green to yellow. It is even bigger than 'Honeybelle,' a giant yellow variety offered by Harris Seeds. I also like 'Sweet Chocolate,' producing average-size chocolate-brown fruits developed by the University of New Hampshire. They yield fruits under low temperatures, look like they were made of Hershey chocolate, and are sweet enough to eat like an apple (though not a chocolate apple).

No doubt by planting time, many seed producers will be making sensational claims for more new vegetables, but it takes time for a home gardener to judge the true value of new varieties. After all, new is not necessarily "better." I've grown all the varieties mentioned here in my home garden near New Hope (PA). They are the kinds of vegetables that make gardening a lot more fun than usual and encourage me back into the garden year after year.

'Sweet Chocolate' peppers, sweet enough to eat like an apple.

'Golden Goliath' ripens from green to yellow.

The author's daughter Vicki takes the measure of 'Royal Windsor,' a 120-pound watermelon.

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Derek Fell is an award-winning garden writer who has photographed and written 14 published gardening books. He lives in Bucks County where he cultivates a two-acre garden.

SOURCES FOR VEGETABLES

ASPARAGUS

'Ben Franklin' (plants)
Gardener's Choice Catalog
County Road 687
Hartford, MI 49057

'Jersey Centennial' (plants)
Stark Bros. Catalog
Louisiana, MO 63353

PEPPER

'Big Bertha' (plants)
'Golden Goliath' (plants)
'Sweet Chocolate' (plants)
Gardener's Choice Catalog

'Honeybelle' (seeds)
Joseph Harris Seed Catalog
Moreton Farm
Rochester, NY 14624

'Gideon' (seeds)
W. Atlee Burpee Co. Catalog
200 Park Avenue
Warminster, PA 18974

STRAWBERRY

'Brighton' (plants)
Gardener's Choice

'Tristar' (seeds)
Burpee Catalog

'Sweetheart' (seeds)
Park Seed Catalog
Greenwood, SC 29647

SWEET CORN

'Honey & Pearls' (seeds)
Park Seed Catalog

TOMATO

'Early Pick VF' hybrid (seeds)
'Supersteak VF' hybrid (seeds)
Burpee Catalog

WATERMELON

'Yellow Baby' (seeds)
Park Catalog

'Royal Windsor'
Twilley Seeds
Trevose, PA 19047

ZUCCHINI SQUASH

'Richgreen' (seeds)
Burpee Catalog

'Goldrush' (seeds)
Park Catalog

PLANT SOCIETIES MEETINGS IN 1989

photo by Kathryn S. Andersen

American Daffodil Society field trip.

AFRICAN VIOLET SOCIETY OF PHILADELPHIA

Annual Show & Plant Sale	**Plant Sale**	**Contact:**
May 6, 1-9:30 pm May 7, 12-4:30 pm Plymouth Meeting Mall Plymouth Meeting, PA	"Hometown Fair" Sept. 15-16 10-9:30 pm Plymouth Meeting Mall Plymouth Meeting, PA	Margaret Cass 920 Andorra Road Lafayette Hill, PA 19444 (215) 836-5467

AFRICAN VIOLET SOCIETY OF SPRINGFIELD

Annual Show & Plant Sale	**Contact:**
April 29, 12-10 pm April 30, 10-6 pm Springfield Mall Baltimore Pike & Sproul Rd. (Rt. 320) Springfield, Pa 19064	Mrs. Henry Roth 105 Carleton Rd. Wallingford, PA 19086 or Mrs. Richard Jones 909 Louise Lane West Chester, PA 19380

PENNSYLVANIA **BONSAI** SOCIETY

Exhibit at	**Auction/Picnic**	**Contact:**
Philadelphia Flower Show March 5-12 Philadelphia Civic Center 34th St. & Civic Center Blvd. Show Admission $9.00	May (TBA)	James A. Gillespie 3183 Pine Rd. Danielsville, PA 18038 (215) 837-6688

BRANDYWINE CONSERVANCY AND BRANDYWINE RIVER MUSEUM

Annual Wildflower, Native Plant & Seed Sale	**Contact:**
May 13-14, 9:30-4:30 p.m. Brandywine River Museum Route 1 Chadds Ford, PA	F. M. Mooberry or Mark Gormel (215) 459-1900

PHILADELPHIA **CACTUS & SUCCULENT** SOCIETY

Exhibit	**Plant Sale**	**Contact:**
Philadelphia Flower Show March 5-12 Philadelphia Civic Center 34th St. & Civic Center Blvd. Show Admission $9.00	Sept. TBA, 9-5 pm Peddlers Village Lahaska, PA	Donald Wolters 17-9 Valley Road Drexel Hill, PA 19026

DELAWARE VALLEY **CHRYSANTHEMUM** SOCIETY

31st Annual Show	**Plant Sale**	**Contact:**
Oct. 14, 1-5 pm Oct. 15, 10-5 pm Longwood Gardens, Conservatory Kennett Square, PA 19348 Admission fee to Longwood Gardens	Sept. 20-21, 10-4 pm Tyler Arboretum Painter Rd. Lima, PA 19037	Mr. Robert Long 953 Palmers Mill Road Media, PA 19063

CHRYSANTHEMUM SOCIETY OF SOUTH JERSEY

Flower Show	**Plant Sale:**	**Contact:**
Nov. 4, 2-5 p.m. Nov. 5, 1-5 p.m. Gloucester County College Tanyard Rd. Sewell, NJ	May 19, 3-8 p.m. May 20, 9-5 p.m. 323 Columbia Ave. Pitman, NJ 08071 $1.75 for 3 rooted cuttings, send SASE	**Sale** Mrs. E. Erichson 323 Columbia Ave. Pitman, NJ 08071 (609) 5890-2475 **Show** Lowell E. Topham 84 Erial Rd. Clementon, NJ 08021 (609) 435-8762

DELAWARE VALLEY **DAFFODIL** SOCIETY

Annual Flower Show	**Plant Sale**	**Contact:**
April 22, 1-5 pm April 23, 10-5 pm Longwood Gardens Kennett Square, PA 19348 Admission fee to Longwood Gardens	Sept. 30, 9-5 pm 535 Woodhaven Rd. West Chester, PA 19382	Mrs. Marvin Andersen 7 Perth Drive Wilmington, DE 19803

NEW JERSEY **DAFFODIL** SOCIETY

State Daffodil Show	**Bulb Auction & Meeting**	**Contact:**
April 25, 1-6 pm All Saints Church All Saints Road Princeton, NJ	Sept. 24, 3:30 pm Frelinghuysen Arboretum East Hanover Ave. Morristown, NJ	Mrs. Eugene Haring Rosedale Lane Princeton, NJ 08540 or Mrs. Fairman 88 N. Stanworth Dr. Princeton, NJ 08540

GREATER PHILADELPHIA **DAHLIA** SOCIETY

Annual Show	**Contact:**
Sept. 16, 3-6 pm Sept. 17, 12-4 pm Fair Acres Geriatric Ctr. Route 352 Lima, PA	Wm. G. Moser 717 Hemlock Rd. Media, PA 19063 (215) 566-5537

DELAWARE VALLEY **DAYLILY** SOCIETY

DVDS Flower Show	**Plant Sale**	**Contact:**
July 22, 1-5 pm The Court King of Prussia Mall King of Prussia, PA	Sept. 9, 9-12 pm Tyler Arboretum	Beth Creveling 234 Bypass Rd. Perkasie, PA 18944

BURHOLME HORTICULTURAL SOCIETY

Annual Gladiolus Show	**Bulb Auction**	**Contact:**
August 1989 TBA	March 1989 TBA	Mrs. John McCarthy 829 Knorr St. Philadelphia, PA 19111

THE AMERICAN **GOURD** SOCIETY INC.

Annual Gourd Show	**Contact:**
Oct. 7, 12-6 pm Oct. 8, 9-5 pm Fairgrounds Mt. Gilead, Ohio	John Stevens P.O. Box 274 Mt. Gilead, OH 43338-0274

DELAWARE VALLEY UNIT **HERB** SOCIETY OF AMERICA

Scholarship Luncheon for Horticultural Scholarship at Delaware Valley College	**Annual Herb Sale & Luncheon**	**Contact:**
Oct. 18, Noon Prallsville Mill Route 29 Stockton, NJ $12.50	May 20, 10-4 pm Prallsville Mill Route 29 Stockton, NJ	Joan Schumacher 8 Windey Lane Doylestown, PA 18901

HERB GARDEN CLUB

"Celebration of Herbs"
(Lecture, Plants, and Related Articles)
May 13, 10-2 pm
Norristown, PA

Contact:
Barbara Brouse
2015 Potshop Rd.
Norristown, PA
(215) 539-7371

HERB SOCIETY OF AMERICA, SUSQUEHANNA UNIT

Plant Sale
May 6, 10-1:30 pm
The Barn at
Rockford Plantation
Lancaster County Park
Lancaster, PA

Contact:
Michele Miller
5092 Lyndana Drive
Lancaster, PA 17601

DELAWARE VALLEY **IRIS** SOCIETY

Iris Show
TBA

Plant Sale
July 15, 10-2 pm
Tyler Arboretum
Lima, PA

Contact:
Mrs. Arthur F. Martin
116 Meriden Drive
Hockessin, DE 19707
302-998-2414

DIAMOND STATE **IRIS** SOCIETY

Iris Show
May 28, 12-5 pm
Boscov's Dept. Store
Dover Mall
Dover, DE

Plant Sale
July 8, 10-12 pm
Boscov's Dept. Store
Dover Mall
Dover, DE

Contact:
Mrs. Arthur Martin
116 Meriden Drive
Hockessin, DE 19707
302-988-2414

AMERICAN **IVY** SOCIETY

Annual Convention
June 15-18
Schenectady County
Public Library
Schenectady, NY

Eastern Regional Chapter
(Quarterly Meeting)
April 15
Longwood Gardens
Kennett Square, PA

Contact:
Annual Convention
Ann B. Speanburg
133 Saratoga Rd., Apt. K-2
Scotia, NY 12302
518-399-4367

Eastern Regional Chapter
Ed Broadbent
Longwood Gardens
Kennett Square, PA 19348

MIDDLE ATLANTIC REGIONAL **LILY** GROUP

25th Annual Show
June 24, 1:30-5:30 pm
June 25, 10-5 pm
Longwood Gardens
Kennett Square, PA
Longwood admission fee

Bulb Sale
Oct. 28, 2-4 pm
Jenkins Arboretum
631 Berwyn-Baptist Rd.
Devon, PA

Contact:
Harold S. Slemmer
Box 36
558 Wawa Camp Road
Lederach, PA 19450

MARIGOLD SOCIETY OF AMERICA

Annual Meeting
TBA

Contact:
Jeannette Lowe
394 West Court St.
Doylestown, PA 18901

CENTER CITY **ORCHID** SOCIETY

Lecture "Vandaceous Orchids"
by Debbie Robinson
April 17, 6:30 pm
Thomas Moser Cabinetmakers
210 W. Washington Square
Philadelphia, PA 19106

Lecture "Pink Paphs"
by Walt Off
Waldor Orchids
May 15, 6:30 pm
Thomas Moser
Cabinetmakers
210 W. Washington Sq.
Philadelphia, PA 19106

Contact:
Margee P. Stone
c/o Thomas Moser
Cabinetmakers
210 W. Washington Sq.
Philadelphia, PA 19106

Phone Contact:
Mildred Lizenbaum
215-627-1981

GREATER PHILADELPHIA **ORCHID** SOCIETY

Monthly Meeting
4th Thursday, 8:30
Merion Friends Activity Ctr.
613 Montgomery Ave.
Narberth, PA

Plant Sale
Sept. 28, 7:30 pm
Merion Friends
Activity Center
613 Montgomery Ave.
Narberth, PA

Contact:
Lois Duffin
7411 Boyer St.
Philadelphia, PA 19119

SOUTH JERSEY **ORCHID** SOCIETY

Annual Plant Auction
Covered Dish Luncheon
June 18, 1-4 pm
Wenonah Meth. Church
Willow Grove &
Clinton Ave.
Wenonah, NJ

Contact:
Olga Karchuta
19 High St.
Woodbury, NJ 08096

SOUTHEASTERN PENNSYLVANIA **ORCHID** SOCIETY, INC.

Monthly Meeting
2nd Wednesday
All Saints Episcopal Church
Montgomery Ave. at
Gypsy Lane
Narberth, PA

Contact:
Mrs. George S. Robinson, Jr.
Wells' Acres
RD 2, Box 129
Chester Springs, PA 19425

AMERICAN **PRIMROSE** SOCIETY — DORETTA KLABER CHAPTER

Garden Visits
April TBA
Bucks County, PA

Plant Sale
June TBA
West Chester, PA

Contact:
Mrs. John S. Kistler
1421 Ship Rd.
West Chester, PA 19380

AMERICAN **RHODODENDRON** SOCIETY — PHILADELPHIA CHAPTER

Truss Show
May 13, 12-4 pm
Tyler Arboretum
Painter Rd.
Lima, PA

Plant Sale
May 13, 10-4 pm
Tyler Arboretum
Painter Rd.
Lima, PA

Contact:
Betts Layman
212 Almur Lane
Wynnewood, PA 19096

AMERICAN **RHODODENDRON** SOCIETY — PINE BARRENS CHAPTER

Flower Show / Monthly Meeting
April 18, 7:30 pm
May 23, 7:30 pm
Atlantic County Library
Egg Harbor Rd.
Hammonton, NJ

Plant Sale
May TBA

Contact:
Ray Rhoads
746 Upton Way
Somerdale, NJ 08083

AMERICAN **RHODODENDRON** SOCIETY — VALLEY FORGE CHAPTER

Flower Truss Show
May 13, 1-4 p.m.
Tyler Arboretum
515 Painter Rd.
Lima, PA

Plant Sale
May 6, 9-3 p.m.
Jenkins Arboretum
631 Berwyn-Baptist Rd.
Devon, PA

Contact:
Francis Rangley
2112 Foulk Rd.
Wilmington, DE 19810

AMERICAN **ROCK GARDEN** SOCIETY — DELAWARE VALLEY CHAPTER

Annual Meeting
June 16-18
Raddison Hotel
Wilmington, DE
$85.00

Garden Tour
May 13, 10-4 pm
Arboretum of the
Barnes Foundation,
Wherry Memorial Rock
Garden and other
local gardens

Contact:
Joyce Fingerut
2106 Pennsylvania Ave.
Fort Washington, PA 19034

DEL-CHESTER **ROSE** SOCIETY

Annual Rose Show
June 10
Entries by 10 am
Open to public 1 pm
Longwood Gardens
Kennett Square, PA

Annual Auction
Oct. 23, 8 pm
Delaware Valley
Christian Church
Off Route 352, across
from Penn State
Lima Campus

Contact:
Jack & Pat Bilson
127 Gable Rd.
Paoli, PA 19301

GREATER HARRISBURG **ROSE** SOCIETY

Annual Rose Show
June 17, entries 7-10 am
Camp Hill Shopping Mall
Camp Hill, PA

Contact:
Marguerite Reynolds
RD 2, Box 235
Duncannon, PA 17020

PHILADELPHIA **ROSE** SOCIETY

Philadelphia Rose Show
June 3, 2-9 pm
Plymouth Meeting Mall
Plymouth Meeting, PA
Free — All exhibitors welcome

Monthly Meetings
1st Thursday —
March thru May,
Oct. thru Dec.
8 pm
Mary H. Wood
Parkhouse
120 E. Fifth Ave.
Conshohocken, PA

Contact:
Robert Ballatine III,
President
505 Simms St.
Philadelphia, PA 19116

Phone Contact:
Mrs. Donald Pitkin
215-692-4076

INTERNATIONAL **WATER LILY** SOCIETY

Water Lily Symposium
Aug. 10-13
Hyatt Alecante
Anaheim, CA
Fee $125

Contact:
Virginia Thomas
P.O. Box 104
Buckeystown, MD 21717
301-874-5373

BOWMAN'S HILL **WILDFLOWER** PRESERVE

Plant & Art Sale
May 13-14, 10-4 p.m.
Bowman's Hill
Wildflower Preserve
Route 32
Washington Crossing, PA

Craft Sale
Nov. 18, 10-4 p.m.
Bowman's Hill
Wildflower Preserve
Route 32
Washington Crossing, PA

Contact:
Janet Urban
P. O. Box 103
Washington Crossing,
PA 18977

Green Scene publishes a list of area plant society meetings and plant sales annually in the March issue of *Green Scene.* DEADLINE: November 15. Please follow format used here. Write to: Editor, *Green Scene,* PHS, 325 Walnut Street, Philadelphia, PA 19106.

photo: courtesy of Langeveld Bulb Co.

Hippeastrum 'Best Seller'

AMARYLLIS

They Keep Coming Back

By Todd R. Phillippi

Many of us at one time or another have either bought or received a preplanted amaryllis kit, the kind readily available in most home and garden centers. After following the directions and getting a nice set of blooms the first season, their performance seems to steadily deteriorate. Perhaps it produces one sparse flower stalk the following year, only to wind up tossed into the compost heap the next. This unfortunately all too familiar scenario can be avoided, given the dramatic beauty these plants bring to even sparsely sunlit homes (like mine) in the middle of winter.

The so-called amaryllis familiar to most of us are actually not amaryllis but hippeastrum, a relative in the family amaryllidaceae. In their native habitats, they are found both growing on the floor of rain forests and clinging to branches or tree trunks the way epiphytes such as orchids do. The large showy forms we know today were hybridized by the Dutch and are available in a wide range of colors and color combinations, as well as varying flower shapes and sizes. The plants have been cultivated for centuries and, judging by the quantity of amaryllis etchings executed by Pierre-Joseph Redouté for Josephine Bonaparte, the Empress must have had quite a collection.

My interest in amaryllis began as a child during visits to my grandparents' home at Christmastime. There was always at least one of these strange things in bloom, appearing almost unreal as its vibrant colors towered above the slender stalk and clay pot. Years later I bought one bare root rather than potted and found it readily performed the same winter spectacle for me, in spit of my home's northern exposure. With the exception of one year, that bulb has consistently produced two flower stalks with four blooms each for the past five years. They key to this success is starting out right and then nurturing the plant *after* it blooms.

getting off to a good start

To get an amaryllis to bloom consistently, a top-quality bulb that has been properly prepared is a must. The quality is determined by the size and root development. The bulb should be at least 4" in diameter. The preplanted bulbs in the kits are usually small (3" or less in diameter), and their size cannot be easily determined since they're usually completely covered with the soil mix and/or a plastic disc. Good root development is important to minimize the amount of "stored" energy that goes into making roots rather than

Comparing bulb quality. Upper left: top size bulb with good root formation. Upper right: average to small bulb with decent roots. Lower middle: small bulb with poor root development.

photos by Todd R. Phillippi

Proper planting depth and space around bulb.

making flowers for the following year. The base of the bulb should be covered with plump, fleshy roots, 6" or more in length. To evaluate the roots and bulb size, purchase the bulbs bare root. Bare root amaryllis can either be purchased at specialty nurseries and garden centers or through mail order catalogs from Holland.

Because I've had problems with stunted flower development and dried out roots on bulbs from garden centers (due to weeks in warm, dry conditions in the shops where they're sold), I buy all of mine direct from Holland mail order. One particularly reliable source I've found is Dutch Gardens in Liesse, Holland (I order through their local office in Adelphia, NJ).* The bulbs they supply are consistently large with plenty of roots and the few times I was dissatisfied, they readily replaced them the same season. Buying direct from the growers also keeps the time to a minimum that the bulbs are out of their storage coolers. By scrutinizing a bulb's quality and conditioning, subsequent care keeps a plant in blooming condition, rather than trying to both build up the bulb size and get it to flower again.

planting it right

Plant your top-quality bulb as soon as possible according to the instructions provided. These directions emphasize two key factors: an inch of space between the bulb and pot edges, and leave at least half of the bulb *above* soil level. The soil mix, not ordinarily addressed in the literature, is important, too. Aside from potential problems of bulb rot when the bulb is completely covered by soil, the growing medium contained in the preplanted kits ordinarily holds a lot of moisture, due to the high amount of peat in the mix. As with true epiphytes, excessive moisture will cause the roots to rot. The mix I prefer has one-third coarse sand to promote drainage. The other two-thirds are equal parts of garden loam and composted manure. The manure provides plenty of nutrients, preventing the need for repotting for about two years. (An added advantage of this mix is that it is heavy, and the weight keeps the pot from toppling under the weight of the flowers.)

*Dutch Gardens, P.O. Box 200, Adelphia, New Jersey 07710

care guide

The following is an excerpt from a care guide I've written to accompany the many amaryllis I give as business gifts each year:

Culture

Keep the soil moist until all flowers have finished blooming. When a stalk has completed flowering (your plant will produce two or three stalks), cut off at the top of the bulb. After all the stalks have bloomed, place the plant in a sunny window and begin to fertilize monthly, (I use a tablespoon of bone meal or bulb booster, but other fertilizers will do). Your plant must grow a number of strap-like leaves in order to bloom again next year. After May 15, sink the pot with the plant in your garden in a location where it will receive diffused or morning sunlight. Continue to fertilize and water (unless there is adequate rainfall). Stop monthly fertilizing mid-August. By the end of September (and before the first frost), take the pot in, cut the leaves back to about 2" above the top of the bulb, and lay the pot on its side for a week. Then store the pot in a cool basement or garage. Do not water for several weeks, then give just enough to prevent the soil from drying out. After January 1st (and sometimes as late as March) you'll see the small green tip of a flower stalk beginning to emerge. Now it is time to bring the amaryllis back into a sunny window. Water thoroughly once, then keep the soil moist, watering weekly. In about eight weeks, you should once again have a flowering plant. Follow culture of fertilizing and watering as before. Plants may need repotting in about two years.

•

Todd R. Phillippi, AIA, is an architect and garden designer who lives in Philadelphia. His amaryllis have won numerous ribbons in the Philadelphia Flower Show for the past three years.

H O T L I N E

photo by Gina Burnett

By Kathy Mills, Assistant Horticulturist

Questions about house plants dominate those asked our hotliners each winter. They answer questions on everything from gardenias to venus fly traps. Here are a few general tips that will help your plants make it through the long winter months.

healthy indoor plants

Always buy indoor plants from a knowledgeable and reputable dealer who keeps a clean retail outlet. A well-tended plant comes from a well-tended shop. Ask the retailer about the plant's growing requirements. Carefully inspect it at the shop to make sure there are no signs of pests and/or disease, and that the plant looks healthy. When transporting, keep the plant as warm as possible; during the winter months a quick trip home is a must. A piece of plastic around the plant to keep the cold wind off is a good idea but remove it as soon as you get the plant home. Expect some leaf drop while the plant adjusts to temperature fluctuations and its new growing environment.

Although there may be no visible signs of a health problem before homecoming, isolate the plant from other plants for a week or two, just to be sure. New plants coming inside after a summer outside can be washed off with soapy water and rinsed to remove unwanted pests. Set larger plant in the bathtub and spray with a hand-held shower head.

Treat each house plant as an individual, not just a component of a larger massing. Knowing where your plant grows in nature will help you to recreate the proper growing environment at home. A good reference book on house plants is a must. Each time you water, take a moment to inspect the plant. Look for symptoms of pests, disease; note changes in the plant's environment (e.g. light or temperature). During the winter months the home's heating system will keep the air warm and dry. It's important that you keep the humidity at a level favorable for your plants. Pebble trays are an easy way to do that. The best way to keep house plants healthy is to keep them clean. Remove dead or diseased leaves as they appear. Wipe off leaves periodically with water. The build-up of dust and leaf polishes will eventually clog the plants' pores. Do not overwater your plants. Discard any water that drains into the saucer. Overwatering is the primary cause for house plant disease and death.

unhealthy indoor plants

Even when you take loving care of your plants, problems can arise. As soon as you notice that a plant looks unhealthy, isolate it from your other house plants so the problem won't spread.

The most important step is to correctly identify the plant's problem. Treating the plant for insects is senseless if the plant has a fungal disease. Plant problems can be divided into three categories: environmental stresses, insect pests, and disease. Each category may have similar symptoms, yet the cause and the treatment are different. An environmental stress, too much or too little light, can cause yellowing leaves. An infestation of aphids or spider mites can cause yellowing leaves. A fungal disease can also be identified by yellowing leaves. You need to know *how* the leaf is yellowing to correctly identify the problem. Use your house plant reference book or call the PHS Hotline to be sure what the problem is; then tailor treatment to fix the problem.

Save a plant in the wrong environment by changing its growing conditions: raise or lower the humidity, increase or decrease the amount of fertilizer, light, and/or water.

watering

The water used for plants should sit out overnight. This gives the gases harmful to plants time to escape and ensures the water is at room temperature when it is poured onto the plant. Cold water can spot the sensitive leaves of some plants (African violets, for example). If you fertilize when you water it is important not to let the salt content of the soil build up. White lines on clay pots indicate this could be happening to your plant.* Every few waterings use water only; make sure that water runs from the bottom of the pot to leach out any fertilizer build-up. In severe cases, repot in a new potting mix and fresh pot.

Overwatering causes many plant problems. Too much can suffocate the plant by keeping needed oxygen from the soil. Root disease and other fungi thrive in a wet environment. Avoid overwatering by using a good, porous potting soil mix and always provide a drainage hole in the bottom of the pot.

pests

Insects multiply rapidly, so early detection is your best defense. When populations are small, control is much easier. A strong jet of water or a dab of rubbing alcohol followed by a rinse of water can control most insects and mites in the early stages. For larger populations weekly applications of insecticidal soap followed by a rinse may be necessary to eliminate the problem.

If it is possible, cut out heavily infested areas. Monitor the plant carefully after any treatment to make sure the problem is under control. Yellowing, discoloration, cupping leaves, webs and cottony fluffs are a few signs that you have a pest problem.

A bad infestation? Discard the plant. Few insecticides are cleared for indoor, non-greenhouse use. To spray an insecticide or miticide not labeled for indoor use, in a house closed tightly for winter, is a

More Reading for Healthy Indoor Plants

Rodale's Encyclopedia of Indoor Gardening
ed. Anne M. Halpin
Rodale Press
Emmaus, PA
1980

Ortho's Complete Guide to Successful House Plants
ed. Karin Shakery
Chevron Chemical Co.
San Francisco, CA
1984

These and many other fine books on house plants are available at the PHS Library.

* To get rid of salt line, soak pot in a solution one part bleach to 10 parts water; rub clean. Rinse thoroughly before using pot again.

senseless health risk. If you must use an insecticide, read the label **thoroughly and carefully** before use.

fungal disease

To control fungal diseases you need to manipulate the environment, to make it unfavorable to the fungus and favorable to the plant. Preventing a fungal disease includes proper sanitation and grooming practices and using only pasteurized potting mixes when repotting.

Root rots are often caused by overwatering. The roots, then later the stems, become mushy. Reduce watering, repot, or in severe cases discard the plant.

Leaf spots are common on all house plants. They can be caused by cold water on the leaf, misting in full sun, or too much sun resulting in scald spots. These spots tend to have diffuse margins or lines of demarcation between the spot and the unaffected area of the leaf. Fungal leaf spots on the other hand, have distinct margins, and on the underside of the leaf often display black dots within the spot. Remove leaves with fungal leaf spots at once to keep the fungus from spreading. Fungi like a warm and wet environment; given both they will flourish. Keep an infected plant at a lowered humidity, and keep the leaves dry. Make sure air circulation is good around the plant. These steps will make the environment less favorable to the fungus.

Powdery mildew and botrytis are two other fungal diseases that prosper when the humidity is too high and the plant is receiving too little light. Remove any affected parts, reduce watering, increase light, and improve air circulation. If you feel you must use a fungicide, read the label **thoroughly and carefully** before use.

Plant Problems?

Call the PHS HOTLINE 922-8043, Monday through Friday 9:30 - Noon (except December).

●

LETTERS TO THE EDITOR

Bambi Go Home

Dear Editor:

I would like to thank you for printing the excellent and timely article entitled "Bambi Go Home" in your January edition.

I am afraid too few people realize the devastating effect, not only on the land but also on the deer themselves, when any species is allowed to multiply beyond the capacity of its area to support them.

This is such a fine article I wish it could be condensed into a flyer and passed out to those well-meaning but uninformed demonstrators who invariably gather whenever true conservationists try to thin down a deer population to a reasonable level.

Nancy Reynolds
Greenville, DE

Down's Syndrome

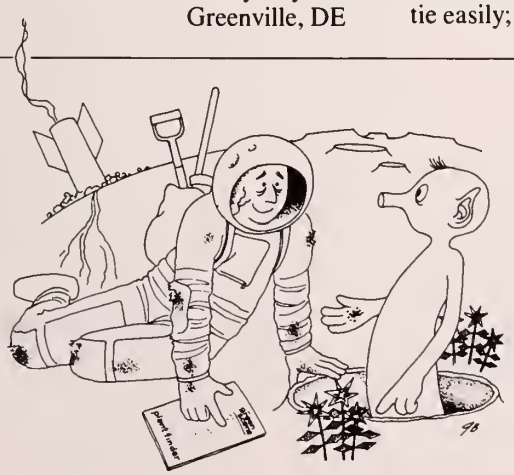
Dear Editor:

I was delighted to see your feature on the gardeners at the Melmark Home. However, as the parent of a Down Syndrome child and an advocate for people with mental retardation, I am concerned about two comments your author made:

1. The short stubby fingers of Down Syndrome made tying a difficult, if not impossible, task.
2. At first most Down Syndrome children are squeamish, hesitant to get down and mess around in dirt.

Down Syndrome people exhibit as many differences as do normal people. Some can tie easily; some cannot. Some are squeamish about dirt, some are not. We now know there's an enormous range of IQ and skills in Down Syndrome people. I appreciate your article, which was concentrating on the successes of retarded people. Such articles help break stereotypic ideas. These two corrections may seem minor in light of the author's achievement, but it's important to share our progress and new information at every opportunity.

Arlene Jarett
President, Montgomery County
Association for Retarded Citizens



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Kyle Prescott (foreground) and Daniel Fahl, in the four-to-five year old group at the ISI Caring Center for Parents and Children, weed corn under Tonya Tate's tutelage. See page 11.

GREEN SCENE

THE MAGAZINE OF THE PENNSYLVANIA HORTICULTURAL SOCIETY • MAY/ JUNE 1989 • $1.50

A City Sanctuary: Crozer-Chester Medical Center Gardens.

See page 28

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Front Cover
Delphiniums grow alongside the barn wall at the entrance to the Leona Gold Garden at Crozer-Chester Medical Center Gardens.
photo by Christopher Ransom

Back Cover
Monarch butterfly.
photo by Pat Abel

in this issue

Volume 17, Number 5 May/June 1989

THE PENNSYLVANIA HORTICULTURAL SOCIETY
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Cox Arboretum

PASSION, DROUGHTS & GARDEN TOURS

By Jean Byrne

Ambition. Greed. Not words you often use when speaking about gardeners. But I felt an attack of mirth coming on when a friend called in January to gleefully announce that he had selected 30 kinds of pepper seeds to plant for the Harvest Show. Getting up steam, he escalated his flower and vegetable seed order as we talked. Knowing the limits of his garden plot, I envisioned a leveraged takeover of his neighbor's garden. His joy and excitement were so real, however, that I was moved to a gentler assessment: Passion. Passion for gardening; passion for harvesting.

Passion. That's the only thing that can explain Sue Leary's weekly round-trip jaunt of 170 miles to garden. I first met Sue Leary while she was pulling a dolly loaded with vegetables at the Harvest Show about six years ago. She was winning lots of blue ribbons until 1987 when she won the Horticultural Sweepstakes, and in September '88, she copped both the Preserved Products and Horticultural Sweepstakes at the Harvest Show. I was surprised and awed when over a year and a half ago I heard Sue Leary had been maintaining two gardens — one near her home in Collingswood and one in the Poconos. Recently she reluctantly gave up the one near her home but continued her weekly long-distance gardening. Mary Lou Wolfe and Jane Pepper went up to the Poconos to see this modest, dedicated gardener in August, and Mary Lou's story appears in this issue. We hope it will stir all passionate gardeners to buckle down and plant those flowers and vegetables for the Harvest Show.

After last year's July issue dedicated to "Water," I had not anticipated publishing more about water so soon. But with prescience, Anne Cunningham compiled a list of suggestions for combatting a possible drought this summer. She collaborated with artist Karel Hayes to positively reinforce her timely suggestions. They are on the handsome double-page spread on pages 16 and 17.

We welcome to *Green Scene* Kath Duckett and Nancy Boettger, two gardeners we met at PHS's New Members' Open House last June. If you enjoy the stories about Duckett's wild, self-seeding border and Boettger's story about her cottage garden, you'll be able to see them on PHS's Members Garden Tour to Bucks County in June. Check the *PHS News*, (May and June issues) for further information.

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The Long-Distance Country Gardener

Butternut squash was only one item in Sue Leary's prize-winning bounty by the basket at the Harvest Show.

You can take the woman out of the country, but you can't take the country out of the woman. Sue Yale Leary is the tall, sleek, rural "silver fox" of the PHS Harvest Show who walked away with two sweepstakes awards in 1988. She drives a white Mercedes and plants when the moon is on the increase. She and husband Bob live in Collingswood, New Jersey, but garden 85 miles away with the Poconos' Blue Mountain for a backdrop in Walnutport, Pennsylvania. Every week, summer and winter, the Learys tool up the Northeast extension of the Pennsylvania Turnpike making the 170-mile roundtrip that links their city and country lives.

By Mary Lou Wolfe

photo by Mary Lou Wolfe

The Learys drive 170 miles each week to tend the garden that yielded two sweepstakes ribbons at the Harvest Show.

When Sue grew up on the Walnutport homestead that has been in her family since 1929, her parents grew almost everything the family ate. Their 1¾-acre holding produced vegetables, fruits, chickens and even beef. With aunts and uncles farming nearby, the Yale family's calf could be fattened on a generous relative's grass, a sort of calf babysitting service, and it was led home each night to bed down. Soap was made, onions braided and tomatoes ripened in the small summer house behind the farmhouse. Rows of home-canned fruits and vegetables gleamed in the cool farmhouse cellar. Back in those depression years, Sue learned from her mother the basics of bean beetles, cucumber pickles and dandelion wine. She watched her mother use an arsenal of chemical fertilizers and pesticides.

Then came World War II, a nursing career, marriage, a move to New Jersey to raise a family and garden on her own. She read *Organic Gardening* magazine and Ruth Stout's book *How to Have a Green Thumb Without an Aching Back.* She had decided against using chemicals in her garden and was well on her way to becoming an organic gardener when a lucky stop on a trip to New England really converted her. Driving through Connecticut with Bob, she realized she was passing through the town of Redding where Ruth Stout gardened and wrote. On an impulse she stopped at a fruit stand to ask directions to Stout's garden and was pointed toward two old houses a quarter-mile away. Knocking at one she was met by Stout's sister who pronounced "Ruth's an old lady. Don't take up her time." Our silver fox was undaunted and knocked at the other door. Ruth Stout greeted her with "Oh, come in! I want you to see my garden. Don't worry about my sister." Leary remembers Stout's explanations about not tilling the ground, sowing on top and mulching, mulching, mulching. Ruth Stout was then in her late eighties and her graciousness and theories made a big impression on Sue Leary.

In Walnutport, the frequent hand cultivating and dust mulches her parents practiced have been replaced with weekly mulching with grass clippings and leaf compost. Last summer's drought was a good test of this approach and the 1,500-sq. ft. garden flourished. Part of this success is due to Bob's special contribution — finding a supply of goat manure from a nearby outfit that provides some of New York City's Middle Eastern and Greek population with goat meat. The goat manure is aged for three years before the Learys use it on crops, and a handful goes into the bottom of every tomato hole.

January finds Sue Leary poring over the avalanche of seed catalogs that arrive in Collingswood. Years of gardening both in New Jersey and farther north toward the Poconos have taught her what will and won't thrive. Eggplant and melons need a longer growing season than Walnutport provides and early peas tried there are always a disappointment. Burpee's 'Wando' pea, planted later, tolerates heat and produces well. Leary grows Dr. Martin's limas from John and Janet Gyer's Fernhill (N.J.) Farm and another smaller lima you probably never heard of, Dr. Strohl's. This is heirloom seed given Sue's mother by her dentist, Dr. Strohl, and saved to plant each year. In the '89 summer Sue will try some vegetables new to her, kohlrabi and peanuts. Her great success with most vegetables is evidenced by her 14 blue ribbons in the horticultural section of the '88 Harvest Show.

On a wide, sunny, south windowsill in Collingswood, cabbage, tomato, pepper and leek seeds are started, transplanted to 2"x2" pots, and carted 85 miles for planting in late April, May and June. In the garden, Leary uses 12" pieces of discarded venetian blinds to label varieties and record planting dates. They're wonderfully legible.

Spurning chemical controls, Leary uses organic gardening guerrilla tactics.

An intricate progression of plantings insures a long supply of carrots, potatoes, squash, corn, tomatoes and beans.

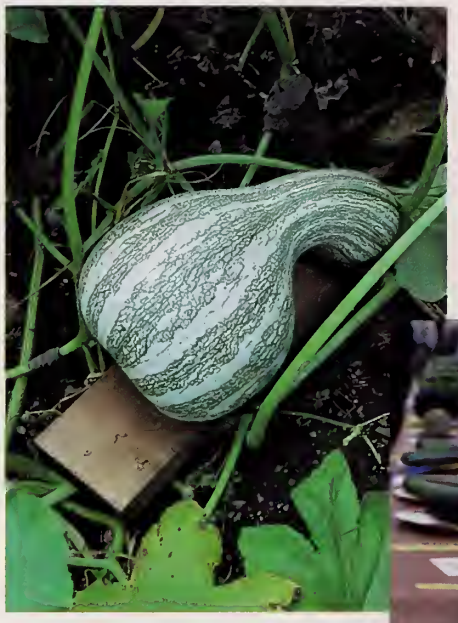
Spurning chemical controls, Leary uses organic gardening guerrilla tactics. Wood ashes surround her potato and squash plants whose stalks, at season's end, are burned, not composted. The wood ash repels the Colorado potato beetle and squash bug; its potash and lime benefits the plant's growth. A mix of flour, salt and baking powder is dusted on cole crops to discourage cabbage worms, and cabbage

continued

heads are further protected with a cover of fine plastic netting or panty hose tops. Pungent herbs like oregano and thyme are interplanted with cabbage. Snails (slugs) are a problem but Leary encourages the bird patrol by posting a wren house adorned with branches right in the garden. She finds that the branches ensure that the house gets occupied and that hungry wrens will emerge. The "no chemical sprays" philosophy applies to the three apple and one pear tree on the homestead. Leary admits the yield is not good and that it may take six or seven years of combat with the main pest, the coddling moth, to get a good crop. She hangs yellow pheromone traps to catch the moths and will wrap the tree trunks with burlap or corrugated paper, removing and burning these as the moths lay their eggs there. In the meantime there's enough useable fruit for jam and jelly.

As her crops progress, Leary scouts specimens that might be winners. When I visited in August, Sue parted the leaves of a 'Cushaw' green striped squash and carefully slipped a clean board under one especially comely fruit. The board protected its underside from scarring as it continued to grow and helped produce the blue ribbon winner pictured here.

Sue Leary still produces gleaming jars of canned fruits, vegetables, relishes and jams that sit on those same shelves that her mother filled in a cool Walnutport cellar. But some things are different. There are no chickens and no calf to take to day-care. There are three freezers (two of which are in Collingswood) and a microwave in each state's kitchen. Leary cans to please herself and delight her friends and family. The parade of dilly beans, corn relishes, pickled beets and spiced onion rings is awesome and, according to the '88 Harvest Show judges, delicious and beautiful enough to win the PHS Preserved Products Sweep-



A board protects a precious 'Cushaw' green-striped squash from scarring before it's exhibited at the Harvest Show. Payoff! A blue ribbon.

photo by Mary Lou Wolfe

Sue Leary's bounty by the basket won a blue at the Harvest Show. Her 43 horticultural entries netted 14 blues, 4 seconds, 4 thirds, and 8 honorable mentions as well as a bronze for her leeks.

photo by Mary Lou Wolfe

Leary's Queen Anne's Lace Jelly

Bring 3½ cups of water to a boil. Remove from heat and add 15 large Queen Anne's Lace flowerheads. Brew to make a strong "tea." Strain and measure 3 cups of this liquid.

Dissolve 1 box of pectin (Sure-Jell) in the 3 cups of flowerhead "tea." Bring this mixture to a boil and add 3¾ cups of sugar. Stir until sugar is dissolved.

Pour into sterilized jars, cool and cover with melted parrafin.

stakes certificate. One that particularly intrigued me was Leary's Queen Anne's lace jelly, and she graciously shared the recipe and says it's especially good with chicken!

Having just pulled a muscle in my back and also envying Sue's meeting long ago with Ruth Stout, I picked up *How to Have a Green Thumb Without an Aching Back* to reacquaint myself with this great lady. Ruth Stout shared her mystery writer brother Rex's talents, and I nodded and smiled my way through this book that made horticultural waves when first published in 1955. I especially like this passage which seems to me to fit Sue Leary: "Planning a garden is like planning a way of life; arrange it to please yourself, copying neither convention, nor tradition, nor any individual, enjoy it and hope that a few other people besides you will be pleased with it."*

How to Have a Green Thumb Without an Aching Back: A New Method of Mulch Gardening. By Ruth Stout, N.Y., Exposition Press, 1955, *p. 140. Available on loan from the PHS Library.

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Mary Lou Wolfe, a writer/photographer, is a frequent contributor to *Green Scene.*

SUE LEARY'S VEGETABLE CHOICES

Beans

CONTENDER
string — 6-7" long; good for "DillyBeans"
Orol Ledden & Sons
Center & Atlantic Aves.
Sewell, NJ 08080
(609) 468-1000

GOLDENROD
yellow wax
Harris Seeds
Moreton Farm
3670 Buffalo Road
Rochester, NY 14624
(716) 594-9411

DR. MARTIN'S
limas
Fernhill Farm
Jessup Mill Road
Clarksboro, NJ 08020

DR. STROHL'S
small lima
Heirloom seed from dentist

Beets

DETROIT
sweet, dark red
Orol Ledden & Sons

LONG SEASON
can harvest at any stage
Harris Seeds

Cabbage

EARLY JERSEY WAKEFIELD
Orol Ledden & Sons

MAMOUTH RED
Orol Ledden & Sons

LATE FLAT RED
Orol Ledden & Sons

Carrots

IMPERATOR
W. Atlee Burpee Co.
Warminster, PA 18974
(215) 674-4915

ROYAL CHANTENAY
Orol Ledden & Sons

SCARLET NANTES
Orol Ledden & Sons

SHORT & SWEET
Orol Ledden & Sons

Corn

SPRITE
68 days
Harris Seeds

HARMONY
73-day bicolor
Harris Seeds

SILVER QUEEN
94 days
Harris Seeds

Cucumbers

CALYPSO
good pickler
Harris Seeds

SWEET SUCCESS
long — good for salads
Orol Ledden & Sons

Okra

ANNIE OAKLEY
53 days
Orol Ledden & Sons

Peas

WANDO
late, tolerates heat
W. Atlee Burpee Co.

LINCOLN
Harris Seeds

KNIGHT
Orol Ledden & Sons

Peppers

BIG BERTHA
to stuff
Harris Seeds

SWEET PICKLE
to can with dried Thai hot peppers. A "challenge" seed, prolific and splendid
Harris Seeds

CAYENNE
Harris Seeds

Potatoes

RED PONTIAC
early to mid-season
Orol Ledden & Sons

YUKON GOLD
large, gold inside
Orol Ledden & Sons

KATAHDIN
good winter keeper
Orol Ledden & Sons

Pumpkins

JACK-BE-LITTLE
for perfect specimens, grow on fence
W. Atlee Burpee Co.

GODIVA
hulless seeds to eat
Harris Seeds

Squash

SUNBURST
first yellow scalloped to ripen
Harris Seeds

TURK'S TURBAN
ornamental
Harris Seeds

CUSHAW
green striped
Orol Ledden & Sons

BUTTERCUP
Sue sometimes eats it for breakfast!
Harris Seeds

BUTTERNUT
Harris Seeds

Tomatoes

ACE 55VF
lasts very well
Orol Ledden & Sons

BETTER BOY
W. Atlee Burpee Co.

DEL ORO
better than plum tomatoes for canning
Orol Ledden & Sons

RAMAPO
a good late one
Orol Ledden & Sons

photo by Mary Lou Wolfe

A lightweight cloth protects Leary's sunflower seeds from the birds until they are ripe. Leary says "Feed the birds in winter, not summer."

A BORDER GOES WILD

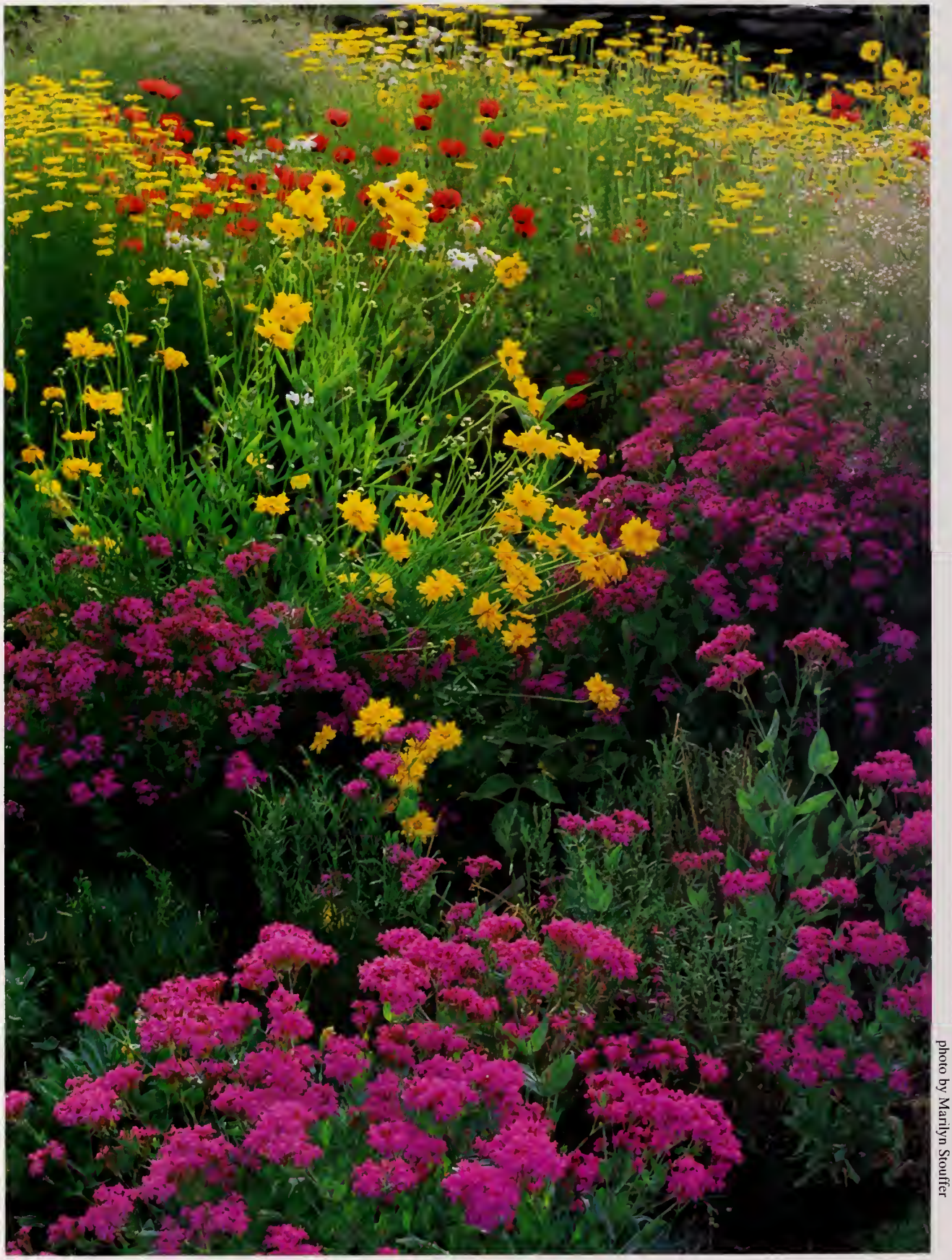

photo by Marilyn Stouffer

Kath Duckett's June border of self-seeding perennials, biennials and annuals includes Coreopsis, *Silene armeria,* shasta daisies 'May Queen,' and flanders poppies.

By Kath Duckett

Self-seeding plants: more color and less work at home for a busy perennial garden designer.

photo by Marilyn Stouffer

The delicate pale orange flowers of *Papaver atlanticum,* a self-seeding perennial, blooms for up to two months if deadheaded.

"Showers or flowers" I tell my family, and they consistently vote for the showers.

An old stone dry wall transverses the hillside behind our home. My first perennial border was planted using the wall as a backdrop. I spent the previous winter meticulously laying out the plan on graph paper, using four transparent overlays for seasons and colors. The plants were all herbaceous perennials with the exception of a few biennials. That was 13 years ago and the garden which measured 8 by 50 feet, has now grown to 20 by 150 feet. Many of the original plants no longer exist either because I changed my mind or they could not tolerate the site. The biennials have moved around and I've added new plants. Since people invariably offer you plants that have overrun their own gardens, most of my plants were carefully purchased. Seeds are a different story; I cannot resist the offer of a few seeds to scatter about.

I was surprised last June when I realized the border's masses of blooms had little to do with my efforts or expertise. The plants had taken control of themselves vigorously seeding, not always where I would have chosen; and they were not all perennials or biennials. The drifts of color I was enjoying were largely annuals.

I had long been aware of the seeding potential of some plants as a source of new material. My first shasta daisies were discarded seedlings from a friend's compost pile. I enjoyed their bloom in combination with the bearded iris so much that I let them seed where they might until I realized they all but submerged the iris. I reluctantly began moving some of the shasta daisies. In bloom sequence the daisies were joined by blue flax which produce hundreds of sky blue flowers, each only lasting a day from May to July when I cut them back to force a second bloom.

Another perennial, tickseed, a lovely bright gold daisy, quickly proved itself a prolific seeder. This tall somewhat leggy variety reigned during June and July until I discovered that a much tidier relative *Coreopsis* 'Baby Sun' would also seed. The tickseed went to the back of the border where it can flop over whatever it chooses. At least, that is the plan. In reality, the initial foliage of both plants is difficult to tell apart and sometimes the tickseed slips by to the front where only its increasing height leads to its demise.

Golden Marguerite, another charming lemon-yellow three-foot daisy, which prefers low fertility soil, was the next perennial to vie for supremacy in the June/July border. It seeds rampantly although the flowers of these seedlings are slightly smaller than the cultivar. I periodically discard the older plants because in my fertile soil after two years they tend to become leggy and less attractive, while the new additions form a bushier, more compact plant.

More recent perennial additions include *Salvia x superba* 'East Friesland' at 1½ feet with purple spikes, and perennial sweet pea, a grey-green-leaved vine in every shade of pink plus white. Both have proven their propensity for seeding despite being heavily cut back in July to force a second bloom. The original sweet pea vine was planted to climb over a large baby's breath; however, its seedlings rapidly began draping themselves over and smothering every flower nearby. I must remove unwanted seedlings quickly as the root systems become tenacious and deep.

biennials

I have always relied on a few biennials: sweet rocket, a three-foot-tall plant resembling phlox with either lilac or white flowers, which appear in May, followed by foxglove with their tall stately spires of pink and yellow, and a salmon pink sweet william 'Newport Pink,' a biennial *Dianthus* about 12 inches tall.

annuals

Two years ago, I added a few annual larkspur to supplement the delphinium, which, despite my best efforts, maintain up to a 50% mortality rate. The larkspur quickly became a sea of blue in May and June. Another hardy annual 'Catchfly,' with its lovely blue-grey foliage and brilliant pink flower heads, seems able to seed almost anywhere, and I frequently find it happily blooming between stepping stones. In June, I also rely on the yearly return of three varieties of hardy annual poppies: the brilliant scarlet flanders; the pastel pinks of

continued

photo by Marilyn Stouffer

Two annuals, larkspur and the Paeony Flowered poppy, with perennial sweet pea starting its climb over the large baby's breath on the right.

This section of the June border includes digitalis along with the Coreopsis, 'May Queen' shasta, larkspur and Flanders poppy.

photo by Marilyn Stouffer

Shirley and Paeony Flowered; and one perennial, *Papaver atlanticum,* with delicate pale orange flowers, which also self-seeds, and whose bloom period covers two months if deadheaded.

While the annuals have their most spectacular display in May and June, later in the season I depend on other perennials to seed in including *Heliopsis, Echinacea, Echinops,* and *Aster.* This year, I will add *Cosmos* and *Cleome* (spider flower), both annuals in white and shades of pink, to supplement the late garden. Altogether in various situations on my property (sun, shade and rockery) I can count on 35 perennials, five biennials and seven annuals to seed in.

what affects germination?

A couple of factors affect germination in my garden, including rain or the lack of it. We depend on a well, and I can seldom water without the risk of running dry. "Showers or flowers" I tell my family, and they consistently vote for the showers. Undoubtedly, the most important ingredient in this garden is mushroom soil, simply horse manure, which has been used to grow mushrooms. In the process, it is steamed to kill weed seeds and loses most of its fertility. If allowed to compost it has an almost neutral pH. I use it in vast quantities as a soil amendment and mulch. It does not last from year to year like a bark mulch, but works its way into the soil creating a grand humusy-growing medium.

I also play a part in this seeding process. My work schedule does not allow me much time to spend in my own garden so in the case of perennials and biennials, I do a lax job of deadheading, allowing at least some flowers to go to seed. With annuals you must let a few plants die back completely to have mature seeds. Since dying plants are unsightly, I select those that are hidden from view by taller perennials and, during the fall cleanup, distribute the seeds where I hope they will grow. Therein lies the drawback to this form of gardening. You cannot control where seeds will germinate. Despite my best efforts, the brilliant red flanders poppy seems irresistibly drawn to my pink peonies. But then the peonies only last a week or two and precede the poppy in bloom, so I choose to overlook that garish week knowing how lovely those red flowers will soon look next to the dark green peony foliage.

If you prefer a less harsh, more pastel tone try the Peaony Flowered *Papaver somniferum* 'Pink Beauty' with its shaggy double pink blossoms and blue-grey foliage. My hands-off methods of allowing this poppy to seed itself may be the only legal way in this country to perpetuate it in gardens, as it is illegal to germinate *P. somniferum.* In any case, I am sure the red flanders and pink paeony poppy will shortly find each other.

Along with this inherent obstinacy to seed where they will, my problem is compounded by the fact that my garden is situated on a hillside. Every flower tends to want a front-row seat. Quite a few plants jump the gate entirely or, in my case, a wide brick edging at the front of the border, and end up in the lawn. The habitual offenders usually are the tallest plants, while edging plants like basket-of-gold frequently seek a quieter spot in mid-border.

All in all, I would not advise those of you who require control and orderliness to pursue this type of gardening. But, if you love the unexpected, rejoice in the almost effortless occurrence of new plants and can look forward to a garden that not only changes with sequence of bloom but sometimes dramatically from year to year, my wild border may be for you.

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Kath Duckett turned an avid love of gardening into a profession eight years ago when she began a landscape firm specializing in designing and installing perennial beds, borders and rockeries. Her firm, Perennial Designs, is located in Doylestown, Pa. She is a member of PHS, the Perennial Plant Association, the American Rock Garden Society and Landscape Design Network and frequently teaches and speaks on the uses of perennials.

KEY
HP . . . . . Hardy Perennial
A . . . . . Annual
HB . . . . . Hardy Biennial

SELF-SEEDING BORDER PLANTS (in order of bloom)

Plant	Time of Bloom	Height	Color	Type	Comment
Aurinia saxatilis (basket-of-gold)	May	12 in.	yellow	HP	
Hesperis matronalis (sweet rocket)	May, June	36 in.	lilac, white	HB	The height is an unusual bonus in early spring
Chrysanthemum leucanthemum 'May Queen'	May, June	18-24 in.	white	HP	a cultivar of the wild ox eye daisy
Papaver commutatum (Flanders poppy)	May, June	18-24 in.	scarlet	A	
Papaver atlanticum	May - July	18-24 in.	orange	HP	lovely in a rockery, if deadheaded blooms most of the summer
Papaver rhoeas (Shirley poppy)	May, June	24 in.	pink, white, rose, salmon, crimson	A	very difficult to transplant
Dianthus barbatus (sweet william)	June	6-18 in.	red, white, pink, rosy purple	HB	
Papaver somniferum (peaony flowered poppy)	June, July	26 in.	pink, white	A	seed among lower growing perennials to soften the stiff bright stem, perhaps salvia or lavender
Digitalis purpurea (foxglove)	June	3-5 ft.	cream, pink, carmine, purple	HB	prefers partial shade, lovely vertical accent
Silene armeria (catchfly)	June	16-18 in.	bright pink	A	seedlings germinate at different rates so blooms appear throughout the summer
Anthemis tinctoria (golden marguerite)	June, July	24-36 in.	yellow	HP	a short-lived evergreen perennial
Consolida orientalis (annual larkspur)	June, July	3-4 ft.	blue	A	
Lathyrus latifolius (perennial sweet pea)	June to August	3-9 ft.	pink, white, rose	HP	climbing or trailing vine, prone to mites, cut back for second bloom
Salvia x *superba* 'East Friesland'	June	18 in.	violet purple	HP	reblooms if cut back heavily
Coreopsis 'Baby Sun'	June to August	12-36 in.	yellow	HP	deadheading can be tedious so I shear back in mid-summer to force a second bloom
Echinacea purpurea (purple coneflower)	July, August	24-36 in.	rose	HP	flowers resemble Rudbeckia, seedlings will not be true to parent
Echinops ritro (globe thistle)	July, August	36 in.	blue	HP	the globular flowerheads are used fresh or dried
Heliopsis 'Summer Sun'	June to August	36 in.	yellow	HP	
Cleome spinosa (spider plant)	July, August	3-6 ft.	white, rose, pink	A	heat and drought resistant, good back of the border plant
Aster novae-angliae (michaelimas daisy)	September	36-48 in.	violet blue, purple, rose, pink	HP	*A. novi-belgii* also seed, seedling colors will vary, pinch back for a more compact plant
Linum perenne (blue flax)	May to July	20 in.	blue	HP	

Philadelphia Shows Off Its Bloomers

By Natalie Kempner

From 30 gardens in 1975, the City Gardens Contest judges now visit more than 600 Philadelphia gardens. The winners fill the Port of History Museum.

photo by Gina Burnett

Much-decorated contest veteran, Blanche Epps, at work in her West Philadelphia backyard Container Garden. She was third place in the category.

The Pennsylvania Horticultural Society, through Philadelphia Green, boasts the most concentrated community gardening movement in the United States, linking once separated neighbors and neighborhoods into a community of gardeners.

I am a passionate convert to Philadelphia gardening — a true believer in its miracles. I do not suggest that PHS can save the world, but it certainly goes farther than any other thing I've heard about for setting Philadelphia back on track towards Penn's vision of a "greene countrie towne" filled with brotherly and sisterly love.

All movements of faith and vision need ceremonies of commitment — upbeat occasions for solidarity and renewal. For this, Philadelphia gardeners have the yearly City Gardens Contest with its culminating event, Awards Night, a jubilant celebration of triumphs in the ongoing battle to reclaim the city's wastelands.

The first City Gardens Contest, sponsored by *The Daily News* and PHS in 1975, was open only to community vegetable gardens. The 30 contestants entered by submitting photos of their gardens.

The 14th annual Contest in 1988, sponsored by PHS in cooperation with Penn State's Urban Gardening Program, was open to individual and community gardeners in categories ranging from containers on rooftops to agricultural wonderlands covering acres of city blocks. A team of three to five judges, selected from a pool of 385, visited each of the 545 entry gardens.

In considering the evolution of the City Gardens Contest, one must consider Jean Byall and Flossie Narducci. These two women personify, each in her particular way, the solid accomplishments and pure fun that characterize the Contest. The very symbol of the Contest — the giant red rose bursting through the top of City Hall — is a reminder of Byall, contest coordinator from 1980 until 1985. Since Byall's retirement, Narducci, Philadelphia Green activities coordinator, has presided with grace over Contest affairs, meeting regularly with a creative Contest Committee of 15 city

photo by Gina Burnett

City Garden Contest judges called Sister Mary Martha "Philadelphia's Patron Saint of Gardening." All the flowers, vegetables and herbs she grows are used in the Nicetown Sacred Heart Nursing Home where she works.

photo by Gina Burnett

Third place winner in Greenest Block in Town category: In one season barrels of blossoms took over barren spaces at Johnson Homes, part of Philadelphia's public housing.

gardeners. Their last year's publicity posters encouraged gardeners to "Show Off Your Bloomers."

Promotion for Contest entries begins at the Spring Flower Show in March and continues in April with a bulk mailing to every known gardener in the city. The single limitation for the Contest is that the garden is within Philadelphia.

Judges, however, are not limited geographically, and they are recruited from the entire tri-state area. Jane Pepper, president of PHS, explains: "You don't have to be an experienced judge, just a dirt-digger who appreciates the special challenges of gardening in the city." The result is a savvy mix of suburban garden club members and seasoned urban gardeners, many of whom are also contestants, PHS staff persons and Council members.

The monumental organizational feat of coordinating entries and judges is pulled

"We served lemonade and even the trash collectors joined in. The drug addicts rolled wheelbarrows for us and the neighborhood prostitutes came by to say how beautiful it was. Before you knew it, the space was clean, the fence up, flowers planted and everyone oooohed and aaahed: 'We did it!'. . . "
Mary Walke

off by Narducci, who calls herself the Zip Code Queen. "I simply take over the conference room," says she, where she covers every surface with lists and maps as she divides judges into 100 teams of three to five members and assigns them to 500-plus gardens for the preliminary round of judging in July.

In first-round judging, gardens are assigned by zip code, not category, and each garden is evaluated on its own merit, numerically and with comments by each judge. In the final round, the top-scoring 10-20 gardens in each category are assigned to one team of judges and each garden is judged against all the others in its category.

an antidote to politics and pollution

Judging in the City Gardens Contest is the perfect antidote to despair over Philadelphia politics and pollution. Furthermore, it offers pragmatic lessons in navigation, geography, logic, horticulture, community organizing, group dynamics, cooking, linguistics, gymnastics, landscaping, decision-making — I could go on.

Because part of Narducci's master-plan is to assign judges to new localities each year, repeat performers gain an ever-increasing knowledge of the Philadelphia gardening scene. My years of judging provide vivid, varied memories — a quiet rock garden pool in Fishtown, soybeans in West Philadelphia, hanging melons in Kensington, a mini waterfall in Northern Liberties. In the Garden of Gethsemane in West Philadelphia, Blanche Epps grows peanuts, cotton, tobacco, sugar cane — reminders of her roots. "I want my grandkids to know," she explains.

Some judging teams stick together year after year. Others leave arranging the team to Narducci. I have worked with new people every year, and each time we are quickly bonded through scouting unknown turf together, and witnessing a greening movement that cuts through differences in age, sex, race, culture, religion — all those areas community activists agonize about.

what the judges consider

Judges quickly learn that in many parts

continued

of the city, only a stout-hearted optimist would even consider sowing a seed.

The obvious problem is space; that is, inventing a site when your doorstep is on the sidewalk and your backyard is concrete — or, if there is a vacant lot, clearing it. In Kensington, an arthritic gardener led our reluctant judging team up a rickety ladder to view her garage roof garden of container plants. Blanche Epps and friends hauled away 35 truckloads of trash before gardening began in Gethsemane.

Depleted soil, vandalism, and lack of light, water and convenient garden centers — all are problems indigenous to urban gardening.

Fertilizer for Tatiana Bembischew's West Kensington garden came from walking trips to the nearest police horse barns. For mulch, she carried leaves in bags from the Park.

For many years, before Wilhelmina Jones got her centralized drip water system, this 73-year-old Special Awards winner carried water to her garden in a 30-gallon plastic trash can. In Salvador Morales's vegetable garden, the judges discovered "the most ingenious watering system we've ever seen. Hoses run to a tree in the middle of the garden with two fan blades, which sprinkle the garden when the water is on."

Gardens in the shadows of tall buildings crave sunshine. For Lawrence King, foil on the house wall reflects light and warms the vegetables.

innovations and hospitality

Without garden centers, innovative recycling is imperative for urban gardeners. Salvaged sinks and toilet bowls overflow with plants. Beans climb up crutches and stepladders. In one neighborhood, colorful bathroom fixtures, discarded from a local factory, mark walkways. Tires from auto graveyards, railroad ties lugged from abandoned tracks, bricks from fallen houses are part of the gardening landscape. Marina La Pinia garners seeds on yearly trips to the Philippines. Tomasita Romero's prize Spanish pumpkin grew from the seeds of one she bought in a Korean market. Blanche Epps' precious heritage seeds —okra, kale, Swiss chard — come from her South Carolina grandmother.

As judges spread out across the city on the hottest days of summer they are welcomed with generosity and warmth. Although contestants are warned in advance that judges have tight schedules, gardeners are not easily restrained. Iced beverages flow and cookies abound. Down-home cooking is dished up in sitting gardens, homemade wine is tasted under grape arbors, vegetable harvests are shared. Every year, Narducci gets calls from judges asking her to find the recipe for a particular cake served by one or another gardener.

photo by Gina Burnett

First place in the large Community Flower/Sitting Garden division was awarded to Mary Walke and Neighbors for this reclaimed dumping site across from their houses on the 3900 block of North 13th St.

Judges are gardeners, too, and many go bearing gifts of seeds and cuttings. One personalizes the participant certificates by hand-painting them. A bee-keeping judge takes jars of honey.

awards night

In September, winners and judges are invited to reunite at the Port of History Museum for Awards Night, a gala reception where cash prizes, seed company gift certificates, Flower Show tickets and PHS memberships are presented to winners. A letter from a winner "tells it like it is":

"I attended the Contest awards last evening. Had the presentation lasted a few minutes more I was certain that the roof of the auditorium was about to lift off from the good vibrations. My palms are raw from clapping and my face hurts from smiling. I cannot wait until next year!... All of Philadelphia was represented. All sharing one common bond — the love of gardening. When I received the phone call that I was a finalist, that was recognition enough. But when my name was announced as the 2nd prize winner of the Small Flower Garden division, you would have thought that I won the lottery."

Recognition for gardening is not necessary, but it is gratifying. Five years ago, my friend, Iris Brown, and her children cleared the empty lot between their rowhouse and the next, painted a rainbow mural, hung a hammock and planted a garden. Everything grew like Jack's beanstalk — vegetables, flowers — so that first year Iris entered the contest and won a first place. "I was so pleased. You see your own garden every day and you feel happy with it but winning is telling you that other people think it's wonderful too, and that is very nice."

Judges share this feeling of satisfaction when a garden they select as a finalist comes up a winner, deemed worthy by another team. On my first round of visits last summer I found myself judging gardens for the Greenest Block In Town in the Johnson Homes Housing Development. Five months before, on a bitter day, I had joined Philadelphia Green staff members and prospective Johnson Homes gardeners to survey garden sites and dream up gardens on paper. Now, on a sunny June day, those paper designs were reality. Barrels of blossoms and rows of eggplants and tomatoes had taken over the bleak spaces I remembered.

I had such a bias towards this miraculous transformation that I doubted my ability to judge objectively. I said nothing as my teammates scored and wrote comments: "Tremendously successful!" "A place of beauty." One judge, whose garden flourishes in an equally challenging spot in another part of North Philadelphia, wrote: "It is a thoroughfare in a housing project. To plant a garden in this spot takes a lot of courage. Its success shows that neighbors respect the effort." The numerical scores were high an the recommendation for final judging unanimous. On Awards Night, the Johnson Greenest Block In Town entries

tied for 3rd place.

The high point of the 1988 Awards ceremony came halfway through the evening. First, 2nd and 3rd place awards had been presented to Children's Gardens, Garden Blocks, The Greenest Block In Town and Individual Flower Gardens in four sizes. Awards of Excellence had been distributed to gardeners who had won first place for three consecutive years, and the Super Senior Citizen Award had been won by 94-year-old gardener, Albert Brown.

It was time for Honorary co-chairpersons Herb Clarke and Diane Allen to honor Community Flower/Sitting Gardens. Six awards for small, six for mid-size, and then, for large — two 3rds, two 2nds and two 1sts: Stapeley in Germantown and Mary Walke and Neighbors.

At this announcement, from a seat near the stage, Mary Walke sprang to her feet, turned to the audience, raised her arms in exultation and shouted with glee. She may not have exclaimed "Halleluja!" but I seem to have heard it. Mary Walke is an imposing, radiant woman under every circumstance. That night she was dazzling as she danced to the stage, embracing everyone in sight, cheered on by a happy crowd gone wild with the contagion of her joy.

Mary Walke's garden story is the tale of just one of the multiplying miracles being performed through perseverance and hard work. The triangular-shaped garden for which she has been the driving force is a sunny, treeless spot in North Philadelphia. "I picked cotton where I grew up. I never did gardening. But I kept looking at that ugly lot across the street and it got on my nerves. It was a terrible dump site. Bags of trash and truckloads of cement from construction. Dead dogs and seafood. This man had a seafood restaurant and dumped his crabs and stuff. Lord, did it stink!"

So Walke started "bugging" her City Councilperson who referred her to Philadelphia Green where staffers provided sod, fencing, seeds, substantial design advice as well as trees, shrubs and plants to start the garden. She rang doorbells and got help clearing trash. "We served lemonade and even the trash collectors joined in. The drug addicts rolled wheelbarrows for us and the neighborhood prostitutes came by to say how beautiful it was. Before you knew it, the space was clean, the fence up, flowers planted and everyone oooohed and aaahed: 'We did it!' And I said, 'if we did it, everybody can. And if everybody does it, our city will shine again!' "

In 1987, they entered the Contest and were one of five 3rd place winners in a special category for First Year Gardens.

Participate in Philadelphia's City Garden Contest as a contestant, a judge, or both.

For more information contact:
Flossie Narducci
The Pennsylvania Horticultural Society
325 Walnut Street
Philadelphia, PA 19106
(215) 625-8280

Their judges, distressed that this shadeless beauty spot was too hot to enjoy, got a Paoli shop to install a giant canvas umbrella.

In 1988, they entered the Contest again. "I knew this time we'd be competing with all those people who been growing for years and they're going to win," says Walke. "When we got the invitation to Awards Night, we knew we'd won something. But first place? We never dreamed that. So, when I heard my name I screamed!"

Mary Walke does a lot of things besides gardening. She sews for a living. She is bringing up two boys left to her care. She organizes a neighborhood food program out of her house that feeds 60-90 people a week, and she serves as block captain, trustee and choir director of her church, and president of several community organizations.

"I've always worked hard," says Walke. "In school I worked to be first and get a good report card. But I never won anything. Nobody ever awarded me anything before."

After the contest, when Mary Walke and her friends approached their block, "We stuck our heads out the car window and yelled: 'We won 1st prize! We won 1st prize!' over and over again. And people in our neighborhood called back: 'Oh, shut up, we knew you would!' and then people came to drink tea and eat cookies and it was like coming home with the best report card ever."

All urban gardens are not, of course, a takeover of trashed lots. The gardeners at Stapeley-in-Germantown, a Quaker retirement home, who tied with Mary Walke and Neighbors, had no trash to remove from their landscaped grounds and no need for a canvas umbrella beneath their stately trees. But they are justifiably proud of the recognition they received for working together on plantings and sitting places that bring beauty and pleasure to the whole community.

judges' comments

A sampling of judges' comments from last year's Contest reflects the multitude of styles of city gardeners and gardens:

"The climb up the ladder took us to a delightful rooftop garden and bird's eye view of the city."

"A garden that integrates the family's needs, well-designed for child use: exploring nature, growing fruit, and a wonderful pond with flowering lilies and water hyacinths."

"A three-story-high mural with hot air balloons drifting across a bright blue sky most definitely lifted our spirits."

"Forty-one rose bushes — all in full bloom. Sorry we weren't around to see the 750 tulips in the spring."

"The fountain adds a visual as well as an audible effect."

For a winner in Garden Blocks: "Every house (and there are 70 of them in the block) participates. And every planter is flourishing. Fantastic cooperation. The youngsters do the watering."

And finally, describing the 3.67-acre urban farm smack up against the railroad tracks at 18th and Glenwood: "On a bright sunny day we were welcomed by four acres of waving flags, fluttering over 96 garden plots. James Taylor, garden coordinator, should be called 'Mr. Organization.' He tends his own plots and maintains the paths (miles and miles of them). Congratulations to all 96 gardeners on a super job!"

As slides of the prize-winning gardens were flashed on the giant screen at last year's presentation, Herb Clarke queried: "How can any one of you look at these and not see you've made a difference in Philadelphia?"

The competition of the City Gardens Contest is anything but cutthroat. Everyone roots for everyone and rejoices with the winners. It is as though we are a big, talented family in which every member is a star. We can all applaud the winner of the moment, knowing we are winners, too.

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PHS Council member Natalie Kempner will chair the PHS Junior Flower Show. Natalie Kempner is founder of the Norris Square Project in West Kensington. She is a writer who frequently contributes to *Green Scene.*

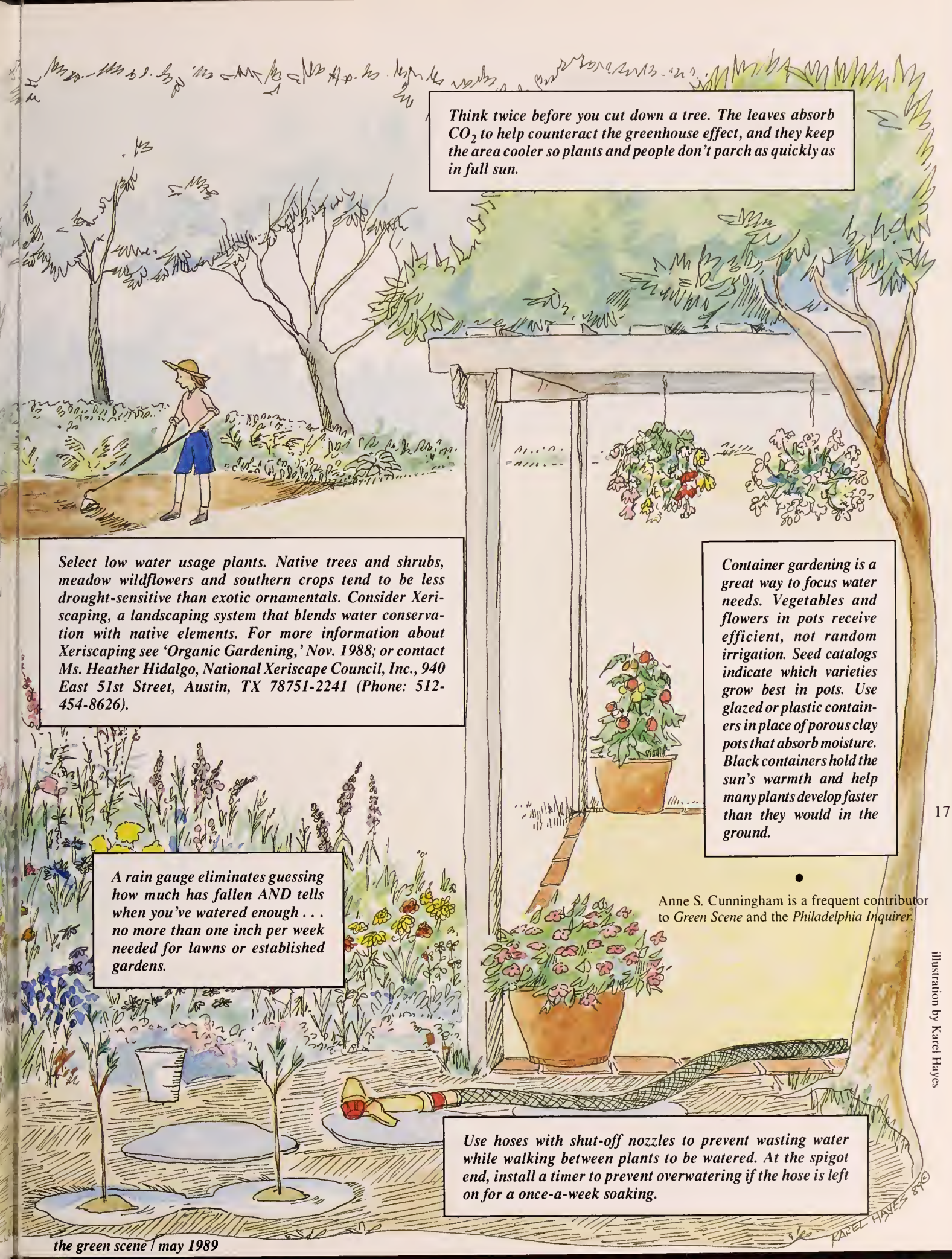
Water Reminders

By Anne S. Cunningham

Keep growth rate slow in late spring and summer. Plants and lawns can withstand drought if they are not overfertilized or overwatered at the beginning, so they grow slowly and evenly. Liquid organic fertilizers are easier for plants to absorb under drought conditions than are chemical fertilizers. If using organic granules for fertilizers, be sure to bury them down far enough so they don't release too soon in the summer heat.

Add compost or other organic material to soil to help it absorb water for maximum efficiency. To prevent puddling, cultivate the soil around plants before watering.

Use drip irrigation if possible. Cover hoses with straw, salt hay, chopped leaves, shredded newspaper or other mulch to discourage weeds and prevent evaporation. Or dig trenches around plants, dig a connecting link between each basin, then water only in the basins. Avoid oscillating sprinklers, where 30 to 50 percent of the water is lost to evaporation.



Think twice before you cut down a tree. The leaves absorb CO_2 to help counteract the greenhouse effect, and they keep the area cooler so plants and people don't parch as quickly as in full sun.

Select low water usage plants. Native trees and shrubs, meadow wildflowers and southern crops tend to be less drought-sensitive than exotic ornamentals. Consider Xeriscaping, a landscaping system that blends water conservation with native elements. For more information about Xeriscaping see 'Organic Gardening,' Nov. 1988; or contact Ms. Heather Hidalgo, National Xeriscape Council, Inc., 940 East 51st Street, Austin, TX 78751-2241 (Phone: 512-454-8626).

Container gardening is a great way to focus water needs. Vegetables and flowers in pots receive efficient, not random irrigation. Seed catalogs indicate which varieties grow best in pots. Use glazed or plastic containers in place of porous clay pots that absorb moisture. Black containers hold the sun's warmth and help many plants develop faster than they would in the ground.

A rain gauge eliminates guessing how much has fallen AND tells when you've watered enough . . . no more than one inch per week needed for lawns or established gardens.

Anne S. Cunningham is a frequent contributor to *Green Scene* and the *Philadelphia Inquirer.*

Use hoses with shut-off nozzles to prevent wasting water while walking between plants to be watered. At the spigot end, install a timer to prevent overwatering if the hose is left on for a once-a-week soaking.

illustration by Karel Hayes

Cottage Gardening:

An Old Idea Whose Time has Come - Again

By Nancy L. Boettger

Cottage gardening is gentle, open-minded, creature-friendly gardening; it is easy, low-maintenance gardening. It is the perfect cure for the feeling of being pushed and pulled by too many responsibilities, and by the frustrations, limitations, and irritations of the workplace.

You come home to a little world of your own making, a peaceful, relaxed word. A little overgrown and untidy perhaps, but it is this very untidiness, the tangle and profusion of growth that invites the birds, bees, butterflies and occasional praying mantis, making your garden doubly satisfying, because you are working in harmony with Nature, rather than poisoning your environment competing for the neatest lawn on the block.

Remember: **Nature is not neat** and never plants things in straight rows. Her wildflowers tend to grow in clumps or drifts of one kind with other clumps of the same kind nearby. Rarely does a single flower appear on its own, and when it does, if conditions are suitable, more will soon appear.

Abundance is the key. Nature provides an abundance of plants for every inch of earth, given the least opportunity. Nature abhors a vacuum and gives plants the ability to over-reproduce to ensure that no fertile piece of earth remains bare for long. Like Nature, cottage gardeners usually try to cram as many different kinds of plants in as large amounts as possible into the available space.

This colorful, overflowing, and riotously profuse style of gardening known as cottage gardening is most often associated with England. Given their mild climate and rainfall provided more or less evenly throughout year, the English people have been gardening enthusiastically for centuries. It is their national pastime. While the great estate gardens of England tended to follow international gardening styles, trends, and fads, over the years the humble

photo by Marilyn Stouffer

◀ Nancy Boettger's completely naturalized cottage garden in front of her antique shop features old-fashioned hollyhock, purple loosestrife, wild daylily, lovage in flower and common chicory.

▼ Several years ago at her former home, the author found the iris in the front border in a bag of leaves set out for the trash collector. Although a short yellow variety when planted, it came up the following year as a lovely tall mauve specimen, which soon spread into a whole colony. Subsequently she moved it to the front of the antique shop.

photo by Marilyn Stouffer

cottage gardeners stayed with their old-fashioned jumble of easy-to-grow perennials, biennials, self-sowing annuals, hardy bulbs, shrub roses, and useful herbs. This was undoubtedly because they had neither time, space (or money) for French parterres, Italian vistas, or Victorian carpet bedding.

It was from these ancient English cottage gardens that William Robinson and Gertrude Jekyll derived, just about 100 years ago, the more naturalistic "perennial border" based primarily on hardy perennials blooming in succession, as a reaction to the more rigid earlier Victorian type of garden where endless flats of tender annuals were set out by hordes of hired gardeners into elaborate designs in formal beds, thus the term "bedding annuals." These gardens were impressive but labor-intensive.

That is why in this busy age it is time again for the old-fashioned "cottage garden." A garden designed, largely installed, and completely maintained by the gardener, for pure enjoyment rather than impressing the neighbors.

what will happen next

By now you should know whether or not you are a cottage gardener in your heart. Either you like the feeling of being in control of every situation you encounter, or you prefer the feeling of not quite knowing what will happen next. You enjoy surprises. If the latter description fits you, read on!

You may have come to realize that you have been a cottage gardener all along, and already have a gorgeous, prolific garden that you enjoy just the way it is. Good! Keep doing what you're doing, and try to convert a few neighbors if you can. Or you may have decided that you have a cottage gardener inside of you just bursting to get out and you need some specific ideas to get you started. Here are some suggestions for achieving a mature-looking cottage garden in a very short time (if you can't stand to wait).

continued

Cottage Gardening

Step One: **Analyze Your Site.** Assume that you reside in a dwelling of some sort (cottage excellent but optional) partially or completely surrounded by soil. First dig up a spade full of soil on the south or east side of your house, which is the most desirable location for your cottage garden. Notice whether the soil is dark, crumbly, and full of earthworms, or light-colored, tightly packed, and slippery when wet. This latter type of soil, clay or possibly superclay, is what some builders of new houses leave behind after they have sold off all of the topsoil. In this case you will have to dig in lots of sand and organic matter, such as peatmoss, compost, or leaf mold.

Step Two: **Prepare Your Soil.** Decide how large a space you can comfortably deal with, then outline your chosen area with a garden hose, to make the outline curvy rather than straight. Remove any existing sod. Dig or rototill in as much sand and organic matter as time and energy allow. Even good soil will benefit from this.

Step Three: **Design Your Garden.** Here's a crash course in garden design. Plant tall things in the back, medium things in the middle, and short things in the front for a garden in front of a building, wall, or fence, meant to be viewed from one side. For an "island bed," meant to be viewed from all sides, plant tall things in the middle, medium things around those, and short things around the perimeter. The idea is to be able to see all the plants.

It is best to group three or more plants of one kind together for greater impact, and odd numbers seem to work better than even. Shrubs should be properly spaced as recommended by experts, but perennials, biennials, and annuals can be squeezed much closer than recommended, to give your garden an established look. When it becomes too crowded later, you can dig up, divide, and share your bounty with friends.

As far as color is concerned, choose what appeals to you. If you like bright colors, by all means plant them. Grey-green or blue-green herbs used as your short plants around the edges will soften the effect. Nature's colors rarely "clash" anyway. It's not like dressing to go out. A large variety of sizes and colors are available to suit your particular color scheme and soil conditions.

Step Four: **Finding Plants:** This is where you do your homework. Study garden books and visit public gardens, with a notebook to jot down botanical names of plants that appeal to you. Find an older

photo by Marilyn Stouffer

The author's Bucks County home is called Daisy Hill, for the wild daisies found growing in the meadow before construction. The plants here were chosen for mid-summer bloom. They thrive without fertilizers or herbicides, providing an attractive habitat for toads, butterflies, insects and birds.

photo by Marilyn Stouffer

East side of "Daisy Hill": *Coreopsis lanceolata* (tickseed), *Gaillardia* (blanketflower), *Anthemis tinctoria* 'E.C. Buxton' and *Chrysanthemum leucanthemum* (ox-eye daisy).

garden in your neighborhood and see what flourishes there. Once you have an idea of what you want, shop local garden centers and nurseries and ask lots of questions. Get to know the botanical names to make sure you get exactly what you want. Garden catalogs are a great source of information about characteristics and requirements of garden plants.

Step Five: **Plant, Mulch, Water, and Enjoy.** After you have selected, arranged, and planted your precious flower treasures, cover all the bare earth in between your plants with a mulch of pine bark or similar material to prevent Nature from filling in with plants you might not care to have. As your garden flourishes, you may be able to obtain seedlings from your original plants. Once you learn to recognize seedlings of desirable plants, less mulching will permit more self-sowing, and your weeding will be limited to the nasty Canada thistle, poison ivy, bindweed, and the like.

After planting, water your garden well, and keep it moist until you see evidence of new growth. Once it is established, you need only water in extreme drought, since the organic matter in the soil and in the mulch retains water like a sponge. A solution of seaweed or fish emulsion, used whenever planting or transplanting, is a nice bonus for your plants and seems to lessen transplanting shock.

The hard work is all done. It's time to step back and admire your brand new cottage garden! Now all you ever have to do is divide plants to share or trade with friends, try out new varieties that you find, and rearrange a little here and there to try a new effect. As your garden becomes taller, thicker and more colorful, you will notice more and more varieties of butterflies, bees, and birds coming to visit. You will have an abundance of flowers to bring into your house, with plenty left over outside. And with each passing year, your garden will get fuller, richer, and more interesting. And so will you.

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Nancy Lee Willson Boettger has been cottage gardening in Bucks County, PA, for at least 15 years, and more recently has been publishing articles and giving lectures and slide shows urging others to do likewise. Since 1983 she has owned and operated the "Penn's Park Country Store" on Rt. 232 in Penns Park, PA, where the "Mad Gardener™" section features herbs, baskets, wildflower seeds, garden books, and English gardening tools.

AUTHOR'S FAVORITE PLANTS

Chosen for hardiness, ease of cultivation and proliferation, offering the most flowers for the least expense

SELF-SEEDING PERENNIALS

Thalictrum aquilegifolium, columbine meadowrue. Fluffy mauve flowers, three-foot stems; blooms late May into June.

Hesperis matronalis, sweet rocket. Lavender or white flowers, some pinkish, three-foot stems; blooms late May into June, smells sweet in the evening.

Malva alcea fastigiata, hollyhock mallow. Soft pink flowers, three- to four-foot stems; blooms July to October.

Coreopsis lanceolata, tickseed. Golden yellow "daisies," two-foot stems; blooms June through September.

Heliopsis helianthoides scabra. Yellow-gold double "daisies," three- to four-foot stems; blooms July to frost.

Lythrum salicaria, purple loosestrife. Reddish-purple spikes, three- to five-feet tall; blooms July to September.

Rudbeckia triloba. Small "black-eyed-susan" flowers on five- to six-foot plant; blooms July until September.

Aster novae-angliae, New England aster. Purple "daisy" flower, sometimes pink, yellow center, five feet or taller unless pinched back; blooms September to frost.

Rudbeckia nitida. Single yellow coneflower, up to eight feet; blooms August and September.

OTHER PERENNIALS

Hemerocallis fulva, common roadside daylily. Virtually indestructible, orange flowers, attractive foliage all season; blooms late June and July.

Monarda didyma, bee balm. Pink, white, lavender or red, attracts hummingbirds; blooms June to August.

Physostegia virginiana, obedient plant. Rose-pink spikes, one- to four-foot tall square stems; blooms July to September.

Rudbeckia laciniata, golden glow. Very double yellow flowers, five feet or taller; blooms July to September.

SELF-SEEDING BIENNIALS

Alcea rosea, hollyhocks. Most colors except blue, two- to nine-feet tall; prefer single blossoms.

Lychnis coronaria, rose campion. Brilliant magenta flowers, silver stems and leaves, two-feet tall.

Chrysanthemum leucanthemum, common ox-eye daisy. Two-feet tall; blooms late May into June.

SELF-SEEDING HERBS

Allium schoenoprasum, chives. Twelve-inches high, lavender flowers; blooms around June if not harvested.

Allium tuberosum, garlic chives. two-feet high, white star-shaped flowers in July.

Chrysanthemum parthenium, feverfew. Twelve- to fifteen-inches tall, tiny "daisy" flowers; blooms July and August.

Artemisia annua, Sweet Annie. Tiny greenish-yellow flowers; four- to five-foot ferny plant, dries well, smells sweet.

Borago officinalis, Borage. Up to three-feet tall, bristly leaves, drooping star-shaped flowers; first crop late spring, self-sown second crop late summer.

SELF-SEEDING ANNUALS

Eschscholzia californica, California poppy. Shades of orange, twelve- to fifteen-inches high, attractive blue-grey-green foliage; first crop late spring, self-sown second crop late summer into fall.

Centaurea cyanus, bachelor's buttons. One- to three-feet tall; "cornflower blue," also white, pink or purple; blooms late April into July from self-sowing in late summer.

Cosmos bipinnatus. Pink, magenta, white, lavender, up to four-foot tall lacy plant; blooms mid-summer to frost.

Cleome hasslerana, spider flower. Three- to six-feet, pink, white or lavender; self-sown plants revert in time to all white.

photo by Pat Abel

Tiger swallowtail butterfly feeds on *Verbena* 'Sissinghurst' at the entrance to the Scott Arboretum offices.

GARDENING FOR BUTTERFLIES

By Elizabeth F. Sullivan

Butterflies: beautiful, yes; beneficial, yes. These vanishing pollinators need all the help they can get from gardeners.

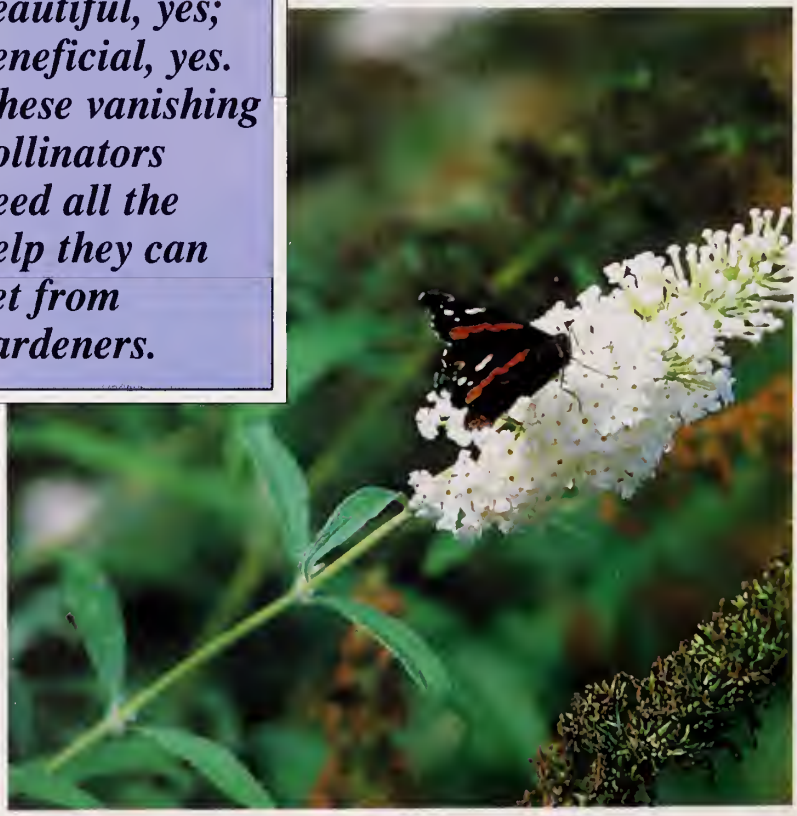


photo by Pat Abel

Red admiral butterfly finds a spire of *Buddleia davidii* 'White Cloud' still blooming in late October at Ridley Creek State Park.

Some of my best childhood memories are of hot summer mornings when I would saddle up my horse, grab my butterfly net, and ride across the creek to pursue butterflies. The sunny fringes of farmers' fields were prime hunting grounds, for the butterflies would feed on the milkweed, asters, and other nectar-laden weeds that grew there. I no longer have the stomach or the desire to chloroform monarchs and mourning cloaks to pin in my collections; too few of these marvelous creatures are left in the United States. Butterflies are some of our most beautiful and industrious plant pollinators. They lack the pollen sacs of bees, but transfer pollen on their bodies while searching for nectar. Unfortunately, the heavy use of pesticides and herbicides, and the continuing destruction of natural habitats to make room for highways, housing developments, and shopping malls have drastically reduced their numbers. More and more, butterflies must turn to federally protected lands, and public and private gardens to find uncontaminated feeding and breeding grounds.

Plants play an integral role in the egg, larval, pupal, and adult stages of a butterfly's life. The adult female butterfly lays her eggs in a sheltered spot on or near the plant on which the emerging caterpillars will feed. Caterpillars eat only the leaves and

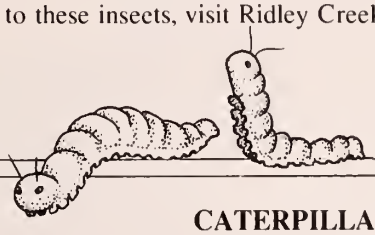
stems of plants specific to their species. They will starve to death rather than eat a nonspecific plant. During the larval stage they moult four or five times, with each new skin covering a larger caterpillar. The final moult prefaces the pupal stage. During this stage, the pupa is completely inactive. Some spin a silk cocoon for shelter; others tie themselves with a silk cord to a twig or leaf. After a waiting period lasting from two weeks to all winter, the adult butterfly emerges from the pupal case. It hangs upside down, forcing blood into the wrinkled new wings. When its wings are dry, the butterfly takes off in search of its first flower nectar.

Every garden can attract butterflies given sun, nearby drinking water, limited use of pesticides and herbicides, and both caterpillar and adult butterfly food plants. Being cold-blooded, butterflies rely on the sun to maintain their bodies at operating temperature. In the northeastern United States they do not appear until late spring or early summer when they can be assured of consistently warm temperatures. Flagstone benches and sidewalks, and gravel paths are frequently butterfly beaches where they bask in the sun. Butterflies like mud puddles and wet stream banks for watering holes. If you do not have such areas in or near your garden, sink a bucket of sand or dirt and keep it wet to provide a permanent butterfly bath.

Caterpillars eat only the leaves and stems of plants specific to their species. They will starve to death rather than eat a nonspecific plant.

Your garden may already have caterpillar food plants (see table). The green-, black-, and gold-banded larvae of the beautiful black swallowtail may have nibbled your rue and parsley plants in the past, or the black-, white-, and yellow-striped larvae of the regal monarch butterfly perhaps fed on the milkweed growing wild at the edge of your land. Many caterpillar food plants are considered weeds. If you are so fortunate as to have a naturalized meadow or open woods, you may easily accommodate these plants without trying to include them in your more formal gardens. Do not fear that caterpillars will devour your plants. Most butterfly caterpillars are too small and too few in number to do significant damage. Two exceptions are the larvae of the notorious cabbage butterfly and the black swallowtail. Black swallowtail caterpillars feed on umbelliferous plants (family of plants that include carrots, dill and parsley). While they usually manage to curb their voracious appetites, Jane Pepper, PHS president reports these audacious creatures devoured her parsley plants.

Caterpillar food plants are an essential part of gardening for butterflies, but the adult butterfly food plants give the most aesthetic pleasure. They are beautiful in their own right, as are the butterflies that feed on their nectar. There are, of course, many more butterfly-attracting plants than those described here. If you would like more information about plants for butterflies or want to see gardens devoted exclusively to these insects, visit Ridley Creek State Park in Media, Pennsylvania; Brookside Gardens in Wheaton, Maryland, and the Day Butterfly Center at Callaway Gardens in Pine Mountain, Georgia. This spring, take stock of the food supply your garden offers its caterpillar and butterfly guests. Butterflies' precarious position in today's environment and the intrinsic landscape value of butterfly-attracting plants are both excellent reasons to garden for butterflies. But their exquisite, irridescent beauty is the most persuasive incentive. To echo Emerson: "... if eyes were made for seeing, / Then beauty is its own excuse for being."



CATERPILLAR FOOD PLANTS

Food plants for the larvae of several common American butterflies.

BUTTERFLY	PLANTS
black swallowtail	*Daucus carota* var. *carota*, wild carrot *Petroselinum crispum*, parsley *Apium graveolens* var. *dulce*, celery
spicebush swallowtail	*Lindera benzoin*, spicebush *Sassafras albidum*, sassafras *Magnolia virginiana*, sweet bay magnolia
eastern tiger swallowtail	*Liriodendron tulipifera*, tulip tree *Prunus serotina*, black cherry
comma	*Urtica dioica*, stinging nettle
viceroy	*Salix* species, willows *Populus* species, poplars
monarch	*Asclepias syriaca*, common milkweed
great spangled fritillary	*Viola* species, violets
Baltimore checkerspot	*Chelone glabra*, turtlehead
painted lady	*Cirsium arvense*, Canada thistle *Cirsium vulgare*, bull thistle
American copper	*Rumex acetosella*, sheep sorrel
buckeye	*Plantago major*, plaintain *Agalinis purpurea*, purple gerardia
question mark	*Ulmus* species, elms
mourning cloak	*Ulmus* species, elms *Salix* species, willows *Populus* species, poplars
harvester	*Fagus grandifolia*, American beech *Hamamelis virginiana*, common witchhazel
red-spotted purple	*Prunus serotina*, black cherry
red admiral	*Urtica dioica*, stinging nettle

continued

BUTTERFLY FOOD PLANTS

These shrubs, perennials, and annuals were selected for their proven ability to attract butterflies.

Buddleia davidii, butterfly bush, is a superb shrub for attracting butterflies. From mid-summer through October these large deciduous shrubs wave fragrant panicles of pink, purple, or white flowers. Nurseries offer numerous cultivars of *B. davidii,* and all attract throngs of butterflies. The white cultivars often bloom longer than the others, providing a last supper before the butterflies die or depart for warmer climates. You can easily grow butterfly bushes in your garden if you have a reasonably fertile and well-drained soil, lots of sun, and adequate space, since they grow 5'-8' in one season. *B. davidii* blooms on new wood, therefore it should be pruned back to 1' above the ground between late winter and early spring before the new growth starts.

Vitex agnus-castus, chaste tree, is also a butterfly favorite. The fragrance of this large deciduous shrub was once thought to induce chasteness in those who smelled it, but the butterfly couples I have seen apparently do not subscribe to this belief. Spires of light blue flowers bloom from late June through September. The delicate blue flowers are particularly effective against a high limestone wall, for they accentuate the blue, white, and grey striations of the stone. Like the butterflies they attract, chaste trees prefer full sun and hot weather. In a moist, well-drained soil, they can grow 3'-5' in one season. If winter damage or dead wood makes pruning necessary, you should prune in the spring, cutting back to 5'-8', or in the case of older shrubs, cut back to live wood.

A delightful surprise in late August and September is the second blooming of *Syringa microphylla,* littleleaf lilac. It first blooms in late May, but its deliciously fragrant light pink flowers frequently appear again in the summer when the butterflies can enjoy them. Not all littleleaf lilacs bloom twice, so if buying from a nursery, go in late August and select a shrub in flower. *S. microphylla* 'Superba' is an exceptionally floriferous cultivar. Like all lilacs, *S. microphylla* prefers full sun and slightly acidic soil, and should be pruned in the spring after flowering.

The delicate white and pink flowers of *Abelia* x *grandiflora* lure many butterflies. The small flowers first open in June and continue to bloom after the first frost. Even after the flowers have fallen, this semi-evergreen shrub is still lovely, for the long pink sepals remain on the stem. *A.* x *grandiflora* flowers on the new growth of the season, and should be pruned at the same time as *Buddleia davidii.*

Perennials also serve a bountiful feast to butterflies. The most obvious choice for a perennial nectar provider is *Asclepias tuberosa,* butterfly weed. This sun-loving plant tolerates abuse, thriving in infertile, dry soils. Butterfly weed is an ideal choice for a summer-blooming meadow garden. Clusters of bright orange flowers bloom from early summer until fall on 1'-3' plants. Unlike some of its weedy milkweed relatives, *A. tuberosa* will not overrun your garden, but does have the same beautiful seed pods that burst with eiderdown when ripe.

Echinacea purpurea, purple coneflower, is a choice perennial among butterflies. A rather coarse-textured plant, *E. purpurea* has a composite flower with a golden brown center cone surrounded by petals of an unusual mauve color. Given full or partial sun and well-drained soil, purple coneflowers will thrive and spread, and should be divided every 3-4 years.

Sedum 'Autumn Joy,' a favorite perennial for many gardeners, is also a favorite of many butterflies. The broccoli-like flowers emerge pale yellow in the late spring, and turn pink in July. As the flowers die they gradually deepen to a coppery red, which holds through the winter. Given an average soil and partial or full sun, this sedum will reward you with flowers of long interest and numerous butterfly visitors.

In many gardens, the blooming of *Aster novae-angliae* heralds autumn's arrival. The 4' plants with masses of small purple-fringed flowers with golden centers bloom vigorously until frost and provide food for butterflies after many other sources of nectar have faded. New England asters will thrive in full sun and moist soil. Staking is almost unavoidable with these tall plants, but pinching them back in the early summer will help control their growth and encourage more flower buds.

The traditional planting of annuals to assure color in the garden throughout the seasons also assures the presence of butterflies. Zinnias, marigolds, ageratum, salvia and verbena are all good choices. The combination of the vibrant pink *Verbena* 'Sissinghurst' and the deep blue *Salvia farinacea* proves irresistible to butterflies, and is lovely for containers.

photo by Pat Abel

Clouded yellow sulfur butterfly feasts on *Aster novaeangliae* 'September Ruby' in the late afternoon sunshine.

Elizabeth Sullivan is a horticulturist at Chanticleer, a private estate in Wayne, PA. She has written for the Scott Arboretum's newsletter *Hybrid* and *American Nurseryman.*

CHINESE EVERGREENS:

War Horses of the Plant World

Drawing by Peter Loewer from *Bringing the Outdoors In*, (reissued by Contemporary Books, Chicago, 1988).

A self-watering pot containing a group of foliage plants including three Chinese evergreens *(Aglaonema).*

1. *Aglaonema simplex*
2. *Aglaonema commutatum* 'Malay' Beauty'
3. *Aglaonema commutatum* var. *elegans*
4. Satin pothos, *Scindapsus pictus* 'Argyraeus'
5. Devil's ivy, *Epipremnum aureum*

During the winter of 1977 a terrible sleet storm ravaged the Catskill Mountains of New York State where I have a home and garden. Ice built up with frightening speed on the electric lines, especially where they crossed the country roads. The lines broke, power went out, and the temperature in our greenhouse, with its collection of orchids and houseplants, soon fell below freezing. Among the plants that perished were a number of Chinese evergreens, originally purchased for research on a book I was writing about growing plants in water.

One Chinese evergreen that survived sat in a hydroponic setup for two years while I wrote the book. When the freeze occurred four years later the plant was two-feet high, comfortably at home in a glass battery jar, its roots growing through a submerged pile of glass marbles. I knew then that these plants were war horses of the plant world.

The years passed and I never thought about Chinese evergreens again. Then one evening last spring I received a call from a friend who lived in New York City. Richard Kirchner is the director of National Services for the Theater Development Fund (TDF). He was also the producer for the Shaw Festival in Canada before he came back across the border to once again take up residence in the Big Apple.

"Peter," he said, "I've decided to try my

continued

hand at houseplants, and I remember that my mother always had a certain kind of plant around the house because they were so carefree and tolerated low light. She had a big plant with dark green leaves on a table in the corner of our living room — right next to the MahJong set. And believe me, in this apartment I have low light conditions. Do you have any idea of the name? I seem to recall Japanese or Chinese connected with it."

"Chinese evergreens," I answered.

"That's it. Now where do I find them?"

I gave Richard the names of a few dealers and convinced him that with the services of United Parcel, anyone could order plants from around the country and be sure that they would arrive in decent shape.

A few weeks later Richard called to say that his plants had been delivered and they were perfect.

"I ordered seventeen of them," he told me. " And I also picked up 20 pounds of potting soil, four quarts of peat moss, some washed and sterilized gravel, and 20 clay pots. It took me hours to get everything repotted but they look fine."

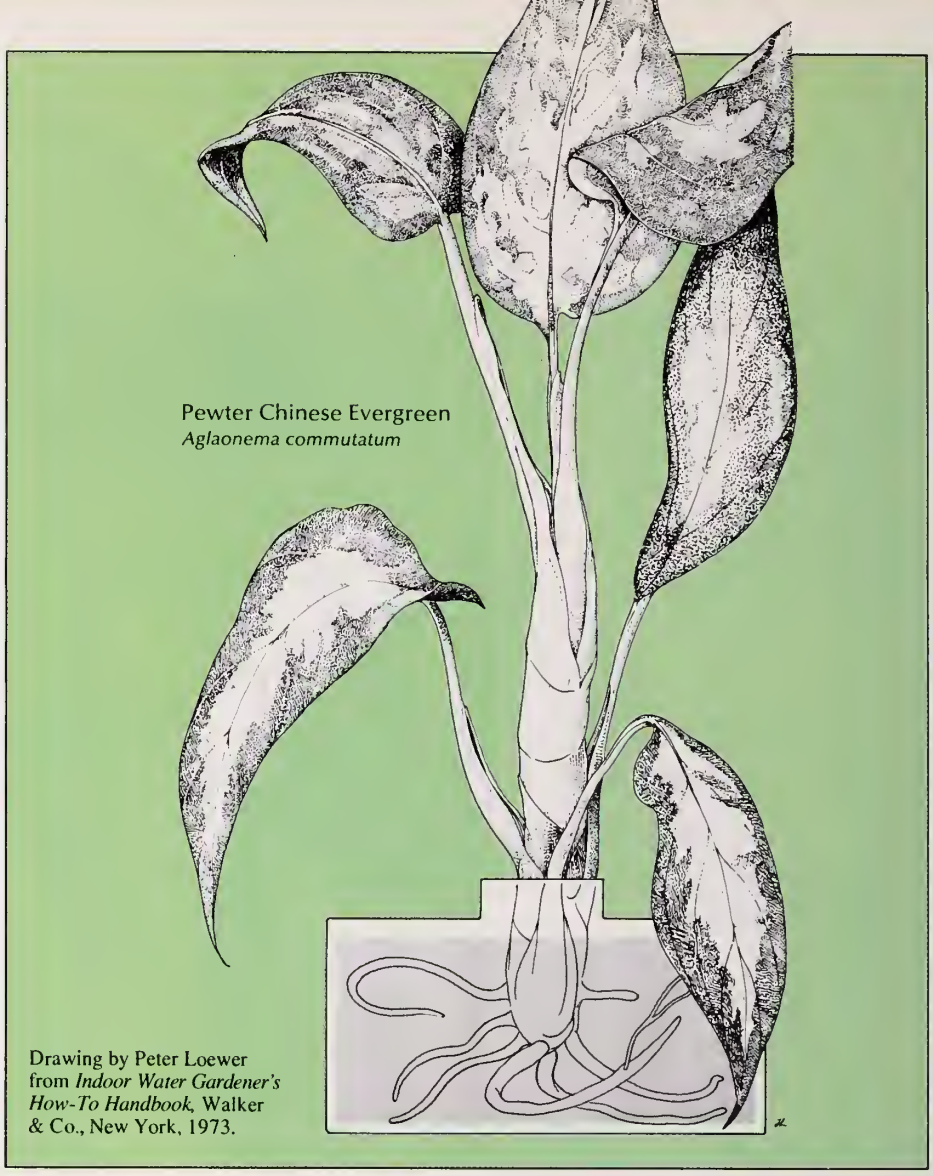
That following summer I visited New York and Richard to see the plants and to get help with a word processing problem I was having. Eight floors up from the roar of West 48th Street — in a typical one-room New York City apartment — the Chinese evergreens were more than surviving. They were lined up near the windows that look out on back courts and alleys, windows perpetually hazed with the particulates of city air. The plants share the limited space with a complete computer installation, 120 application programs, and about 1,500 floppy disks. Seventeen clay pots: each containing a different species or cultivar of *Aglaonema.*

"Finding an apartment in this city," he said, having recently returned from a working stint in Australia, "is on about the same level as searching for a vintage wine at the corner deli: A tough thing to do. I looked for weeks before finding this apartment; it's small but I have just enough room for my computer and the plants."

Like Manhattanites, these plants are tough.

"No lightweight, tender, mollycoddles here," said Richard. "This group of plants will survive neglect and dark corners. They persist where other and often nobler plants eventually perish. I don't suggest that they should be treated without care. Even with air conditioning, dust creeps in so I wash the leaves every two weeks and fertilize once a month during the peak growing season."

Among the plants in Richard's collection are: the old war horse, *Aglaonema modestum;* two of its cultivars, *A.* 'White Rajah,' known as the golden evergreen with leathery, oblong leaves of a deep green with silver-gray markings and *A.* 'Variegatum,' called the most stunning form of the common Chinese evergreen with dark green leaves splashed with markings of pure ivory; and *A.* 'Dow Hybrid,' a hybrid from a Singapore nursery with solid gray and silver leaf centers with scattered green mottlings in a chevron design.



Drawing by Peter Loewer from *Indoor Water Gardener's How-To Handbook,* Walker & Co., New York, 1973.

Richard solved my computer problem for me, and as we left for lunch, he eyed the plants and murmured, "I hope they don't get too much bigger; I really do have a problem with space."

more about Chinese evergreens

The botanical name for the Chinese evergreen is *Aglaonema* (ag-lay-o-Nee-ma) from *aglaos,* bright and *nema,* thread, perhaps referring to the shining stamens of the flower. I asked everyone who knew anything about these plants about the derivation of the name but nobody could give me a clue.

The common name of Chinese evergreen originated with *Aglaonema modestum.* According to the *Aglaonema Growers Notebook* (Roy N. Jervis, Clearwater, FL 1978-80), this particular plant has been in continual cultivation by the Chinese for centuries and is found in the northern part of Thailand, in adjoining Laos, and in areas of both China and northern Vietnam. The book, by the way, is now out of print but well worth searching for.* It is designed with great imagination, is well illustrated, and features a fantastic amount of information, both lively and technical, about these plants.

Roy N. Jervis treats 19 species and reminds us that only 12 are in cultivation. Although there are less than two dozen botanically valid species, varieties, forms, and cultivars total more than 100 names in use today.

Aglaonemas belong to the Araceae or Arum Family of plants. They are herbs, climbers, rarely shrubs, with large simple or compound leaves and a flower that

*Available at the PHS Library.

consists of a *spathe* (a modified leaf) that surrounds a *spadix,* a column or spike covered with numerous small flowers, male on the top of the column and female at the bottom. The fruit is in ellipsoidal berry, in most species a bright, clear red, and contains one seed. Among the most familiar members of this family are the calla lily *(Zantedeschia aethiopica)* and the Jack-in-the-pulpit *(Arisaema triphyllum).*

I called John Banta of the International Aroid Society (IAS) who informed me that the IAS publishes both an informative monthly newsletter and a scholarly quarterly called *Aroideana* that keeps members up to date on developments in the world of Chinese evergreens. I asked him about the common name.

Banta told me that Dr. Frank Brown, a member of the IAS who is writing a new book for the society, says, "The only plant worthy of the name Chinese evergreen is *Aglaonema modestum* because it's the only truly green plant and the only one found in China. Almost all the people of Asia own at least one *A. modestum* because the plant is thought to bring good luck. And in the Philippines, *A. commutatum* is the local species, in every home just like the Chinese, and called *la suerte* for good luck.

"But green isn't all. There are rumblings in the world of Chinese evergreens. Breeders in the Far East have been busy and new cultivars have been developed that have large splashes of reds, pinks, and oranges. Two new plants are called 'King of Siam' and 'Queen of Siam'."

I asked about growing new plants from seed.

Banta says, "It's easy. Clean the red pulp from the outside of the fruit till you find a large, peanut-sized green seed. Place the seed on a bed of moist, chopped or milled sphagnum moss or any clean and light friable soil. Keep temperatures about 65°F. Don't cover the seed as it needs light for germination, a process that averages about three weeks. It grows slowly at first with only a little green tip in view, but eventually that'll become one leaf about the size of a fingernail, soon followed by more."

"But," he adds excitedly, "anyone can try hybridizing and the amazing thing about aglaonemas is when two different plants are cross pollinated, the resulting offspring become a combination of both the parent's patterns: They tend to be cumulative, one superimposed on the other."

To hybridize take the pollen from a male flower of one species or cultivar and collect it in a small piece of aluminum foil. Then tap some of this pollen on the opening female flowers of another plant. To prevent self-fertilization in nature, the flowers do not bloom at the same time; the female opens first, followed by the male.

photo by Peter Loewer

Richard Kirchner's Chinese evergreens compete with his computer and extensive software collection for space.

plant care

The word usually applied to Chinese evergreens is "tough." They succeed in very dim light — surviving with as little as 10- to 15-foot candles, but preferring at least the light from a north window for a few days every month. (One foot candle is the amount of light shed by one candle one foot away on white paper in a dark room.)

Temperature can be a problem. These plants must be kept warm, especially if being grown in water. The roots are especially cold sensitive. During the day 75° to 85°F is ideal with a drop of 10° at night. Although they will do well in a room with air conditioning, Chinese evergreens are sensitive to cold, drafty conditions, and temperatures in the upper 40's will stunt their growth while anything below 45°F will do them in.

As is the case for most plants that will often succeed while growing in water, potting soil should be well drained but the mix should remain moist without ever becoming soggy or drying out.

growing Chinese evergreens in water

To grow Chinese evergreens in water, any vessel that will hold water will serve, except copper, brass, or lead containers as they interact with water, plant food, or both. Do you use clear glass containers or colored glass? The main objection to clear glass is that with a strong light source and the addition of extra nutrients, a large quantity of algae will start. The darker the glass, the less the algae; in an opaque container there will be none. I advocate clear glass because I enjoy seeing the roots and stem. Cleaning containers is not that much of a job; I use test tube cleaners that I buy from a chemical or medical supply house.

If your new plant comes in a pot with soil mix, turn it over and, holding the plant stem and dirt with one hand, knock the pot on the edge of a table. Unless the soil is very wet, a clump of earth surrounding the roots will loosen and fall out. Take the ball of earth and place it in a clean pan of tepid water; let it soak until the earth falls away from the roots. Do this a second time until the roots are quite clean, being very careful to prevent unnecessary destruction. Now rinse the roots under a gentle flow of tepid water.

Next, take a container and put a few small pieces of charcoal in the bottom; they will keep the water clear. Then add the plant and enough plain water to cover the roots and part of the stem. Never let any leaves remain under the water surface, they will rot. As the water evaporates, replace with fresh water. Finally, make sure the water is pure. Do not use chlorinated water. If that's all you have, run a sinkfull of water and let is sit for 36 hours. And do not use water softened by a home appliance. Plants do not like it.

plants or programs

I called Richard the other day to inquire about his Chinese evergreens.

"All is well," he said, but then added, "there is one small problem. I received a phalaenopsis orchid the other day as a gift."

"That shouldn't be troubling," I said, "except that the orchid needs more light than the evergreens."

"Oh, I know that," he answered. "But I also have a whole series of new computer programs and shortly there will be more computer equipment. Yet sometimes I get the feeling that the plants will eventually dominate."

So if you happen to see Chinese evergreens curling through a window of a small Manhattan apartment around West 48th Street, you'll know what the problem is.

The International Aroid Society

Membership in the International Aroid Society is $15 per year for individual and $18 family in the U.S.A. The address is:
Membership Chairman
International Aroid Society
PO Box 43-1853
South Miami, Florida 33143

Sources of Supply:
The Glasshouse Works
Church Street, Box 97
Stewart, Ohio 45778-0097

Jerry Horne
10195 South West 70th
Miami, Florida 33173
(305) 270-1235

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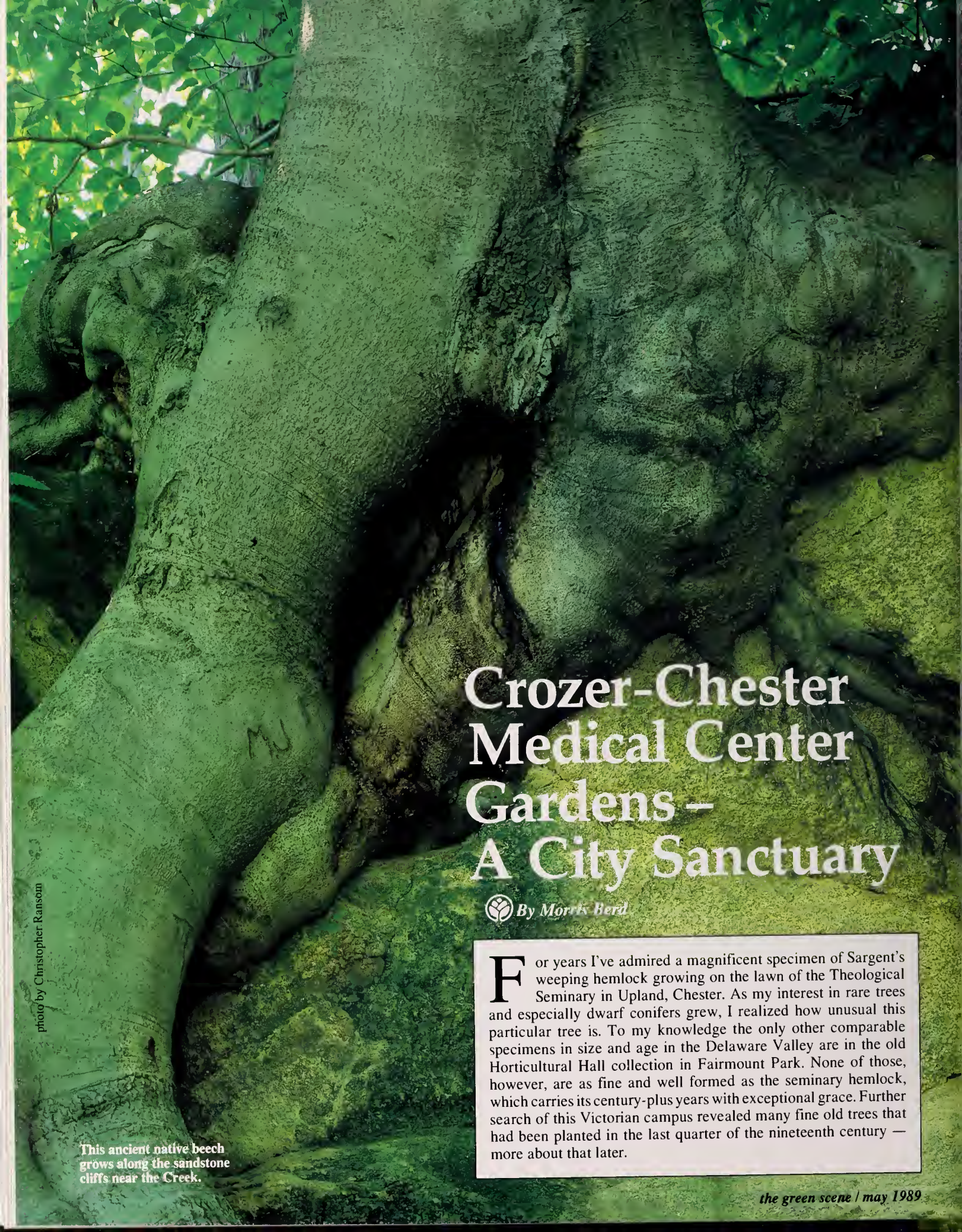
Peter Loewer's 11th book *A Year of Flowers* was published by Rodale Publishing Co. in April 1989. His *American Gardens* was published by Simon & Schuster in November, 1988. Loewer is a frequent contributor to *Green Scene.*



Crozer-Chester Medical Center Gardens – A City Sanctuary

By Morris Berd

For years I've admired a magnificent specimen of Sargent's weeping hemlock growing on the lawn of the Theological Seminary in Upland, Chester. As my interest in rare trees and especially dwarf conifers grew, I realized how unusual this particular tree is. To my knowledge the only other comparable specimens in size and age in the Delaware Valley are in the old Horticultural Hall collection in Fairmount Park. None of those, however, are as fine and well formed as the seminary hemlock, which carries its century-plus years with exceptional grace. Further search of this Victorian campus revealed many fine old trees that had been planted in the last quarter of the nineteenth century — more about that later.

photo by Christopher Ransom

This ancient native beech grows along the sandstone cliffs near the Creek.

photo by Christopher Ransom

The author (right) and Herman Gold (left) sit by the dwarf conifers at the entrance to the Leona Gold Garden at the Crozer-Chester Medical Center.

photo by Harry Foulke

Azaleas, 'Snow White' and 'Stewartstonian' (red), create a necklace around the ponds on the upper trail.

One block west, past this hemlock, along Upland Avenue at 22nd Street a driveway leads to the Crozer-Chester Medical Center (CCMC) gardens. A modest sign marked "Garden Road" introduces the visitor to the garden area, obscured by the cars in the parking lot.

The CCMC garden consists of three distinctly different areas: the remaining old campus of the Crozer Seminary; the newer woodland garden, now called the Leona Gold Garden; and a promenade walk along Chester Creek.

the Seminary Gardens

The Seminary Gardens has a quality often found in old Victorian estates; collections of unusual or rare trees. This upland terrain is bordered by a number of historically important buildings. One such structure is 'Old Main,' which served as a hospital during the Civil War for hundreds of wounded Union and Rebel soldiers. In this area a broad grassy swath stretches beneath an open planting of ancient trees: a pair of majestic red oaks and sister oaks, white scarlet and burr oak. Giant specimens of tulip poplar, a 'National Register' cucumber magnolia and many varieties of maples enrich the list of natives. In this group of trees are also the exotica collected by the intrepid travellers Crozer and Johnson*: giant specimens of Lebanon cedar, Atlas cedar, a battered aged empress

*Samuel A. Crozer, the benefactor, and Professor Elias H. Johnson, Chair of Systematic Theology.

continued

photo by Harry Foulke

Black cherry trees on the right are encircled by masses of azalea blooms in May; on the left hand side of the promenade, willows running along Chester Creek mark the edge of Crozer-Chester's property line.

tree, a ginkgo and many specimen Japanese maples.

the Leona Gold Garden

Dr. Herman Gold, former chief of Cardiology at CCMC, has been overseeing the maintenance and development of the Leona Gold collection since its installation in 1974. When his morning duties at the hospital are over, Gold changes into his gardening clothes, puts on an old battered hat and spends happy afternoons working in the garden. He spends other afternoons travelling about searching for new plants for the Leona Gold Garden, which he dedicated in remembrance of his wife.

It was a lucky day in 1980 when Gold interviewed and hired Harry Foulke to be

Dots of sunlight bounce off the pickerel weed growing in the water along the bank of the willow-lined Chester Creek. The walkway is centered between the creek on one side and a bank of granite and sandstone cliffs on the other.

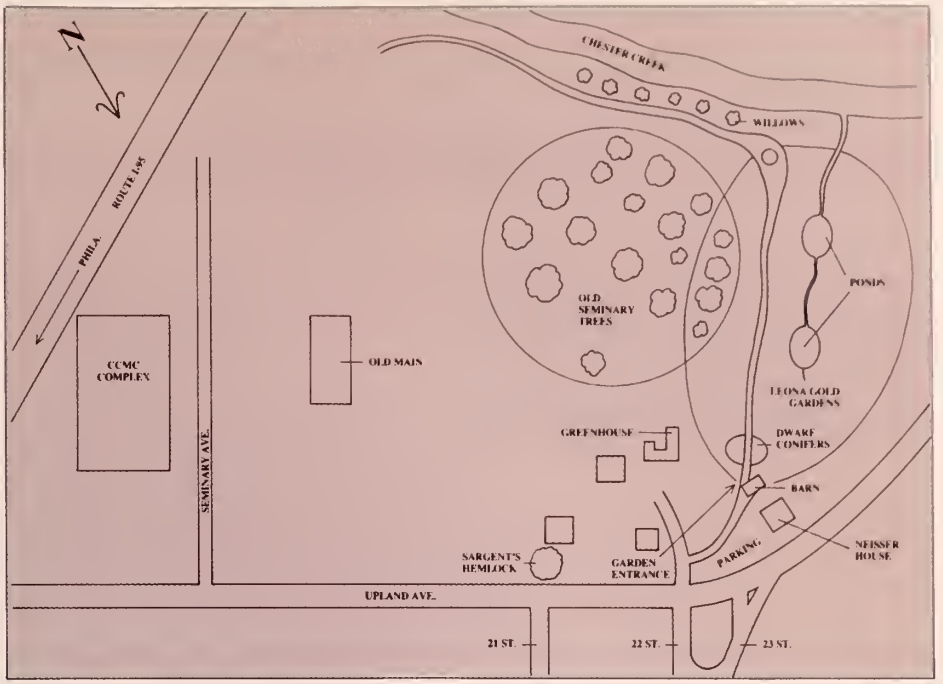
photo by Christopher Ransom

director of the Grounds Department of CCMC. Foulke had been assistant director of Grounds at Swarthmore College for 15 years, and before that owner of a nursery. After Foulke arrived the Leona Gold Garden rapidly expanded. The combination of Foulke's expertise, plus Herman Gold's enthusiasm and love of plants, enabled them to get the funds and cooperation necessary to carry out their ambitious plans. Harry Foulke, with a limited budget and a staff of five dedicated groundskeepers, maintains the hospital's 72 acres including the Leona Gold Garden, in excellent condition. As new buildings have been added to the CCMC, he has planted new cultivars of hawthorns, hollies, birch and many other fine specimens. Foulke is a quiet and courteous man, always willing to share his considerable horticultural knowledge with questioning visitors like myself.

In 1984, a large greenhouse was constructed near the entrance to the garden. Judy Walsh, who had worked in the now defunct horticultural therapy program in the Psychiatric Unit at CCMC, was hired to run it. She produces and cares for all the herbaceous plants. She propagates annuals and perennials for both outdoor beds and decorative indoor plants distributed among the various hospital buildings. The quantity and quality of plants throughout CCMC is a testimony to Judy's heroic energy and horticultural knowledge.

Down a steep slope east of the 'Campus' you enter the Leona Gold Garden. This woodland area is situated in a descending valley leading to the Chester Creek. The visitor first encounters, bordering the path, two islands that contain a collection of dwarf conifers. The intense contrast between the brightness of the stone-chipped mulch of the conifer area and the deep shade of the woodland that follows creates a strong visual impact. In May the hillside to the left sparkles with a brilliance of color found on the palettes of Impressionist painters. Luminous pinks, mauves, lavenders, deep purples and crimson intertwine in drifts of blossoms of the hybrid azaleas and rhododendrons. On another bank harmonies of hot pinks, vermillion and orange reds and yellows are relieved by the cool whites, all vibrating under the shade of towering deciduous and evergreen trees.

To the right of the walk a meandering stream runs into a pool centered by a sea anemone-shaped, flowing fountain. In this lower and damper terrain the wildflowers' colors are less dramatic, although the trained eye may cherish the gold of a tiny primula intermingled with cobalt-blue forget-me-nots, over the exuberant azalea and rhododendron flowers. Yellow wood poppies and violas, white anemones and foam flowers, creamy dutchman's-breeches, red trillium and pink hepatica are painted with a more modest brush. The entire spectrum of colored flowers are brought into a peaceful harmony by the fresh green of the many ferns that carpet the woodland floor. Throughout the garden, wandering or sitting on the benches thoughtfully placed around are ambulatory patients, nurses and staff, dwarfed by the canopy of trees growing in this woodland for many years. Several ponds fed by the streamlet serve as both a visual attraction and a habitat for moisture-loving plants.



the promenade along Chester Creek

At the bottom of the valley the stream disappears into the Chester Creek, the path swings to the left and a new vista unfolds along the promenade walk. The area along the Creek reminds me of a miniature version of the "Grande Jatte," an Impressionist painting by Seurat. One can imagine in Victorian days on a Sunday afternoon, entire families promenading under the weeping willows, which cast long shadows with intermittent slashes of light and shade. A series of coves cut into the sandstone and granite cliffs opposite the Creek, isolating the upper garden from the promenade. Ancient native beech and hardwoods grow there. Azaleas and rhododendrons are planted at the base of the cliff but somehow they seem too civilized and contemporary in mood for this druid-like setting.

When I return to the garden entrance to leave this Eden I am aware that I have been in a haven, an escape from the real world of the hospital grounds. Though the hospital complex is isolated from the garden, the same standard of horticultural interest and tasteful design prevails throughout the grounds. Beds of gay annuals, raised in the greenhouse, soften the clinical environment. These together with the many new varieties of trees and shrubs planted around all the hospital buildings mitigate the apprehension we often experience around most hospitals. The forward-looking administration of John McMeekin and the board of managers deserves acknowledgement for supporting and encouraging this superior horticultural activity.

Botanical Names of Trees Mentioned
(in order of appearance)

Sargent's weeping hemlock	*Tsuga canadensis* 'Pendula'
red oaks	*Quercus rubra*
scarlet oaks	*Q. coccinea*
white oaks	*Q. alba*
burr oaks	*Q. macrocarpa*
tulip poplar	*Liriodendron tulipifera*
cucumber magnifolia	*Magnolia acuminata*
Lebanon cedar	*Cedrus libani*
Atlas cedar	*Cedrus atlantica*
empress tree	*Paulownia tomentosa*
ginkgo	*Ginkgo biloba*
Japanese maple	*Acer palmatum* 'Dissectum'

●

Morris Berd is well-known as a Philadelphia painter and professor emeritus at the University of the Arts (formerly the Philadelphia College of Art). His garden near Media, Pennsylvania, has been visited by several national and local horticultural societies in recognition of his rare and unusual plant collections.

photo by Gina Burnett

THE FAST, EASY WAY TO PROPAGATE YOUR FAVORITE PLANTS

By Kathleen Mills, Assistant Horticulturist

Vegetative propagation by stem cuttings is an easy way to share plants with family and friends, while extending your own plant collection. Three basic types of cuttings are used to propagate most herbaceous and woody plants: softwood, semi-hardwood, and hardwood cuttings. Understanding how and when to take cuttings will make the difference between success and failure. Here are a few basic guidelines.

Softwood cuttings are taken from the soft new growing tips of a plant. These succulent cuttings are usually taken in the spring of the year. The actively growing tips are full of growth hormones, which help the softwood cuttings to root quickly and with a high success ratio. Cuttings can be taken from many houseplants, annuals, hardy perennials, and some woody plants.

Semi-hardwood cuttings are used for many woody plants, both indoor and outdoor varieties. These cuttings are taken after the soft new growth has begun to mature, or harden off. Semi-hardwood cuttings are taken in early to mid-summer, depending on the type of plant.

Hardwood cuttings are used to propagate woody plants. They are taken in the winter months, after the current year's growth has completely matured.

making cuttings

Timing cuttings becomes more critical the harder a plant is to propagate. For example, rhododendrons are propagated by semi-hardwood cuttings. The maturing process can be delayed by a cool, wet spring, so the time when cuttings are normally taken should be delayed until the stem has become semi-hard. Conversely, easy-to-propagate plants have a wider range of time during which you can take cuttings.

Take cuttings from healthy, well-fertilized plants. Cuttings taken from diseased or insect-infested plants root more slowly with a lower success rate than those taken from a healthy plant. Diseased cuttings have few food reserves in their stems, making the transition from cutting to plant unlikely. Should these cuttings root they may have the problem that the mother or stock plant had. Therefore select healthy, vigorous stock plants to insure the best results from your cuttings.

The physiology of outdoor and indoor plants can vary. Outdoor plants are constantly adapting to changes in their environment. Their life cycle has definite seasons that the plants prepare themselves for and are affected by. Because greenhouse/indoor plants are maintained in a more stable environment, somewhat protected from seasonal change, their cuttings tend to root with more success than those of their outdoor peers.

Two sharp, clean cuts make a cutting. First, cut just below a node, or leaf joint. A smooth cut helps to form a callus. The second cut removes any stub, or internode left on the stock plant, down to the next node. Softwood and semi-hardwood cuttings need special attention so they do not wilt or dry out. They should be cut early in the day when the plant is full of water, or turgid. Keep them out of the hot sun, make sure they are kept moist, and pot them as soon as possible. Any flowers or flower buds should be removed so that the stored energy in the stem can be used for rooting. The lower ¼" can be dipped into a rooting hormone before the bottom third to half is placed in a sterile potting medium.

growing cuttings

The success or failure of rooting a cutting depends on the ability of the stem's cells to change their function and differentiate into root cells. For this differentiation to take place the gardener needs to create a favorable environment, which includes warm soil, cooler air temperatures, and humidity without wetness. The following tips can help you create this environment.

The quickest rooting occurs when the transpiration rate of a cutting is kept at a minimum. Transpiration is the loss of water vapor through the leaves. By reducing the amount of leaf surface area, you can reduce transpiration. For example, when taking a rhododendron cutting, cut the leaves down in size. Remember that some leaf area is needed so that photosynthesis can continue. The transpiration rate can also be minimized by maximizing the humidity around the plant. A high humidity can be maintained through several methods. Commercially, mist systems keep a thin film of moisture around the leaves. At home, a pebble tray or a plastic bag over the cuttings will help maintain a high level of humidity. Keeping the soil temperature warmer than the air temperature will also help to elevate the humidity. Heating coils for home use are available through most horticultural catalogs and in many garden centers.

Rooting hormones help to speed the rooting process. Since cuttings are necessarily kept in a moist environment, it is a good idea to use a rooting hormone that contains a fungicide. Fungi, like cuttings, thrive in a warm, moist setting. A fungicide will prevent fungus from entering the wounded end of a cutting. Hormones hasten root initiation and improve the quality of the forming root system, but they do not replace the need for proper temperatures, light, water, and humidity.

The proper growing medium will also aid quick and healthy root production. A soilless mixture provides the needed balance and air and water, and a sterile environment. While a moist medium is needed to avoid wilting, a water-logged one fosters disease, making good drainage a necessity. A mixture of peat and perlite (1:1) will fill the need for home propagation. Where a mist system is used the setting tends to be moister, so often sand is used as a rooting medium. Sand enables water to drain quickly, while still providing a good anchor for developing cuttings.

These general tips will help you propagate your favorite plants. For information on specific plants the books listed here are available in the PHS library, or call the HOTLINE, Monday through Friday, 9:30 a.m. - 12:00 noon, at 215-922-8043.

Recommended Reading

Plant Propagation: A Practical Guide for Every Garden, K.R.W. Hammett, Drake Publishers, Inc., New York, 1977.

Plant Propagation Practices, James S. Wells, American Nurseryman Publishing Company, Chicago, IL, 1985.

Plant Propagation Principles & Practices, Hudson T. Hartmann, Dale E. Kester, Prentice Hall, Inc., New Jersey, 1983.

Propagation, Alan Toogood, Stein & Day Publishers, New York, 1980.

LETTERS TO THE EDITOR

Funding Bambi's Trip Home

The article, "Bambi Go Home," in your January issue paints a vivid and accurate picture of the damage to plant life caused by deer in New Jersey.

We, on the Pennsylvania side of the Delaware River, are no less victims of this same problem, which has become acute at the Bowman's Hill Wildflower Preserve in Washington Crossing Historic Park in Bucks County. This Preserve is a botanical garden of great value to the public and to the horticultural and scientific communities locally, regionally and worldwide. It is the first botanical garden in Pennsylvania to be accredited by the American Association of Museums and the only accredited wildflower garden in the nation.

The Preserve's living plant collection includes nearly 100 species, which are listed as endangered in Pennsylvania, or which are on the federally endangered list. And they represent a significant part of the natural heritage of the people of Pennsylvania, a heritage that is now threatened by the deer.

We have tried every known repellent and type of barricade, all to no avail and have now concluded that the only permanent solution to our problem is to enclose the Preserve in a 10-foot chain-link fence that would be deerproof. Such a fence would cost about $250,000. Such a fence project was included in the state's capital budget last fall. Now it will be necessary to get the present administration to *appropriate* the money for the fence. We would be most grateful for any help your readers can give us by contacting their senators and representatives in Harrisburg and urging them to support funding for this project.

Martha Ludes Garra
Trustee, Bowman's Hill
Wildflower Preserve

Verbascum

It was a delight to read John Swan's article praising the lovely but under-utilized *Verbascum.* I can also attest that these delightful plants tolerate heat and drought beautifully and remain attractive for weeks. Some successful combinations I've used with *Verbascum olympicum* (and which should also work well with other tall *Verbascum)* are:

- *Miscanthus sinensis* 'Zebrinus' (Zebra Grass) and *Echinacea purpurea* 'White Lustre.'
- *Tithonia rotundifolia* 'Sundance' (also 'Goldfinger,' both short cultivars of Mexican sunflower) and *Artemisia ludoviciana* 'Silver King.'

Where I need a shorter *Verbascum,* I cut back (to about 3") the flower stalks of *V. thapsis* and *V. olympicum* when they reach 18". In 2-3 weeks the plants form long-lasting multi-branched candelabra of heavily flowered stalks 24"-30" tall. As an added bonus, the leaf rosettes do not die and are handsome during the following winter.

For something different, try the *V. phoeniceum* hybrids (Thompson and Morgan) — a 24"-36" green-leaved *Verbascum* which displays a profusion of rose, pink, violet, lavender and white flowers in late April and May.

Patricia C. Christopher
(Instructor—Longwood Gardens
Annual Plants and Perennial
Plants courses.)

Amaryllis

Your March article on amaryllis was especially informative but it omitted one aspect of the treatment of these bulbs: *When* is the best season for repotting? Immediately after they're forced into dormancy at the end of summer? Or as they begin new growth after the winter rest period?

I'd be most grateful for a reply.

John G. Shaffer
Potomac, Maryland

Todd R. Phillippi replies: "Every two or three years I repot my *Hippeastrum* (amaryllis) at the end of the summer growing season (late September). About mid-August I stop all fertilizing, and water sparingly to help get the bulbs in the right condition. It's important when repotting to remove any dead or decayed roots down to the bulb's base."

•

Correction: March/April *Green Scene,* p. 28

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Monarch butterfly stops during its fall migration to feed on *Buddleia davidii* 'Peace' at the Scott Arboretum. See page 22.

GREEN SCENE

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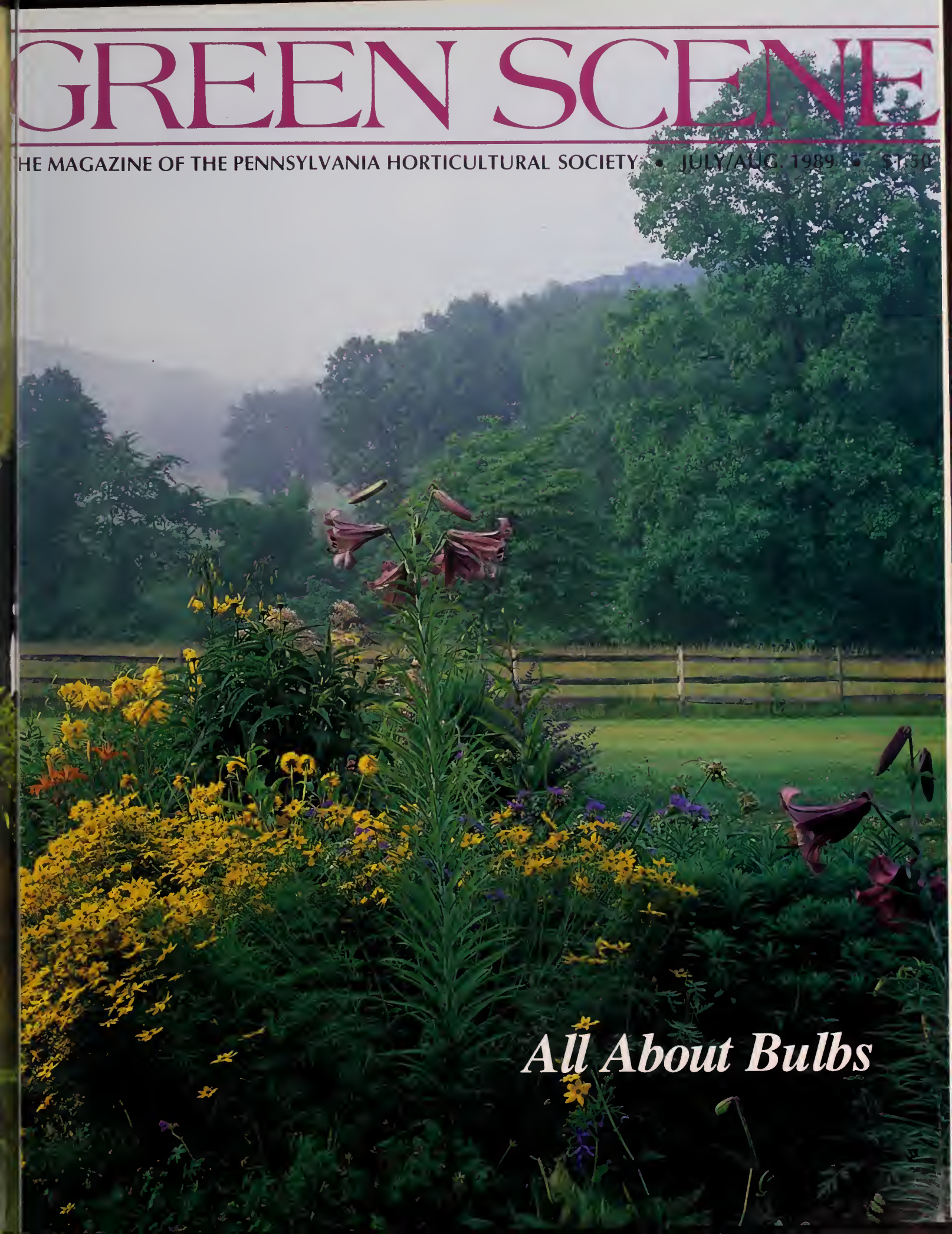

All About Bulbs

9

15

22

in this issue

Volume 17, Number 6 July/August 1989

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Front Cover
Lilies steal the show from coreopsis in the cutting garden.
photo by Walter Chandoha

Back Cover
Photo by Gottlieb Hampfler. Courtesy of Winterthur Museum and Gardens

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BULBS INDOOR & OUT

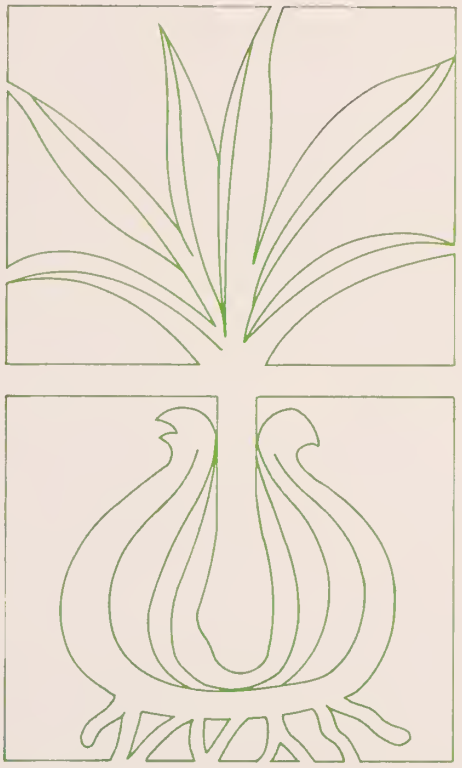
(including Lilium 'Jane Pepper')

By Jean Byrne

Since our first *Green Scene* special issue on pruning in July, 1973, we've always devoted the July issue to a single topic.* No matter how many extra copies we print, we always run out sooner than we expect. It seems to be a favorite, and we find people tend to save these special issues for reference. We expect no less for this collection of stories about bulbs. We've added four more pages to accommodate the overflow of stories and even moved a super article about alliums by John Swan to the September issue because everyone had so much relevant material we couldn't pare it down.

This issue features a group of "hot" authors writing about a subject they know a lot about. Walt Chandoha and Mary Mills give a month-by-month breakdown on what's in bloom outdoors. And we invited Joanna Reed to write about bulbs in the landscape for this issue, because her garden is so exceptional. Joanna's work has been featured on four *Green Scene* covers, and she has written eloquently about her garden in *The American Woman's Garden* (Rosemary Verey and Ellen Samuels, A New York Graphic Society Book, Little Brown & Co., Boston, 1984). Her interest in gardens transcends state boundaries; while president of the Herb Society of America, she visited at least 100 herb gardens all over the country, and she designed the Fragrant Garden at the U.S. National Arboretum in Washington, D.C.

It's appropriate that Kathryn Andersen has two stories in this issue; she's president of the American Daffodil Society, American vice-president of the North American Lily Society, and past president of the Middle Atlantic Regional Lily group. One of her stories is about three American daffodil hybridizers, a subject she knows a lot about because she's a hybridizer herself. In fact, Kathryn Andersen hybridized the soon-to-be-available *Lilium* 'Jane Pepper' honoring PHS's president. (For more details about this hybrid, see page 21.)



When we were planning this special issue on bulbs more than a year ago, exuberant Walt Fisher, who has been exhibiting at the Show for 10 years, said he'd like to do a survey on growing techniques among the Flower Show bulb exhibitors. Smart. He talked to seven other growers and finished his article about a week after the 1989 Show. Did he learn anything? How could he not. Can he teach anything? How could he not. He won Runner-Up in the Horticultural Sweepstakes this year bolstered by his "Best of Day" wins in the Narcissus Division on all three days of horticultural judging, and second place for his beautiful bulb exhibit in the collections class.

"A botanical and aesthetic tour de force," exclaimed the judges of co-exhibitor Julie Morris and Lee Raden's collection of 46 bulbs, which took "Best of Day" in the 1989 Philadelphia Flower Show Horticultural Section for an entry of two or more varieties on opening day. They accomplished this miracle with Julie gardening in Newport, Rhode Island and Lee in Phoenixville, Pennsylvania. Their exhibit was culled from 200 plants forced over a four-month period. Julie writes about her favorite old bulb books and Lee, president of the American Rock Garden Society, writes about cultivating hard-to-grow bulbs in this area.

Susie Ganoe of Princeton, who has successfully exhibited plants from her greenhouse at the Show, surveyed people all over the country, tracking down the best suppliers, from Massachusetts to Oregon to the Carolinas, and including European suppliers as well. She had the best local advice possible and culled the list on page 28 from at least 75 premium bulb suppliers.

If we haven't answered your most perplexing question about bulbs here, let us know. One of our readers surely knows the answer, or maybe we'll just print volume II, Bulbs.

*For information about other topics, check your *Green Scene 15-Year Index Volume* 1-15. If you don't have an *Index* see the *1988-89 Index* at the back of this issue for information on ordering a copy. The annual *Index* always appears in the July issue.

BULBS IN THE LANDSCAPE

By Joanna

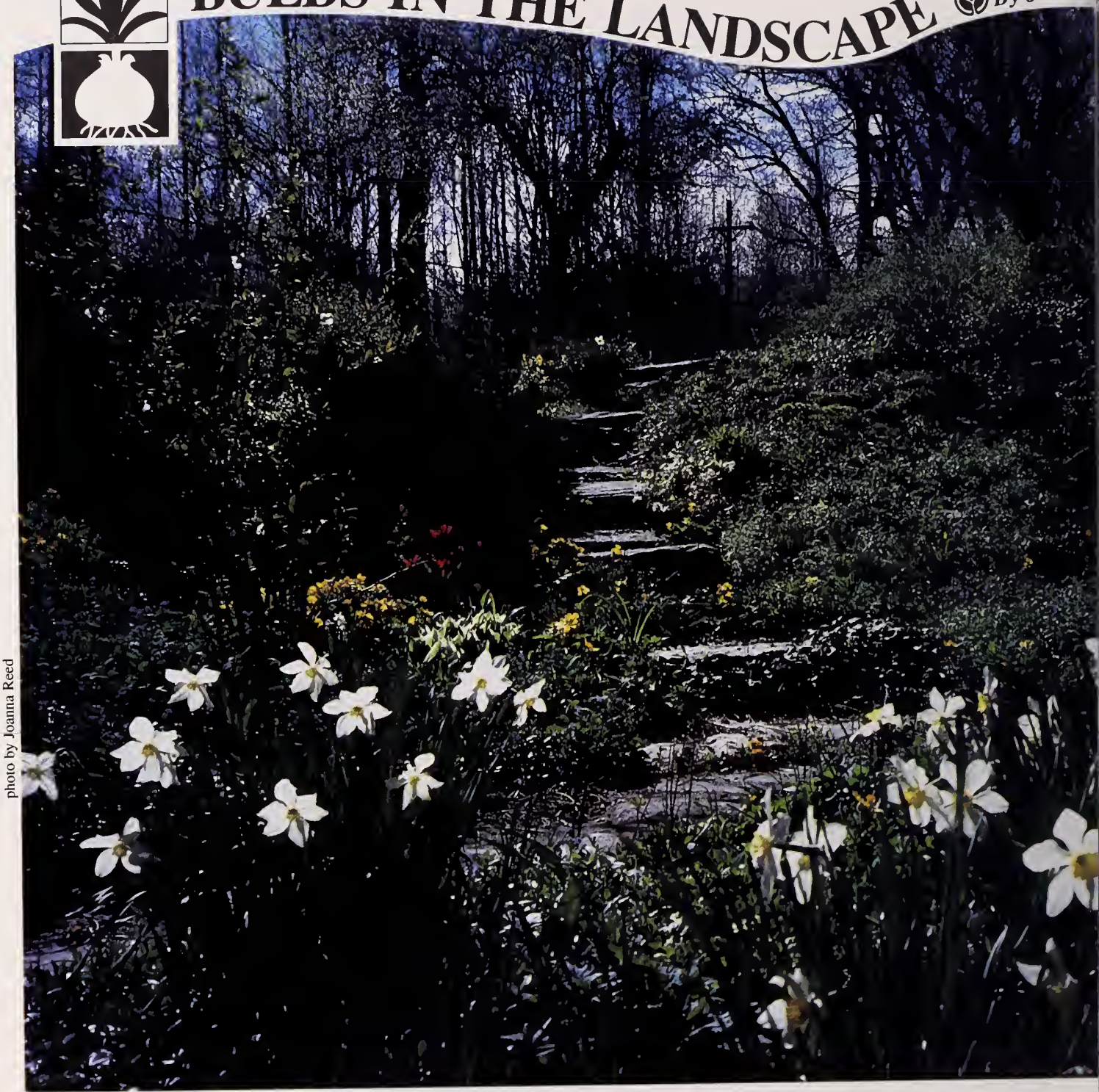


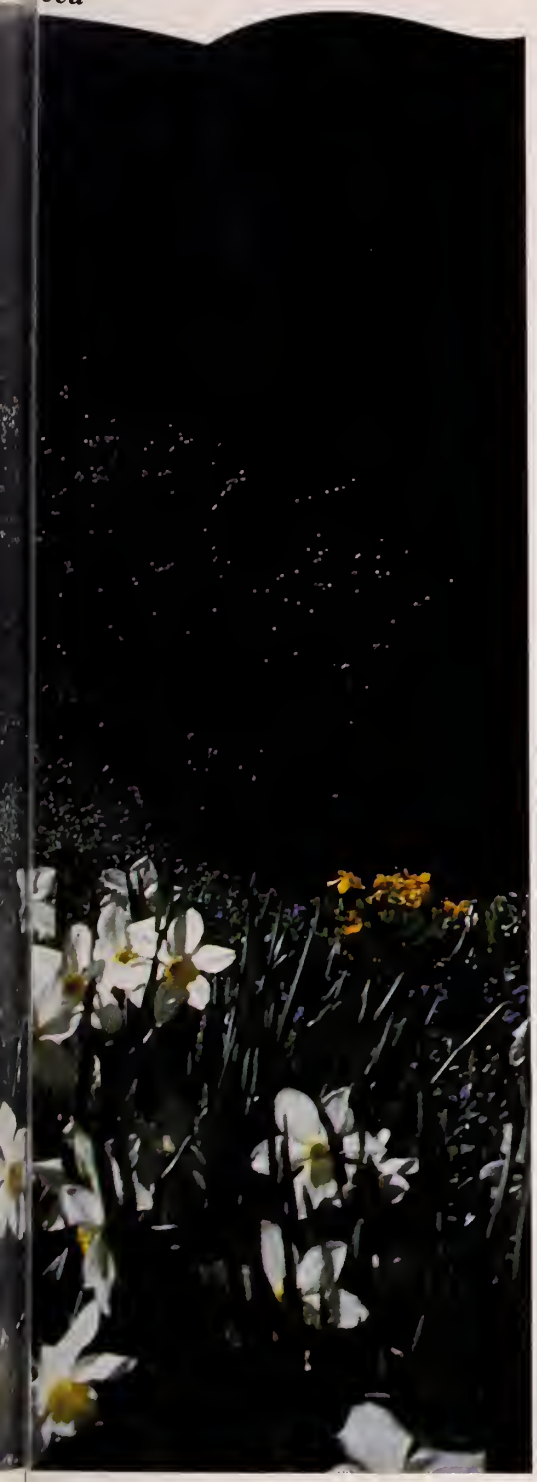
photo by Joanna Reed

Old pheasant's eye narcissus (*N. poeticus.*)

Bulbs, although a single element in the landscape, combine with trees, shrubs and herbaceous plants to make gardens lively and enchanting. They represent the far reaches of our world, their blossoms, exotic and beautiful, attracted the attention of adventurers, crusaders, and traders. Recognized as valuable curiosities they became items of trade along with silks and spices. Their viable parts, formed into the intricate, clever package we call a bulb, were able to survive slow travel, thus they spread across seas and continents.

Hardy bulbs are undemanding. Knowing about their natural habitat helps us provide a growing situation suitable for their needs. Differing exposures to sun and weather can extend the bloom span of each type of bulb for up to three weeks. On schedule they annually reappear in ever-increasing quantities. Snowdrops (*Galanthus spp.*) and winter aconite (*Eranthis hyemalis*) pop up on the first warm days of February to proclaim spring. A frigid spell sends them into tight bud to await, unharmed, the next burst of sun and warmth. They are the first. *Cyclamen hederifolium* and the autumn crocus are the last, brightening the garden well into November.

Bulbs will add color and panache to



every conceivable landscape. *Now* very definitely is the time to decide where and how to fit the next dozens, hundreds or thousands into your own personal landscape.

in limited areas

How bright and cheery are pots, window boxes and containers full or narcissus or tulips underplanted with pansies, forget-me-nots or smaller bulbs. Why not repeat such a splash later in the season with lilies, crocosmias, caladiums or lower growing cannas. Grow them on in pots, the correct size, to fit as liners, into your containers. The possibilities are exciting and limitless.

I use bulbs throughout the entire garden.

If you have trouble with voles and/or rodents, celandine poppy* (Stylophorum diphyllum) *is a desperation substitute for tasty bulbs.

Bases of walls are great places. Usually the ground is dry in the summer; bulbs won't rot for the same reason most plants won't prosper. If it is a garden wall, or even a hedge serving as a backdrop for perennial beds, plant bulbs for a succession of color and moods. Mass the varieties for impact. Mulch well after planting. Next season, after the foliage has died back, you have a handy path to use while staking and deadheading the taller plants in the rear of the border. If the wall edges a lawn, use the smaller bulbs such as crocus, scilla, chionodoxa, snowdrops, aconite or anemone so they can seed themselves into the lawn. Their foliage disappears so quickly it will cause no problems with lawn mowing. The same bulbs plus *Cyclamen hederifolium* are enchanting drifted at the base of specimen trees.

Clumps of bulbs tucked at the edge of steps or in the corners of paths defy the short-cutters-of-the-world to trod on their welcome brave bright green spikes. In

continued

photo by George Reed

Eranthis hyemalis, winter aconite.

BULBS IN THE LANDSCAPE

photo by Franziska Huxley

Scilla campanulata 'Alba' interplanted with forget-me-nots and yarrows.

dormancy they are safe from trespassers' feet. The waste space under fences is a likely spot to use. I have planted deep blue *Scilla siberica* 'Spring Beauty' in combination with an apricot *Viola odorata*, a good spreader vigorous enough to suppress weeds. Any violet or any of the *Ajuga reptans* would work equally well.

Deciduous shrubs in borders, as part of a foundation planting or as lawn specimens beg to have drifts of the lesser bulbs about their feet. They readily multiply, their beauty increasing each year without cost or labor.

interplanting in beds and borders

True, if one interplants bulbs in flower beds and borders, the inevitable sequence will be an occasional chopped or stabbed victim. But the natural increase compensates for such a tragedy. Advance planning is wise. Peonies, *Baptisia*, *Dictamnus* (gas plant), and *Gypsophila* (baby's breath), are all deep rooted plants, with an equally deep aversion to being transplanted. Their ultimate size demands space, leaving ground room for daffodils or tulips. This is also true of daylilies (*Hemerocallis*), red hot pokers (*Kniphofias*), hostas and siberian iris. The emerging foliage will compliment the blooming bulbs and later hide their dying leaves. Interplanting among biennials or oriental poppies, whose foliage disappears during the summer, is another possibility. By mid-June the space is empty and can be bedded with shallow rooted annuals on top of the now dormant bulbs.

I wonder still, did my voles develop a taste for garlic-flavored tulip bulbs?

Dutch crocus, miniature narcissus, *Triteleia* or other small bulbs are charming coming through edging plants, such as, *Iberis sempervirens* (hardy candytuft), *Phlox stolonifera* (creeping phlox), thyme and *Nepeta mussinii* (blue catmint) along the front edges of the border. *Allium senescens glaucum* belong here also, the blue-green spiral twist of its leaves is an asset all summer. Alliums, incidentally are wonderful decorative bulbs, and different varieties will give flowers from May to September.

Unless you feel compelled to till your vegetable garden annually to great depths, tulips, narcissus, camassias may be rowed out for a good supply of cut flowers. Plant 12 or 14 inches deep and mulch. Lettuce, chard, bush beans etc. can be planted on top.

planning for transitions, shade

Since it is vital for next year's bloom to allow foliage to ripen, plant pleasing overall shapes for areas to be naturalized. They should be easy to mow around especially if in lawns. The natural growth of a meadow will hide the decaying foliage. In an urban garden keep the naturalized bulbs to the edge of the lawn or create the ambience of a country garden with one or two wilder spots. *Hesperis matronalis* (sweet rocket), *Digitalis purpurea* (foxglove), *Lobelia siphilitica* (blue lobelia) and *Rudbeckia* 'Goldsturm' (black-eyed-susan) reseed readily and would be good for overplanting such an area. Scale is the thing; in limited space a few plants achieve the same effect as the multitudes needed in a meadow.

In a shady garden or in the woods use the earlier blooming bulb varieties. Their foliage must ripen while the sun can still penetrate. Trees pruned to give high shade, wide pathways and clearings (if it is a sizable woods) allow extra light. *Scilla campanulata*, sometimes called *Endymion*, is one of the best bloomers in shade, as any visitor to Winterthur Museum and Gardens in Delaware well knows.

photo by Joanna Reed

Muscari, Narcissus 'Trevithian' in distance, *Stylophorum* on right.

favorite combinations

A few of my better combinations have been:

- A sweep of winter aconite beneath *Hamamelis mollis*, the Chinese witch hazel, all glowing gold for weeks. This fall I plan to add the bright lavender saffron crocus (*Crocus sativus*) to compliment the witch hazel's yellow autumn leaves.
- *Erythronium albidum* 'Giant White,' *Muscari botryoides* (the white form), and *Fritillaria meleagris* (Guinea-hen-flower), planted among *Viola labradorica*, a favorite of Shakespeare's, the pale yellow, fragrant hose-in-hose primrose against a background of the ephemeral soft yellow flowers of *Epimedium* 'Sulphureum.'
- The miniature *Narcissus* 'Hawera' and *Scilla siberica* 'Spring Beauty' planted among Christmas and maidenhair fern, along with the bronze leaved *Ajuga reptans*.
- 'Mrs. R. O. Blackhouse,' an early developed pink narcissus, and *Mertensia virginica* growing along the back of a border among the vivid green stemmed clumps of *Kerria japonica*.
- *N.* 'Thalia' planted with *Pulmonaria*, especially nice is *P. angustifolia*.
- Drifts of *N.* 'February Gold,' for early bloom, and *N.* 'Pink Fancy' for later bloom among blue *Phlox divaricata*, bright magenta *Lunaria annua* (moneyplant), *Iberis sempervirens* (candytuft), and the wonderful bronze/green, round, scalloped, leaves of *Heuchera*, coral bells. Deeper back in the border *N.* 'Geranium' blooms last of all, tall enough to be showy among the now fully developed perennial foliage.
- *N.* 'Mt. Hood' placed adjacent to a large patch of *Helleborus niger* and *H. orientalis* work well. The lime green and mauvy pinks of the fading lenten and christmas roses lend a richness to the scene while 'Mt. Hood' adds a clear white punch.
- *N. trevithian*, fragrant, intensely lemon yellow, is eye catching near the chartreuse blossoms of *Euphorbia epithymoides* (formerly *Polychroma*) and the deep blue spikes of *Muscari* (grape hyacinth).
- Clumps of the old pheasant eye narcissus interplanted with earlier blooming yellow trumpet daffodils will add weeks of enjoyment to the same spot. Incorporate a drift or two of the self-seeding wild red columbine (*Aquilegia canadensis*) for excitement and a few rosettes of bold *Bergenia cordifolia* for a punch.
- The silver markings on the deep green foliage of the hardy *Cyclamen hederifolium* is a wonderful foil for *Anemone blanda*. I personally prefer planting them by color, not using a mixture.
- If you have trouble with voles and/or rodents, celandine poppy *(Stylophorum diphyllum)* is a desperation substitute for tasty bulbs. Its yellow tulip-shaped blossoms are a great attention getter for low key blue flowering bulbs, such as *Chionodoxa*, *Muscari* or *Triteleia*, sometimes called *Ipheion*.

tulips

Tulips I adore and nothing can really substitute for their unique grace and charm. The animals who share my acres share my taste in plants. Deer and rabbits eat foliage, buds and flowers, voles and mice hungrily eat the bulbs, Long ago I gave up attempting to foil the varmints by planting in cans and cages, resigning myself to enjoying these wonderful flowers in other persons' gardens. *Tulipa praestans* 'Fusilier' has survived the longest and is very

continued

BULBS IN THE LANDSCAPE

photo by Joanna Reed

Tulipa 'Bond Street'

showy with white *Arabis*. Reading that the onion family repelled rodents, I planted drifts of *Tulipa tarda* (or *T. dasystemon*) together with *Allium moly*. Blooming a month apart they produced an extended show. Their willingness to spread by self-seeding was a bonus. They thrived and increased for a number of years then suddenly vanished. I wonder still, did my voles develop a taste for garlic-flavored tulip bulbs?

Spring is certainly not the only time for bulbs. Various lilies bloom elegantly throughout the summer. Being a gourmet item for my animal friends, my success has been minimal. *Lycorus* or the Resurrection lily makes its leaves in early spring, but blooms on leafless stems in August.

Marie Aull, in her Dayton, Ohio garden Aullwood, (open to the public*) has naturalized *Lycorus squamigera* in her woods. Being a mature well managed woods, shafts of sun spotlight, at least, thirty drifts of delicate pink *Lycorus* with hundreds of thousands of blossoms in each drift. A more beautiful or enchanting sight I never expect to see — it is pure magic. Magic, which began as a labor of love in 1927 with a few gift bulbs.

The spectacular clumps of *Crocosmia* 'Lucifer' in Sir John Thouron's garden make me wish I had years and years more in which to garden to produce such spectacular results. Instead I must be satisfied with the beginnings of stands of *Colchicum*, (autumn crocus) *Sternbergia* and hardy *Cyclamen*. In my mind's eye these summer and fall bloomers grow in great sweeps. In reality there are only a few small embryo patches of each. The *Cyclamen herderifolium* with the blue *Anemone blanda* have been increasing. *Sternbergia* finally seems happy in the heat and drought at the base of a house wall. My *Lycorus* has multiplied, been divided and multiplied again but bloom meagerly. I hope a few of these experiments will prosper enough to catch a gardener's attention and care in the future. Meanwhile I marvel at the extent to which my spring bulbs have spread and enjoy heavenly displays planted and shared by other gardeners, some even planted in past centuries.

George, my husband, and I fell in love with the Virginia fields and meadows awash with yellow daffodils or bright blue *Muscari*, on our wedding trip, bulbs truly naturalized. We promptly purchased a bushel of mixed *Narcissus* in 1940. Their progeny have been widespread. A small investment for a collection a few years later, five bulbs each of ten varieties, brought us, 'John Evelyn,' "Edward Buxton,' "Tunis,' 'Carboneer,' 'Selma Lagerlof,' 'Horace,' 'Mary Copeland,' 'King Alfred,' the 'Duke of Windsor' and 'Twink.' Not illustrious guests, but sturdy permanent residents, reliable producers.

Each year more bulbs have been added: some purchased, some gifts, many home-grown, at least 500-1,000. Remember, I said scale is the thing, acres take multitudes. Many a smaller garden has turned me green with envy.

I hope you agree, midsummer is a fine time to think bulbs.

•

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After gardening for 49 years, Joanna Reed says she still enthusiastically plans for the future of her garden. A frequent contributor to *Green Scene*, her work has been featured on at least four covers. See editorial for additional biographical details.

FLOWERING BULBS:

photo by Walter Chandoha

Parrot type tulip, 'Old Orange Favorite'

SPRING & SUMMER

By Walter Chandoha

Although we call them bulbs, those fat, swollen "roots" we plant in the fall and spring are not all bulbs, Some are. Others are tubers, corms, rhizomes, pips and tuberous roots.

Bulbs — true bulbs — are miracles or packaging. Think of true bulbs as big, fat, protected flower buds. Each contains an embryonic flower and leaves neatly encased in layers of life-sustaining, fleshy, protective scales. Bulbs can grow and flower without further enrichment. Some, like hyacinths and paper-whites, will even flower when grown in water. Tulips, narcissus, hyacinths, lilies and alliums are true

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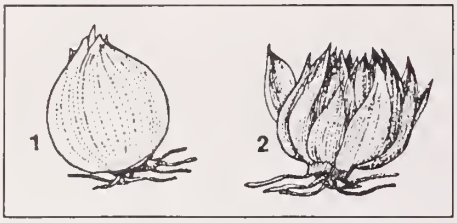
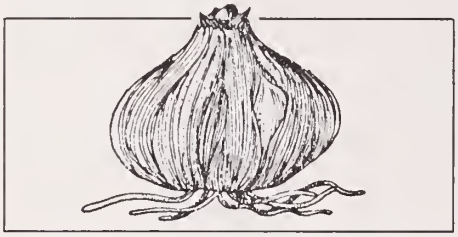
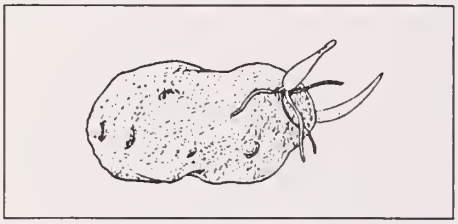


Illustrations by Peter Loewer
Bringing the Outdoors In, Walker & Co., NY 1974.

Hyacinth and onion bulbs (1) are tightly encircled with leaves. Lily bulbs (2) have fewer and more fleshy leaves.



Corms are a series of underground stems that are squeezed into a short, broad, and fleshy package. A gladiolus corm showing a tiny lateral bud; if a corm bears small lateral buds on its surface, it lasts only one growing season, and a new corm is formed on top of the old.



Tubers are modified stolons or underground stems swollen with stored food. The sweet potato, potato, and tuberous begonia are tubers.

Rhizomes are perennial stems that are short and thick and give rise to aboveground branches. Iris, violets, and orchids grow from rhizomes.

photo by Walter Chandoha

Cactus type *Dahlia* 'Border Princess'

bulbs. Some true bulbs live many years in their original form constantly growing larger. They multiply by splitting and by making offsets of tiny clones adjacent to the parent or along the stems.

Corms closely resemble bulbs but do not have layered scales and each year after blooming the old "bulbs" rot away to be replaced by new ones. Crocus and gladiolus are corms and the clones that grow alongside the parents are called cormels. They take several years to grow to full size corms.

Tubers are swollen underground stems with "eyes" from which new growth emerges. The flesh of the tuber sustains the plants until new roots develop to extract moisture and nourishment from the surrounding soil. Irish potatoes are tubers as are tuberous begonias, cyclamen and anemonies.

Rhizomes are thick fleshy stems that grow horizontally on or just below the soil's surface. As with tubers these fleshy parts help feed the plant but they do not rot away after a season's growth. More rhizomes develop from the old ones spreading out in octopus fashion. They are all firmly anchored to the soil by feeder roots. Bearded iris and Solomon's seal grow from rhizomes.

Tuberous roots are swollen roots with eyes or buds that develop into stems. Unlike tubers which have many eyes, tuberous roots have very few and need to be treated with care. If the eyes are broken off you'll get no plants. Dahlias and peonies have tuberous roots.

Pips. Lily-of-the-valley grow from pips. These dormant crowns are small swollen blisters attached to a mass of intertwined roots. Florists (and gardeners) dig lily-of-the-valley roots in the fall and store the pips in refrigerators until needed for forcing in late winter and early spring.

hardy and tender

For the sake of brevity many gardeners call all of these root forms flowering bulbs. More important than knowing which is truly a bulb, corm or tuber is knowing which are hardy or which are tender. Hardy bulbs are usually planted in the fall for spring and summer blooms. Tender bulbs are planted in spring after the last anticipated frost date for summer and fall flowering. Hardy bulbs can be left in the ground through the winter. Tender bulbs cannot take freezing and must be dug up and stored under cover at 40-50°F. through the winter.

soil

Hardy or tender, all flowering bulbs have a common need — they grow best when planted in a humus-rich, easy-draining soil. Given this environment, hardy and tender bulbs will thrive and multiply. If hardy bulbs are fall-planted in heavy, waterlogged soils write them off as annuals — they'll bloom the spring or summer after planting but in succeeding years you'll get fewer flowers, if any. Bulbs quickly rot in heavy soil.

More important than knowing which is truly a bulb, corm or tuber is knowing which are hardy or which are tender.

When planted in the fall, ground moisture and lingering warmth triggers growth. In Zones 4-5-6-7 air temperatures may be cold but the soil stays a comfortable 45-55°F. for several months — perfect for bulb root growth. This growth continues until ground temperatures drop below 40°. Then the bulbs go into a second dormant period and take a winter snooze. As winter wanes and the soil slowly gets warmer, growth resumes and eventually the bulbs flower.

planting

For natuarlizing bulbs in meadows and woods a bulb planter* might prove useful. It's also good to use if your soil is sandy or naturally high in humus. But for tight clay soils bulb planters are useless. Better to dig out the area to be planted and enrich the hole with a 50/50 mixutre of sand and peat moss or compost. Assuming a hole 18" in diameter and 12" deep. fill the bottom 4" with the mixture, add an inch of sand, place the bulbs on the sand 4-5" apart then cover with more of the sand/compost mix. A dozen bulbs planted in the 18" hole will make an impressive cluster of flowers in the spring. Bulbs look better planted in clumps rather than in single-file, soldier-like rows. Restrict row planting to the cutting garden. Water the beds immediately after planting.

After the top 2-3 inches of soil freezes, mulch with chopped leaves to keep the ground frozen. The mulch prevents alternate thawing and freezing, which some-

*Available in garden centers.

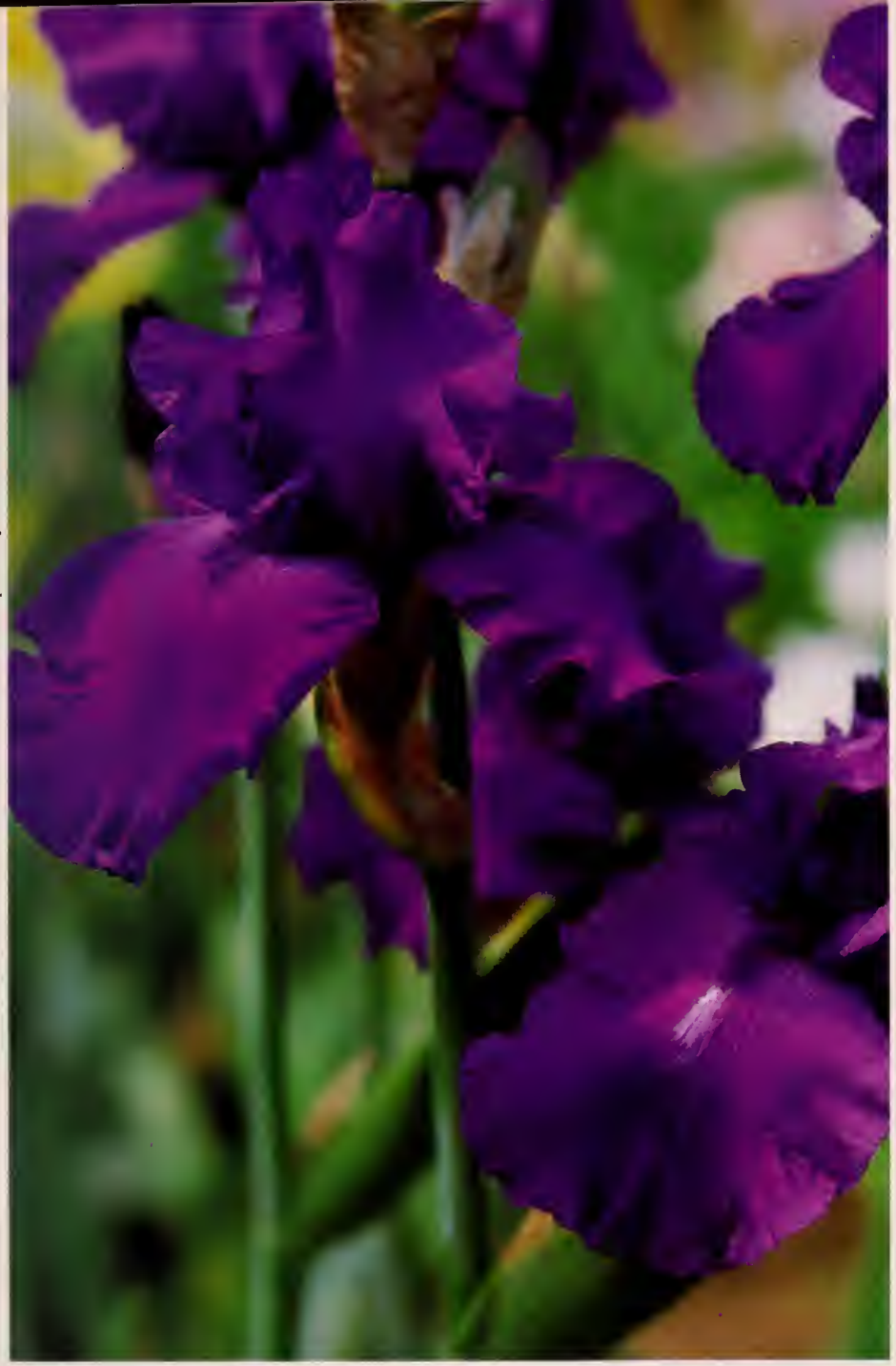


photo by Walter Chandoha

Iris 'Royal Satin'

times loosens roots, which in turn tends to diminish the quality of top growth in the spring.

how deep to plant

Depends on the soil. In light sandy soils plant about four times the height of the bulb. In heavier soils about triple the height. Where winters are severe plant deeper to give bulbs added protection from deep freezes. A good guesstimate on planting depth: big fat bulbs like lilies, imperial frittilaria and larger allium, 7-10" deep; medium bulbs — most of the tulips, daffodils and gladiolus — around 6"; and tiny bulbs, 1-2". With the majority of bulbs depth is not that critical. They generally seek their preferred level after being in the ground for a season or two. A couple of exceptions where exact depth is desirable: plant iris just below the soil's surface and the eye of the peony should be 2" under the soil.

delayed outdoor planting

Ideally, hardy bulbs are best planted early in the fall to give the roots plenty of time to grow before winter dormancy sets in. But suppose you don't have the time to plant already purchased bulbs in September or October? No problem. Store the bulbs in the refrigerator. Then go out and mulch the area where the bulbs are to be planted with 6-10 inches of chopped leaves — at least enough to keep the ground underneath from freezing. Additionally, store a couple of pails of peat moss undercover where it won't freeze.

As time permits in November, December, even January (I've planted tulip bulbs on New Year's Day and have had them bloom in May) rake aside the mulch, dig the site and plant as you would in early fall. If the soil needs amending use the indoor-stored peat moss. Saturate the area after planting, then cover again with the chopped leaves to keep the soil unfrozen.

watering

After planting, water all bulbs thoroughly, completely saturating the soil. In most areas fall rains and winter snows are adequate to keep the bulbs moist, healthy and happy. In the spring when growth resumes, again saturate the soil if winter snows and rains have been lacking. During flowering and later when the bulb's leaves are recharging their underground roots for next year's growth, an abundance of water is again essential. Use the hose if nature is negligent.

feeding bulbs

When I plant my bulbs they get a big pinch of fertilizer under the sand under each bulb. Established beds are fertilized twice during the growing year — in the spring when leaves are about to appear and again after the flowers are deadheaded. I use a combination of wood ashes and Milorganite — several generous handsful of each — broadcast over each clump. Any all-purpose fertilizer can also be used. Apply fertilizer when foliage is dry and water it in immediately.

after care

What you do with your spring bulbs after they flower determines how well the bulbs will bloom next year. First, prune out all spent flowers to prevent seed formation. **Do not cut away green leaves.** Leaves supply sustenance to the bulbs, recharging them for next year's growth. After the

continued

To Mark Bulb Locations

To mark where bulbs are located in our perennial border I place next to them a small green bathroom tile, which prevents digging into them later in the season. To mark where new bulbs are to be planted in the autumn, I place an old brick. The brick is covereed by plants as the season progresses, yet is easy to find when planting time comes.

George R. Clark

photo by Walter Chandoha

Darwin type yellow tulip, 'Golden Appeldoorn'

leaves turn from green to tan it's safe to remove them.

A good way to beat the unsightly foliage problem — interplant other perennials with hardy bulbs. Perennials make fast growth in the spring, their foliage quickly covers the bulbs' leaves. Additionally, annuals planted over the bulb beds quickly hide the dying bulb foliage. After the first frost prune out foliage of lilies, iris and day-lilies.

cut flowers

The blooms of flowering bulbs make excellent cut flowers — they're colorful, long-lasting and some are fragrant. Cut no more than one leaf per flower stalk when harvesting tulips, daffodils and lilies-of-the-valley. And even with leafy peonies and dahlias, the fewer leaves removed with the flower the better. Lilies are impressive when tall-growing varieties are used in tall vases. But if you want lots of blooms next year, cut the lilies with a minimum amount of stem. Clusters of lilies bunched in short vases or even floating in shallow bowls can make attractive — and impressive — indoor bouquets.

To have an adequate supply of bulb flowers for cutting for indoor bouquets, plant several rows in the vegetable garden, or in a designated cutting garden. After the flowers are harvested, overplant the bulb rows of tulips and daffodils with annual seedlings.

●

Photographer/writer Walter Chandoha's work has appeared in many national publications including the *New York Times*, *Fine Gardening*, *Organic Gardening* and *Ladies Home Journal*. His photos have been featured on more than 300 magazine covers.

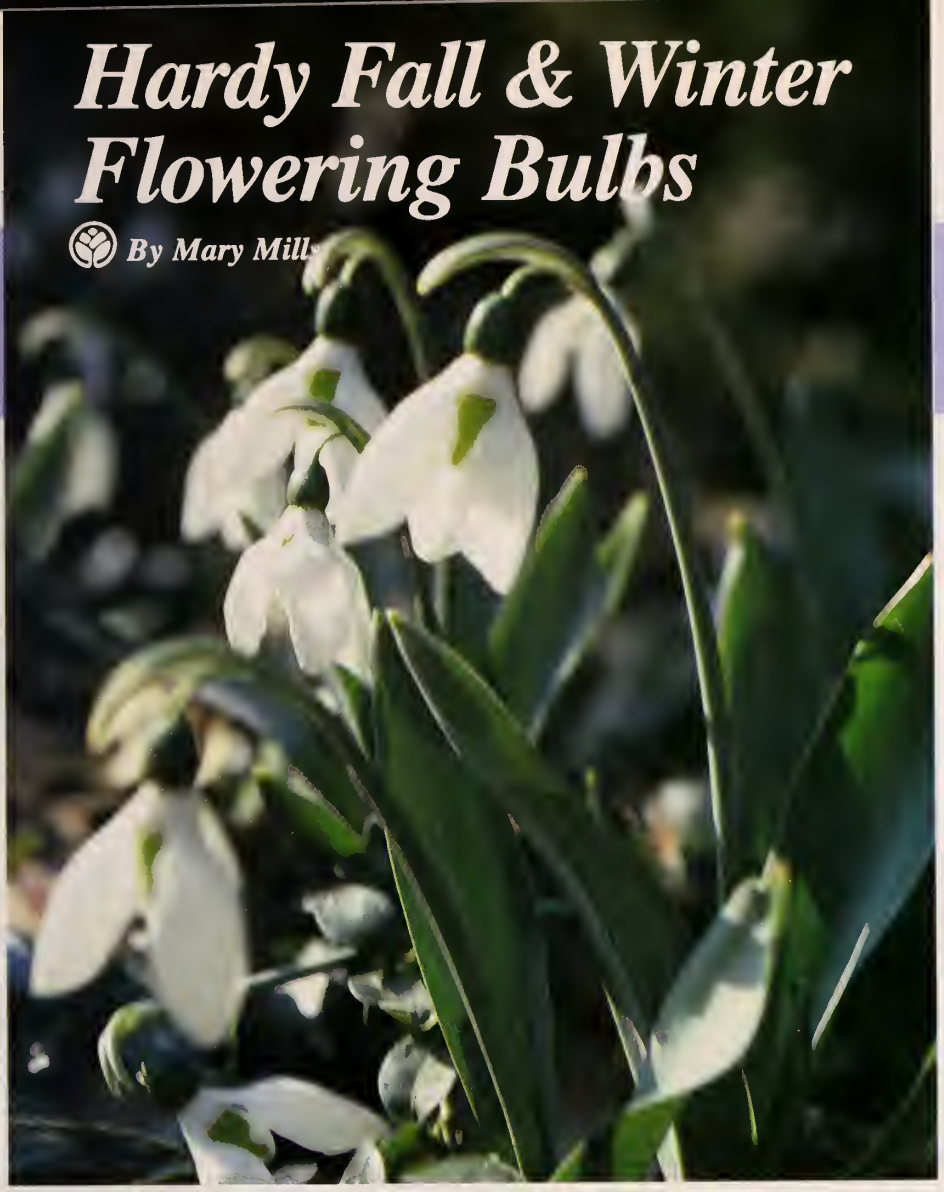
Spring and Summer Flowering Bulbs

	Common Name	Bloom Time	Height (inches)	Hardy H Tender T
Narcissus	paper-white	Jan-April (indoors)	14/18	T
Freesia	Freesia	Feb-April (indoors)	12/18	T
Anemone	windflower	March-April	5/6	H
Arisaema	jack-in-the-pulpit	March-May	12/15	H
Chionodoxa	glory-of-the-snow	March-April	5/8	H
Crocus	crocus	March-April	5/6	H
Fritillaria	checkered lily	March-April	10/12	H
Galanthus	snowdrop	March-April	3/4	H
Iris reticulata	iris	March-May	3/6	H
Puschkinia	striped squill	March-April	4/5	H
Trillium	wake robin	March-May	8/14	H
Begonia	begonia	April-Sept.	12/18	H
Caladium	angel wings	April-Oct. (leaves)	12/18	T
Endymion	bluebells	April-May	10/18	H
Erythronium	trout lily	April-May	6/7	H
Fritillaria	crown imperial	April-May	24/36	H
Hyacinthus	hyacinth	April-May	8/12	H
Leucojum	snowflake	April-May	14/16	H
Muscari	grape hyacinth	April-May	6/7	H
Narcissus	daffodil	April-May	10/20	H
Ornithogalum	star of bethlehem	April-May	8/12	H
Tulipa	tulip	April-May	4/30	H
Allium	flowering onion	May-July	10/60	H
Canna	canna	May-Sept.	24/60	T
Clivia	kaffir lily	May-June	18/24	T
Convallaria	lily of the valley	May-June	6/10	H
Eremurus	desert candle	May-June	30/50	H
Iris	bearded iris	May-June	24/30	H
Iris	dutch iris	May-June	19/30	H
Paeonia	peony	May-June	18/24	H
Scilla	siberian squill	May-June	10/12	H
Colocasia	elephant ear	June-Oct. (leaves)	36/72	T
Gladiolus	gladiola	June-Aug	30/36	T
Hemerocallis	daylily	June-Aug	24/36	H
Lilium	lily	June-Aug	18/36	H
Agapanthus	lily-of-the-nile	July-Aug	12/48	T
Dahlia	dahlia	July-Oct.	12/48	T
Lycoris	spider lily	Aug-Sept	12/24	T/H
Hippeastrum	amaryllis	Dec-March (indoors)	15/20	T

Hardy Fall & Winter Flowering Bulbs

By Mary Mills

photos by Mary Mills



Galanthus elwesii blooms in March

Crocus speciosus blooms in October/November

What do we mean by fall and winter? The well-known English plantsman E. A. Bowles devoted the first chapter of his book *My Garden in Spring*, (1914)* to defining his concept of spring. He concludes that spring begins with the blooming of *Iris unguicularis* — in late September to mid-October. My definition of fall is not quite so eccentric as his of spring, but it does jump the gun on the autumnal equinox: early to mid-September with the blooming of the first colchicums and *Sternbergia lutea*. The end of winter is also not easy to define, varying from year to year with the severity of the weather. Again, I assume that it comes a bit before March 21.

The bulbs listed in the following chart are ones that have grown well and flowered freely either in my garden or the gardens of friends. The list is by no means inclusive of all available bulbs for these seasons. Its purpose is to guide readers toward selections that will "pay off" in flowers. You won't find the saffron crocus (*Crocus sativus*), which can be very stingy with blooms in our climate; and you won't find the autumn snowflake (*Leucojum autumnale*) which is easy enough to grow, but will delight only lovers of minute things. An English bulb catalog (*Cambridge Bulbs*) lists 31 different autumn-flowering crocuses. I've listed only one — *Crocus speciosus*. It is reliable and showy (which is what "speciosus" means.)

While the chart includes brief instructions for where and how to plant, Walter Chandoha's instructions for planting in humus — rich, easy-draining soil and his "quesstimate" for depth of planting will work well with all the bulbs on the list. See page 9 to 12. His instructions for delayed planting, while quite appropriate for tulips, obviously won't apply to bulbs that you expect to bloom shortly after you have put them in the ground. Especially if your bulbs come from local shops, you should try to purchase and plant them as soon as possible after they become available. Colchicums are often advertised as blooming on the window sill. They will, but they will look much better in the ground.

*Theophrastus Press reprint, Pawlet, VT, 1971

continued

Hardy Fall and Winter Flowering Bulbs

Bulb	Bloom Time	Height of Bloom	Culture	Uses
Sternbergia lutea lily of the field	Sept-Oct	8"	Plant these bulbs 4" deep in a sunny, well-drained position, preferably in July. Bulbs are rarely available this early, but later plantings frequently fail to become established.	These bright yellow crocus-like flowers are a cheerful sight at a time when most things in the garden are fading away. Rock garden, borders, in front of shrubbery.
Colchicum meadow saffron or commonly but incorrectly, autumn crocus *C. autumnale* *C. byzantinum* *C. speciosum* Hybrids and named selections such as 'The Giant,' 'Water Lily,' 'Violet Queen.'	Sept-Oct	6-12"	The large bulbs are planted in late summer or early fall, with the top of the bulb about 4" deep. They bloom without leaves, and many varieties tend to topple over. Slugs may damage emerging flower buds.	Planted in a groundcover such as pachysandra, the flowers get the support they need. Also, the very large leaves that appear in the spring and that have to be left until they wither will be less conspicuous. Daylilies also can be used to hide the maturing foliage.
Begonia grandis Hardy begonia	Sept-Oct	15"	Order growing plants from a nursery, and plant them in the spring. They thrive in light to medium shade in humusy soil. Growth is quite late starting, so don't disturb the soil where they will emerge. A very cold (-10°F) winter may kill them.	*Begonia grandis* looks best planted against a wall, where they will also receive some winter protection. Colonies will form (unless the gardener weeds new plants out) from bulbils formed in the leaf axils. They bloom at the same time as *Tricyrtis hirta*.
Scilla autumnalis	October	6-10"	These pink wands are easily grown in ordinary soil in a sunny spot. Plant 3" deep.	Rock garden, border. There seems to be no commercial source for this in the United States at present.
Arisaema triphyllum jack-in-the-pulpit	Spring	12"	Though not an autumn-flowering bulb, **jack-in-the-pulpit is very showy in Sept-Oct** because of its brilliant red seed clusters. Order tubers from wild flower nurseries for fall or very early spring planting. Choose a moist woodland location, and plant 3" deep. They fall over quickly, but staking will extend their effectiveness.	Woodland wild flower garden, in front of shrubbery.
Cyclamen hederifolium (formerly *C. neapolitanum*) wild cyclamen	Sept-Oct	4"	Order tubers only from dealers who grow them from seed. Plant in a partially shaded, well-drained spot. Add leaf mold and stone chips. Cover tubers with 1/2" of soil.	Plant in drifts in a woodland, under shrubbery, or in a partially shaded rock garden. The beautifully mottled leaves are as pleasing as the small pink or white flowers.
Crocus speciosus autumn crocus Named selections include 'Aitchisonii,' 'Oxonian,' 'Albus,' 'Cassiope.'	Oct-Nov	4-6"	Order from bulb dealers and plant in late summer, 3" deep in sun or light shade. Plant with a low perennial such as a sedum or coral bells so that the corms won't be disturbed during their dormant season.	Front of a border, woodland. This is the earliest, largest, and most rewarding of the several fall-blooming crocuses commonly offered. It will naturalize by self-seeding.
Galanthus elwesii giant snowdrop *Galanthus nivalis* common snowdrop	Jan-Mar	3-8"	Plant bulbs in clusters in the fall, 3" deep in humusy, well-drained soil. A sunny location will bring on the earliest blooms, but they need some shade after flowering. Move or divide clumps as the flowers fade, replanting immediately.	These can be used under shrubbery, in borders or rock gardens, wherever their elarly bloom can be appreciated.
Eranthis hyemalis Winter aconite	Feb-Mar	3-4"	Dried corms are available at most garden centers, but they do not always thrive. Plant 3" deep as early as possible, after soaking them in water for several hours. Better yet, beg a starter clump from a friend who has thousands.	Woodland, lawn, borders, along paths. These will spread by self-seeding to make sheets of yellow flowers wherever they are allowed to mature their foliage.
Crocus Early species crocus *C. ancyrensis* 'Golden Bunch' *C. tomasinianus* *C. chrysanthus* Many named varieties	Feb-Mar	3-6"	Plant in the fall, grouping corms 3" apart and 3" deep. New plantings especially need protection from squirrels and other rodents. An inverted plastic berry basket over the corms may work.	Rock garden, naturalized in borders, in ground covers.
Scilla squill *S. tubergeniana* *S. bifolia* *S. siberica* 'Spring Beauty.'	Feb-Mar	3-8"	Plant in the fall in well-drained, humusy soil, covering 3".	Great for naturalizing in woodland, grass, or borders. All three may show up in unexpected places in your garden.
Iris Dwarf bulbous iris *I. histrioides* *I. reticulata* *I. danfordiae*	Mar	3-8"	Plant in the fall 5" deep in a sunny, well-drained location. *I. danfordiae* should be treated as an annual in most gardens, but will rebloom if given perfect drainage and summer drought.	Sunny rock garden, raised beds.

Mary Mills gardens in Princeton, New Jersey. She is a long time member of the American Rock Garden Society. *Primula*, *Narcissus*, and minor bulbs are among her major interests.

photo by Margaret P. Bowditch

Daffodils, tulips, and iris in Peggy Bowditch's garden room, photographed in March before the 1989 Flower Show.

FORCING BULBS FOR THE PHILADELPHIA FLOWER SHOW

By Walter Fisher, Jr.

Eight blue ribbon exhibitors share pointers on forcing bulbs at the Philadelphia Flower Show:

Peggy Bowditch
Bill Burleigh
Leila Cleaves
Pamela C. Copeland
Kitty Draper
Walt Fisher
Susie Ganoe
Rosemarie Vassalluzzo

"Curses and prayers," was Peggy Bowditch's final incantation on the questionnaire I circulated on forcing bulbs for the Philadelphia Flower Show. I can relate to her sentiments, and, so probably can the six other seasoned exhibitors who participated in the survey I prepared for this article to encourage potential Flower Show exhibitors and to help veterans sharpen their skills with these experts' techniques.

I wanted to identify the key variables in forcing bulbs to bloom under artificial conditions. While there are many other accomplished growers and exhibitors who force for the Show, I wanted to gather a sample of growers who I know use different procedures to get the same outstanding results.

preparation

Each year in June, the PHS *News* announces the cultivars selected for the named bulb classes. These classes include several narcissus, a tulip and a hyacinth. The official Flower Show *Exhibitor's Guide* mailed to members in late summer identifies at least 10 other bulb classes from which ex-

continued

photo by Margaret P. Bowditch

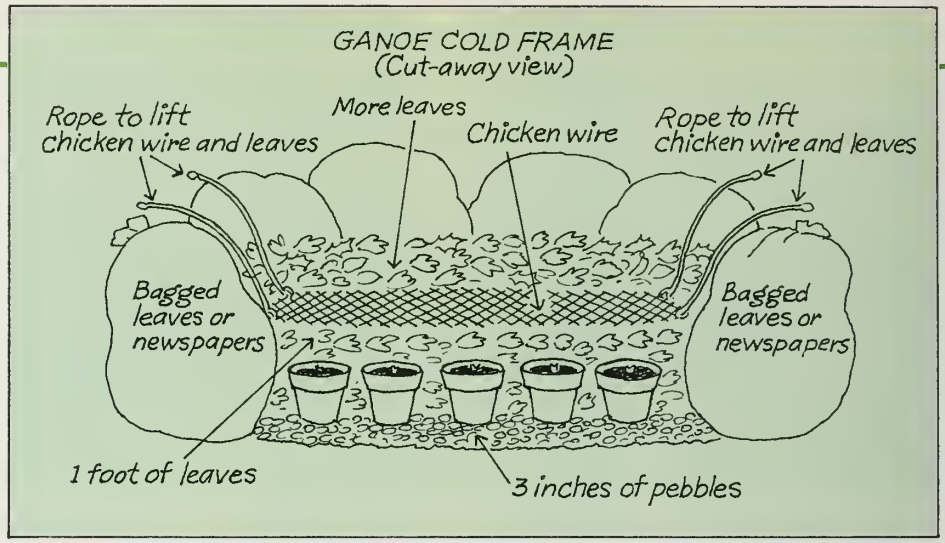
Walt Fisher's collection of bulbs in "Blooming Color," class 400 took a second at Friday's judging at the 1989 Flower Show.

hibitors can choose the cultivars they wish to exhibit.

selecting bulbs

First, select a reputable bulb supplier, who will deliver a dependable, disease-free product. Other factors to consider are delivery schedule, minimum ordering quantities and last of all, price. With a little comparison shopping, you will quickly discover that prices for bulbs of the same quality can vary by as much as 300%.

Proper care by the grower/supplier aids immeasurably in growing quality exhibits. Because you personally will be unable to observe the all-important, early process-



Bill Burleigh uses a little vegetable oil to hide the salt deposits that often mar a pot's appearance.

ing of the bulbs, you must depend on the growers' reputations. Check with other exhibitors, and our panel can help. (A selection of suppliers is listed on page 28 in this issue.) You can, however, evaluate the retail outlet's handling: Are the bulbs stored in a cool, ventilated environment? Are bad bulbs removed? Is there a chance different cultivars will be casually mixed together? If shipped, are the containers ventilated? Imagine your disappointment in February when, having planted your bulbs four months earlier, you suddenly discover that several hyacinths in your eight-inch pan have rotted, or that the tulips are not really 'Apricot Beauty,' or that yellow and white daffodils are growing in the same pan. At that moment you will wish you had picked your supplier more carefully.

Our panel uses at least 10 different suppliers and the quality of their exhibits demonstrates that many excellent sources are available.

Next, select your bulb sizes. In general, our panel uses the top-size bulbs in all classes except daffodils. In the major daffodils, the preferences are either mother bulbs, the largest size, or double nose, the next smaller size. I prefer the double nose because they permit cramming more flower-producing bulbs in pots. (Remember that the pot size is specified for certain Show classes.)

Regardless of your source, carefully inspect your bulbs as soon as possible; look for fungus, or rot, and be certain that they are solid to your touch and of uniform weight (bad bulbs are often lighter.) If you find that more than 10%-20% are bad, return them to your supplier. You can bet that more are bad than you can detect. Although dipping bulbs in a Benomyl or other appropriate solution is an added precaution against disease, only one panel member does this. If it is necessary to store the bulbs before planting, keep them in a cool, not cold, well-ventilated place.

pots

Flower Show rules require that bulb pans or azalea pots be used in the named classes, so you may as well start collecting these types, and stay with clay. Bulb pans, the lowest, are about four inches high for a pan eight inches in diameter, while azalea pots are about six or seven inches high for a similar diameter. Since most pots are now made in metric sizes, and vary widely for the same labeled measurement, take a ruler with you to measure the inside, top diameter, when you make your purchase. Soak new clay pots in water before using.

All of our panel members reuse their clay pots, and after cleaning, most soak them a Clorox bleach solution to kill fungus. Rosemarie Vassaluzzo, winner of the PHS Grand Sweepstakes in the last seven Flower Shows, uses her dishwasher to prepare her pots for her new crop.

Although almost all articles on bulb forcing include advice on the "best" planting medium for bulbs, our eight panel members use at least eight different recipes. Basically, peat, sand, soil and Perlite are the main ingredients with ProMix used alone, or in combinations, by four experts. Pamela Copeland, two-time winner of the Show's PHS Horticultural Sweepstakes Trophy, uses sterilized, composted top soil for her exhibits.

My conclusion, after experimenting with many combinations, is that virtually any neutral-acidity, potting medium that is firm enough to support bulbs and their blooms and retains moisture, without being soggy, will be satisfactory.

Some, but not all, panel members, add lime, superphosphate, bonemeal or other low-nitrogen fertilizers to their potting medium. However, Leila Cleaves, the guiding force behind the Shipley School Sprouts' exhibits, warns against bonemeal when storing potted bulbs outdoors; it attracts foraging animals

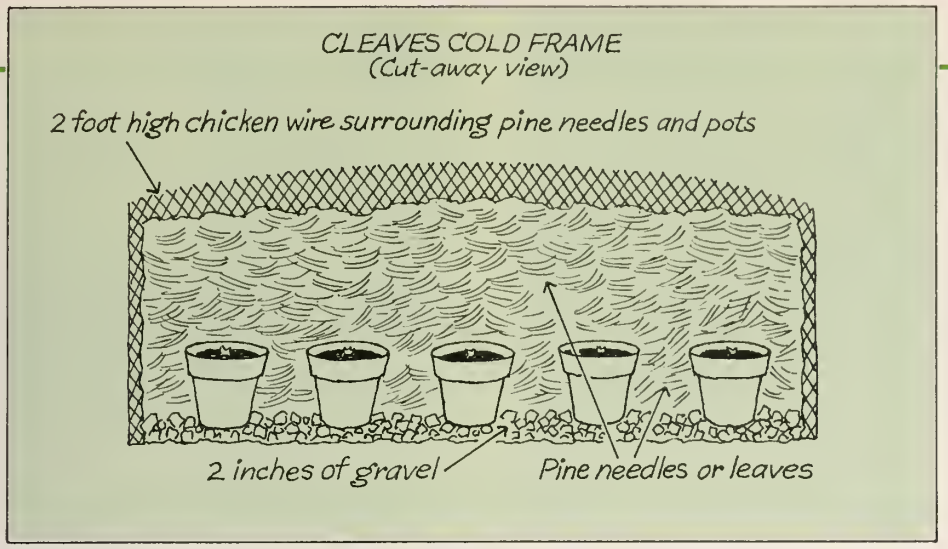
planting

Planting the bulbs in the pots is fairly straightforward. First cover the hole in the bottom of pot with a stone, a piece of broken pot, or a small piece of screening so that water and roots can pass through, but the planting medium cannot. In general, plant bulbs just deep enough so that their tips are at, or slightly above, the surface. One successful technique is to plant two layers of daffodil bulbs: one layer placed on top, and in between, the tips of the lower layer. In this way, the number of blooms is increased.

I pack the soil around hyacinths more firmly, because their root growth tends to push them out of the pot. Tulips require that the flat side face the outside of the pot; the lowest leaf will then face outward. After planting, water the planting and place in a cold-storage facility.

cold storage or rooting stage

Now, here's a chance for ingenuity. The basic requirement is to store the planted pots somewhere that will permit pot temperatures to get progressively colder as winter approaches, remain above freezing, allow rain or watering to reach the plants, and, if outdoors, provide physical protection. This storage is often referred to as the rooting stage. Six of our panel members use permanent or improvised outdoor cold frames, two use root cellars for all or some of their pots, and Pamela Copeland uses an indoor cooler. Both Susie Ganoe and Leila Cleaves build temporary, surface-level, cold frames out of chicken wire (see illus-



trations). Both stress the need for good drainage, which they achieve through a bottom layer of pebbles and gravel. Susie surrounds her plants with bagged leaves for insulation, covers them with leaves and sprinkles mothballs around to discourage rodents. Leila prefers pine needles for insulation.

Bill Burleigh, another perennial blue-ribbon winner, stores his pots, uncovered in a root cellar. Kitty Draper, who has been exhibiting bulbs and winning awards for 20 years, puts some of her pots in a root cellar, some in an old freezer and others in a cold frame. She favors the root cellar. Rosemarie Vassaluzzo, stores her pots, uncovered, in a glass-enclosed cold frame.

Peggy Bowditch and I prefer outdoor cold frames with Perlite as a covering. Incidentally, Peggy located her cold frame on a northern exposure to avoid the direct winter sun. My frame is tightly fitted with a wire screen to keep out my neighbor's cats, and the mice that hide from them. The eight to ten inches of Perlite that I use is a good insulator (the top two to three inches freezes and the lower portion around the pots remains at 35° to 42° F), easy to dig through to recover the pots and has the added advantage of being simple to remove from the pots and the leaves.

I could continue with these local adaptations by our panel and by other exhibitors, who use such places as unheated stairways, garages, refrigerators, (which might appeal to apartment dwellers) and holes dug in the yard, but I hope it's clear that almost anything goes. Regardless of your cold-storage decision, remember that these bulbs are actively growing during this period and require water and occasional inspections.

forcing

Exposing the pots to heat and light is the next stage of inducing bulbs to flower early. After removing the pots from cold storage, they must, unless a controlled-temperature cold-storage facility is used, be temporarily stored for several days in darkness or semi-darkness at temperatures between the cold storage and the forcing temperatures. Here again, no two panel members handle this transition the same way, but they all follow the same general procedure. (Pamela Copeland moves her pots directly to the greenhouse.) My technique, and I'm still experimenting, is to water the pots and then cover them with translucent plastic bags or paper bags and leave them on my 58°-60° F basement floor for two days. Hyacinths, followed by tulips, are the most fragile at this stage and can be permanently damaged by too early exposure. Individual cultivars vary considerably in this sensitivity. Both Bill Burleigh and Leila Cleaves start the forcing process when the leaves start turning green,

Forcing bulbs requires a combination of heat and light. As you might suspect, many variations are possible and our panel does not disappoint us. Three panel members use greenhouses exclusively; two, a combination of greenhouses and artificial lights in their homes; and the other three do all their forcing in their homes using either a combination of natural and artificial light or artificial light exclusively.

Peggy Bowditch, who primarily grows smaller bulbs, coaxes her plants into bloom on her window sills and under fluorescent lights, while Susie Ganoe uses an enclosed porch as well as her greenhouse. Rosemarie and I use fluorescent lights exclusively, mine over a ping-pong table in my basement and Rosemarie in various parts of her house and garage. Of the artificial light users, all have some arrangement, as the plants grow taller, to move the lights or plants to maintain a constant distance between them. I prefer four to six inches between my plants and the 40-watt, 48-inch, fluorescent plant lights that I use. Leila Cleaves and I find that adjustable chains serve this purpose well.

Forcing temperatures vary for our panel between 45° F at night to 70° F during the day. Daytime temperatures around 65° F, and 60° F at night should handle most bulbs. Cooler temperatures slow the blooming and higher temperatures hasten it; an increase of 10° F around these suggested temperatures roughly cuts this stage in half and a similar decrease will about double it. During this forcing stage, keep the pots moist, check for disease and insects, and follow Peggy's advice: pray.

I use Florel™ (ethephon) to prevent some hyacinths, muscari, and daffodils from getting too tall under my fluorescent lights. A-Rest™ (ancyomidol) does the same for tulips. Be cautious; use the *Holland Bulb Forcer's Guide*, or the manufacturers for special directions. Most greenhouse suppliers sell these products.

timing

Timing is obviously the most critical element for the perfect exhibit.

To start, almost all bulbs that require cold storage will be close to their optimum after 15-16 weeks in your rooting facility. Now, add the forcing time, plus a few days for the transition period and then several days grace. Count this total time back from the desired blooming date and plant your bulbs. For example, under my conditions, I plant 'Negrita' tulips 19 weeks (including 25 days of forcing) before the Flower Show and 'Gypsy Queen' hyacinths 17 weeks. 'Unsurpassable' daffodils will be planted around the last week in October (15 weeks cold storage, 2 days transition and 18 days forcing, including the grace period) for the 1990 Show, where the first entries will be accepted on March 2nd and 3rd.

Our panel uses various techniques to retard plants that would, otherwise, bloom too early. These techniques range from storing them in refrigerators or on unheated porches, to packing them in ice or snow. All involve lower temperatures, and, in some cases, reduced light intensity or duration. I have copied the method Gale Nurseries uses to force their Flower Show plants: during the day, they use an opened-door garage that allows plenty of daylight, augmented by artificial lighting, at temperatures above freezing. Another helpful hint is to retard growth while still in the bud stage.

To accelerate blooming do just the opposite: provide higher temperatures and longer light periods. My "Intensive Care Unit" is a propagation mat with two 150-watt plant lights. If you have a choice, err

continued

on the early side; your chances of having an exhibition-quality plant are greatly enhanced.

During this entire forcing process, record the vital information for each pot: when it was planted, the number of bulbs, where stored, when and where the forcing began, when moved, and the date of bloom. This system will enable you to replicate your successes and correct your disasters. I use a four-inch, plastic label to record each pot's vita.

The Flower Show

Before entering your plants in the Flower Show, reread your PHS *Exhibitor's Guide* for entry times and other helpful information. If you pre-enter your exhibits, use the form in the back of the guide and additional instructions will be mailed to you. If you have questions don't be afraid to call the chair of the Horticultural Classes.

Since nature often needs help, carefully groom your entry; brush any dirt off the leaves, trim the ends and edges of, or remove, any brown leaves, and clean your pot. Bill Burleigh uses a little vegetable oil to hide the salt deposits that often mar a pot's appearance. Also, don't be afraid to remove any flowers that detract from the overall effect.

Stake and tie plants that are tall, have weak stems or heavy blooms. To stake place green, wooden or metal stakes around the perimeter of a pot and tie thin, green string around the stakes to form a retaining collar. Although some panel members start staking when the plants are short, I wait, except for hyacinths with their heavy blooms, until the plants are at full height so that I can stake and groom at the same time. I use thin, 14-gauge wire stakes for smaller plants and 3/16 inch diameter floral stakes for larger plants. In either case, I push the 18 inch stakes to the bottom of the pot and cut them so that their tops are just below the flower level and then tie the string just below that. Placing the stakes against the inside of the pot will, in most cases, slant the stakes at an angle that will allow adequate space for the blooms after tying. For pots under 8 inches, I place four stakes, equally separated, and five for larger pots. Even if the plants don't appear to need staking on the entry day, consider how they will look to Flower Show visitors during the three days they are in the Show. String and stakes are available at some garden shops and at greenhouse or florist suppliers.

Mulch, pebbles, moss and sand are often used to enhance the pot's appearance and to retain moisture, but are not a requirement. Exhibitors Janice and Ken Gordon have turned grooming into an art form and their entries would be good models for preparing your exhibits.


Staking tall plants

On entry day, your most important ally will be the passer assigned to your class. Passers wear a bib with a big "P" on the front and back. They will tell you how to get your entry in the Show. They will also ask you to designate the side of the pot you want to face forward. After the passer accepts your plant, it is entirely in the hands of the judges.

After the ribbons have been awarded, exhibitors and visitors have another great learning opportunity: check winners for the characteristics the judges reward. Observe carefully cultivars, height, pot size (where optional), grooming, and number of blooms. Also talk to winners and other exhibitors who, generally, are eager to share their knowledge.

recycling

Finally, four or five months after you first potted your bulbs, you are faced with the chore of recycling, as Leila Cleaves calls it, the bulbs spent by forcing. As you can easily imagine by now, no two panel members do exactly the same. Some discard all or a portion of their bulbs, while others attempt to give them a new outdoor life. Our panel has successfully replanted forced bulbs in both the spring and fall. Some just place the whole pan, with the pot removed, in the ground, while others separate and dry the bulbs before planting in the fall. I have tried just about every possible method with about the same spotty results. Success varies by cultivar with 'Tete-a-tete,' 'Ice Follies,' 'Hawera' and 'Dutch Master' daffodils mentioned by our panel as blooming outdoors during the first year after forcing. Some cultivars take several years before blooming again.

Bulbs should not be reforced. It can be done, but it does not yield high-quality plants.

forcer's checklist

Well, now you have it! Except for the adaptations you must make for your personal microclimates, these guidelines should produce quality exhibits. To summarize, buy high-quality bulbs from a reliable supplier and plant them in clean, fungus-free pots in a firm, well-drained, potting medium. Immediately put them in their winter home where the temperature will gradually get colder and remain there, above freezing. About 15 weeks later remove them, keep in transition for several days and then place in a warm, lighted environment until they bloom. As a general guideline, most large daffodils take two to three weeks of forcing; hyacinths, two weeks; tulips and muscari, three to four weeks; and iris and crocus, one week. (The order of appearance of blooms in your yard gives a good clue to the length of the forcing period — the earlier bloomers being the shorter-forcing bulbs.) Start out by planting at least two pots for each planned entry and use a slightly different schedule for each pot to increase your probability of success. Don't be disappointed by a few failures because if you keep careful records, you can learn as much from the failure as you can from a blue ribbon winner.

Oh, I almost forgot, there is no room for superstition in forcing bulbs; it is a scieintific process that does not reward irrational behavior. I, for example, originally, played classical music for my plants during the forcing period. I discarded this tomfoolery, however, when I empirically discovered that only daffodils respond to the classics, while hyacinths and muscari thrive on patriotic music and tulips love jazz.

•

Walt Fisher was runner-up for the PHS Horticultural Sweepstakes at the 1989 Philadelphia Flower Show. He won the Delaware Daffodil Society ribbon for the outstanding blue ribbon winner in the Narcissus Class in the Saturday judging for his 'Dutch Master' and on Tuesday and Friday's judgings for his 'Pink Supreme' entries. Walt's interest in horticulture began at the age of 13 as a greenhouse laborer in 1943. As an executive at AT&T until 1988, he became increasingly more involved in the Philadelphia Flower Show, where he has exhibited for 10 years. He now serves on the Show's Executive Committee and lectures on the forcing of bulbs.

Hybridizing Daffodils – American Style

By Kathryn S. Andersen

'Petrel' (Mitsch)

'Epitome' (Evans)

photos supplied by Kathryn S. Andersen

Three men are responsible for most of the choice daffodils of American origin seen today in our gardens and on the show table. Two of these men owned commercial daffodil nurseries in Oregon, and the third was a most successful corporate executive from southern Virginia who dabbled in daffodils on the side. Each sought specific goals and expanded the palette of daffodil forms, colors and seasons in different directions.

Grant E. Mitsch

Grant E. Mitsch and his wife Amy issued their first bulb catalog in 1927 from their home near the Willamette River outside Canby, Oregon. Their initial interest was in gladiolus. Other offerings included bearded iris, tulips, dahlias and lilies. In 1932, they acquired bulbs of 'King Alfred' and some other large trumpets. Within a few years they ordered bulbs from the great Irish hybridizers, Guy Wilson and J. Lionel Richardson. The first crosses were made in 1934 as more of the finer cultivars were ordered from Ireland, and daffodils soon became the main thrust of their interest and sole business.

In 1945, Grant Mitsch introduced his first cultivars, 'Cream Cup' and 'Silver-

continued

dale.' By 1968, his catalog listed more than 160 cultivars of his own breeding. During the first 20 years of hybridizing, he made great progress in developing smooth, well-formed reverse bicolors (flowers in which the flat perianth segments are darker in color than the crown or trumpet in Division 1 (trumpets) and 2 (long-cups). 'Daydream,' a long-cupped seedling of 'Binkie,' was introduced in 1960 and is still widely grown and exhibited throughout the daffodil world. 'Daydream' is a round flower opening up lime-green throughout and slowly changing to its reverse bicolor tones at maturity. It is still the quality standard for reverse bicolor long-cups. A sister seedling, 'Bethany,' was the first of a series of reverse bicolor trumpets. By the mid-1960s the first reverse bicolor jonquils (fragrant Division 7 flowers usually bearing two or more blooms per stem) appeared in his catalog. 'Pipit' and 'Dickcissel' are still popular today. In later years he became the first person to introduce reverse bicolor short cups (Division 3) and cyclamineus hybrids (Division 6).

During his first 20 years of hybridizing, Grant Mitsch also made significant progress in refining pink daffodils. Starting with 'Mrs. R. O. Backhouse,' he developed an extensive list of pinks blooming at the same time as the great flush of other daffodils. 'Mrs. R. O. Backhouse' and other pinks of that time bloom at the very end of the season. 'Accent,' a brilliant pink long-cup has been a favorite garden subject almost since its introduction in 1961. In more recent years somewhat smoother flowers have been developed, and pink has been bred into daffodils from almost every division.

Outside the continental U.S. daffodil shows list classes for the first four daffodil Divisions in some detail. At the end of the schedule is a class labeled "N.O.E." — not otherwise enumerated. Into this class fall all daffodils from Divisions 5 through 12. In the U.S. show schedules give equal emphasis to all divisions. Grant Mitsch can be given credit for having used the species, *triandrus*, *cyclamineus* and *jonquilla*, to expand offerings in Divisions 5, 6 and 7. Today pinks and bicolors are available in most of these divisions. Many first generation hybrids in these higher divisions are sterile or at best very difficult to use effectively as parents. Through much persistence over the years, he developed several first generation hybrids, which did prove fertile and which have greatly improved the quality and variety of these smaller "wild-like" flowers.

Grant Mitsch officially turned his business over to his daughter and her husband, Elise and Richard Havens in 1978 after issuing catalogs for 50 years. The Havens have continued to provide new Mitsch offerings as well as Mitsch-Havens and Havens introductions. Mr. Mitsch took an active interest in daffodils until his death in March 1989. Emphasis is still on flowers from the higher divisions and on pinks, but there are beautiful whites, and other smooth flowers in the first four divisions. Grant Mitsch had always been an avid ornithologist naming many flowers for his favorite birds. 'Warbler,' 'Quail,' 'Lyrebird,' 'Dik Dik,' 'Toucan,' 'Chickadee,' etc. New bird names still appear in yearly catalogs. For years he grew on and introduced seedlings hybridized by Dr. Tom D. Throckmorton of Des Moines, Iowa. Many of these are very round late-blooming short-cups, which change color dramatically as they mature. The catalog is filled with mouth-watering colored pictures and contains fine descriptions of the flowers. Prices range from $1 to $150 per bulb. Discounts are offered on early orders. Bonus bulbs are usually tucked in for good measure on larger orders. Collections of pinks, cyclamineus hybrids, seedlings, etc. are offered. An early spring list usually includes some miniatures.

Grant E. Mitsch Novelty Daffodils
Mrs. And Mrs. Richard D. Havens
P.O. Box 218
Hubbard, OR 97032
(503) 651-2742 (6:00-9:00 p.m. Pacific Time)

Murray W. Evans

The late Murray W. Evans and his wife Estella raised Christmas trees and daffodils at their home in Corbett, Oregon for many, many years. He had been in ill health for several years before his death last fall and was assisted in his daffodil business by his niece Diane and her husband Bill Tribe. This year the Tribes and Estella Evans are carrying on alone. Some of his stock was passed on to neighbor Jeannie Driver to grow on. Her list has been included in his catalog for several seasons as he cut down on the number of cultivars he grew and farmed out the others.

Murray Evans named and registered 'Descanso,' a smooth yellow and white bicolor trumpet after it won "Best in Show" as a numbered seedling at the Descanso Gardens Show in Southern California in 1964. The next year 'Wahkeena' a long-cupped bicolor (sister to 'Descanso') and 'Celilo' a pure white trumpet were registered. Grant Mitsch introduced these early flowers for his friend Murray Evans before the first "Murray W. Evans Modern Daffodils" list appeared. These lists in varying shades of yellow bore a picture of the Evans property on the top — Christmas trees, daffodils, Mt. Hood in the background and a sign on the gate, "Visitors Welcome." First came the new introductions followed by all the Evans daffodils and then the offerings by others. In 1979, Bill Pannill daffodils made their first appearance on his list. The new Oregon Trail catalog retains the same format but offers a more extensive listing.

Murray Evans was a kind and generous friend to all who knew him. For many years he directed the Daffodil Society's Committee on Breeding and Selection. He freely shared his experiences if asked and offered suggestions for seed or pollen parents to help hybridizers achieve their goals. He knew what kinds of flowers everyone favored and always included many extra bulbs with each order. New seedlings were sent out on trial to all parts of the country. Those that tested well were introduced. The Evans bulbs have always been large and Murray sent along more than were ordered. During his years of hybridizing, he contributed many worthwhile cultivars among the trumpets, long- and short-cups and doubles. His flowers are extremely good doers in the garden and most perform well on the show table. 'Cataract,' 'Ghost,' 'Shadow' and 'Neahkahnie' are but a few of his white trumpets, which set the standard for whiteness and fine form. 'Ken's Favorite,' 'Quasar' and 'Heart Throb' are three pink long cups that perform well in area gardens and are a nice pink, not tending towards blue. In recent years he became interested in red and white small cups and was just beginnig to name some of these seedlings at the time of his death. Murray Evans always demanded the very whitest of perianths, and these red-and-whites are a fine contrast with very red crowns and very white perianths. He has contributed a number of choice yellows of good size such as 'Big John,' 'Fettle' and 'Ginger,' the last being one of his "toned" flowers which darkens in color as it matures.

Murray loved fishing more than anything else. He knew exactly where the fish were to be found and when they would be there. Some of his daffodils were named after fish ('Arctic Char' and 'Coho') and fishing holes or flies ('Tyee'). Other names are most descriptive of the flowers 'Lollipop' (round), 'Kewpie' (small and pink), 'Sun Ball' (spherical yellow and red double). Years of reading were reflected in his orderly approach to hybridizing and insight into choosing the proper parents for his program. The world is fortunate that his past endeavors are being furthered by capable individulas so that new intro-

photo supplied by Kathryn S. Andersen

'Cameo Queen' (Pannill)

ductions will continue to reach the list and old stocks will be maintained and propagated.

Murray W. Evans Daffodils
Oregon Trail Daffodils
3207 SE Manthey
Corbett, OR 97019
(503) 695-5513
Bill and Diane (Evans) Tribe and Estella Evans

William G. Pannill

Bill Bannill of Martinsville, Virginia became interested in growing and hybridizing daffodils in the early 1960s and travelled with his friend, Harry Tuggle, up to visit Murray Evans after one of the Daffodil Society conventions in California. Murray Evans was planting seed produced by Harry Tuggle in Virginia and growing on the resultant progeny to flowering size. Bill Pannill, busy owner and CEO of Pannill Knitting, decided to entrust his seeds to Murray also. Harry met an early death but for almost 20 years, Bill Pannill made the yearly trek from Virginia to Oregon to evaluate seedlings and go fishing with Murray.

Bill Pannill has produced daffodils in almost all Divisions. Like Grant Mitsch he used the species to create wonderful hybrids in Divisions 5 through 8. 'Jovial,' a brilliant orange and yellow triandrus hybrid with up to three flowers to the stem performs well in the Delaware Valley. 'Indian Maid' is one of the brightest and most prolific red and orange jonquilla hybrids ever seen, performing equally well in the garden and on the show bench. The best pink daffodil exhibited at the National Daffodil Society Show in March, 1989 was 'Cameo Queen,' a trim and smooth long-cupped Pannill flower. Bill Pannilll is perhaps best known for his introduction of choice white flowers in the first three Divisions. 'Homestead,' a long-cupped pure white, has many times won best in show all over the country. 'Crystal Blanc,' 'Portfolio' and 'Mountain Dew' are but a few of the other Pannill whites.

All Pannill flowers (perhaps because of their nearby Virginia origin) are excellent performers in the Delaware Valley. Bill Pannill is a perfectionist in all that he does both in the business world and in the garden. He has not registered a single flower that lacks in form, substance or constitution. All can be recommended without reservation. Pannill flowers may be obtained from Oregon Trail Daffodills, Hatfield Gardens (22799 Ringgold Southern Road, Stoutsville, OH 43154. (614-474-5719) and Bonnie Brae Gardens (1105 S.E. Christensen Road, Corbett, OR 97019. (503-695-5190).

photo by Kathryn S. Andersen

***Lilium* 'Jane Pepper'**

'Jane Pepper,' a pale yellow upfacing Asiatic lily with maroon brush marks on the petals, was first flowered in the summer of 1981 from a cross made in 1979 between a large yellow unnamed Windus seedling and Haring seedling, ATW-2, a yellow with dark brush marks. This lily grows from 20 to 25 inches tall and carries 7 to 12 flowers to the stem. Extremely vigorous and at home in the Delaware Valley, *Lilium* 'Jane Pepper' portrays many other fine attributes of its namesake, our PHS president. It is cheerful in the garden, fine in flower shows, persistent, nondemanding, and admired by everyone.

Hybridizer and introducer: Kathryn S. Andersen

A limited number of *Lilium* 'Jane Pepper' will be available at the Plant Dividend for PHS members on Friday, September 8 (Noon to 7 pm) and Saturday, September 9 (9:30 to Noon), See PHS *News* for additional information. Each member is entitled to one plant from a number of selections. Additional *L.* 'Jane Pepper' plants will be available for sale at the Plant Dividend and the Harvest Show.

Proceeds from the sale of *L.* 'Jane Pepper' go to the Pennsylvania Horticultural Society.

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Kathryn S. Andersen is president of the American Daffodil Society and American vice-president of the North American Lily Society. She's past persident of the Middle Atlantic Regional Lily Group. Andersen is a certified judge for daffodils and lilies. She received her Ph.D. in chemistry from the University of Michigan and is a member of the PHS Council.

CULTIVATING UNUSUAL BULBS

I apply the term 'bulb' loosely to plants that have an underground storage organ, including bulbs, corms, rhizomes, tubers and thick kernel roots. Most of these organs have evolved to carry the plant over a climatic period unfavorable to growth. This is usually the dry summer in the case of spring and autumn flowering bulbs, or winter in the case of plants coming from areas that have summer rain but cold, often dry winters (e.g., *Lilium* and *Nomocharis*). In the case of summer dormant bulbs, the lack of summer rain and the warm dry conditions that prevail in the areas where the bulbs naturally grow make summer the unfavorable period. The plants respond by going dormant, a habit that continues in cultivation. In eastern North America, however, we do not have a climate dry enough or seasonably predictable enough to have developed an extensive bulbous flora of our own and, in order to grow bulbs from other countries, we compromise and provide for the plant's wants and needs as best we can with a variety of concessions and subterfuges, conventionally called growing conditions. Where a plant will not fit to *our* regime but demands an exact simulation of its wild conditions, it is often called 'miffy' (sic) or 'difficult,' but if you want to grow it and cannot provide the correct conditions, please do not blame the plant. The growing conditions for bulbs must inevitably be compromises, as few of us have limestone clay soils that we can flood with snow-melt water in spring and dry off sharply in summer. And suburban alpine meadows are scarce in the Delaware Valley. **More important than simulation of *habitat,* however, is simulation of the *conditions* to which a plant is subjected in that habitat.**

The sunny southern climes that many bulbs come from and the arid appearance of many bulb-rich habitats seen during Mediterranean summer holidays when the bulbs are dormant have led to a popular misconception, namely that these bulbs *must* have a hot dry summer bake and the hotter the better. Again, in the wild this apparent hot dry summer rest is tempered by the cooler conditions prevailing at the depth of the bulb (10-15° F cooler in fact) and at this depth the soil stays slightly moist. If this sounds fanciful try burying your foot in the sand next time you sizzle on an Atlantic beach. The heavy nature of many soils in 'good bulb areas' can aid the bulb by ensuring that moisture does not evaporate (resulting otherwise in a flabby bulb prone to infection by ever-vigilant fungi). In a small pot of loose-textured soil with the bulb planted shallowly, a hot dry summer rest can thus be a very different and more severe hot dry summer rest, and in attempting to simulate what we *think* to be the correct conditions the bulbs need, growth can often be poor, because we have not considered all of the factors affecting growth. Very few bulbs *do* need a hot dry bake; the vast majority respond far better to a warm, dry regime with a little shade from the hottest summer sun, and some moisture remaining in the soil, thus mimicking the conditions of the bulb's natural environment.

Free drainage is the single most important aspect of cultivation. Bulbs rarely succeed enclosed in heavy waterlogged soils. Greater sunshine levels and free air circulation also mean that soils running with water can be bone dry only a few weeks later. A free draining soil *can* be running with water — the important thing is that the water is *moving*, not stagnant, and the abundance of water is often short-lived. Free draining but moisture retentive is less of a contradiction than it might at first seem. Consider a mixture of sand and peat through which water passes freely but which also retains some of this water. It may not be a good growing medium but we can mix in more sand and leafmold, or mushroom soil without losing the desirable properties

It just happens that many of the more desirable bulbs come from cooler, damper or higher elevations. With bulbs from higher altitudes, some summer rain may be the norm and because the growing season will only start after the snow melts in spring, the plants may grow on a cycle more akin to our climate in eastern North America. Thus many of these mountain bulbs make good, undemanding garden plants. At even higher altitudes, we come across what may be called 'alpine' bulbs, which are covered in snow from autumn until as late as July. When the snow melts the plants are inundated with water and must then grow rapidly to complete their development before the autumn snows come again. Their short growing season may be under the full ferocity of the July sun or it may be tempered by the shade afforded by competing vegetation. Thus understanding the plant's exact habitat will aid success (meadowgrass habitats may provide shade, open screes will not). At low altitudes these same plants usually emerge earlier in the year when conditions can often be persistently cold or wet, often with a cold humid atmosphere, quite unlike the buoyant July they enjoy in the wild, and light levels early in the year are much less intense due to shorter days and frequent cloud. Cultivating such high alpine bulbs is not easy, and we find it best to grow them as cold as possible during the winter to delay the shoots' emergence. Once growth has started encourage it with

photos by Lee M. Raden

Fritillaria michailovskyi

Iris reticulata 'Natascha'

Narcissus bulbocodium romieuxii 'Julia Jane'

By Lee M. Raden

abundant watering, heavy feeding and free air circulation. If the species are shaded in the wild, shade may be beneficial in keeping the plants green and growing for as long as possible, building better bulbs.

woodland bulbs

Woodland bulbs fall into two distinct groups for the purpose of cultivation. First what we call 'true' woodland plants, which are often summer growing and like the shade, moisture, shelter and humidity that woodlands provide: e.g. *Arisaema, Lycoris, Leucojum* and *Trillium*. They are often restricted to woods' edges or clearings or damp pockets of leaf soil that do not dry out in summer. Thus, in cultivation, they benefit from leafmold, shade and a general simulation of woodland conditions. Leafmold may be an invaluable aid, but its moisture retentive properties may be too great under garden conditions so sand/grit can improve drainage. A second group of plants may inhabit woodlands but somehow they are not true woodland plants; they use the woods simply because they provide the conditions that they like in an area that may not otherwise be suitable: *Sternbergia, Galanthus, Eranthis* and *Fritillaria*. The wood's shade may keep down competing vegetation, which might overrun them in a meadow habitat, but the bulbs themselves do not need the shade and often grow and flower throughout the autumn and spring when the trees are leafless — e.g. in full sun. The whole wood need not be damp, particularly in summer, when the trees are in leaf and absorbing water. Bulbs below these trees can still be subjected to a warmer, drier rest. Leafmold may collect in pockets but it can also blow off higher areas or break down and incorporate into soil, thus it may be neither essential nor desirable in cultivation.

Iris winogradowii

Where a plant will not fit to our regime but demands an exact simulation of its wild conditions, it is often called 'miffy' or 'difficult,' but if you want to grow it and cannot provide the correct conditions, please do not blame the plant.

assessing environmental conditions

In presenting these contrasts and contradictions, I hope that you will not be confused; my aim is to help but in doing so I wish to instill an idea of enquiry. I started growing bulbs in 1965 when little advice was available to help grow the rarer, slightly more demanding plants, and my idea was to simulate wild environments. That's when I learned that the important thing is not the environment but what happens to the bulbs within that enviornment. If you are unsure about how to grow a plant or wish to improve the growth of a plant you are cultivating, the wild habitat will often provide many clues. An atlas may give geological information about the bedrock, and from this you can discern whether the soil is acid or limey as well as its degree of porosity. The bedrock will also help to determine the type of soil that forms above it. Collectors' notes about soil type are useful and more exact habitat details may indicate whether the plant grew naturally in a scree or a cliff, a meadow or light woodland. The aspect of the habitat may yield a clue — for example, a south-facing slope is hotter and drier than an equivalent north-facing slope. Knowing the total amount of rainfall and its seasonal distribution helps. Prevailing winds (again shown in many atlases) can interact with altitude to create differentially wet or dry habitats within the same area, and altitude will determine whether or not precipitation comes as snow or rain. The adjacent wild vegetation will also affect the conditions around the plant and, while the influence of trees will be obvious, remember that scrub, meadow grasses and creeping groundcover plants all influence the amount of light, water and air movement in a habitat.

Crocus zonatus

While I have suggested some composts and soil recipes, these are only useful if applied to the conditions in which a plant will subsequently grow. In damp gardens more grit or drainage may be needed, while in dry gardens shade and some summer watering may be required to ensure that a warm drier summer rest is not *too* hot or dry. I hope that this will not confuse, but adaptation is the rule rather than rigid mixing of compost recipes. Success does not come from magic formulae or secret ingredients but, I cannot say it too often, from a balance of correct conditions.

Growing Bulbs from Seed

Containers: Always select as deep a container as is available, preferably 4"-5". Using only one size container enables you to make the most efficient cubic use of your seed raising area — containers can be moved about easily, consolidating germinated seed, grouping together seedlings needing similar growing conditions and discarding ungerminated seed after a reasonable period. For most amateur purposes, a container 3 1/2 inches square can be used to raise a sufficient number of bulbs. About 12 mature bulbs of most dwarf species can be grown in it but it is not too large for a single plant. It is adequate for many seedlings for several years.

Growing Medium: A mixture of one-half loam, one-half stream sand* is satisfactory for most species in their early stages. Growing conditions and treatment are more important than the medium itself. A peat-based compost with added nutrients is not suited to most bulbs. Nutrients will usually have leached out before germination occurs and the peat retains too much moisture. Better to mix your own loam and stream sand. A sterile mixture is not necessary nor is the addition of artificial fertilizer. After germination, use a balanced liquid feed to aid development. Use a mix

*Stream sand: dug out of local stream; if none available use Jersey gravel (sand with particulates) available from most lumber yards.

continued

fairly low on nitrogen but high on potash. Peters' Root-N-Bloom 5-50-17 one-half strength is my standard dilution. The Peters' can be used whenever watering is necessary during the growing season.

Obtain Seed from your own plants, plant societies, some commercial sources and friends. Many 'bulbs' are self-sterile so that you need more than one clone to obtain seed. Commercial bulb-stocks are often of a single self-sterile clone, which is increased vegetatively, and which will never set seed no matter how many plants of it you have. In nature, many 'bulbs' do not set seed freely. When they do, those setting seed deteriorate or even die; at best, they will not normally flower again for several years. With good cultivation, it is possible to flower 'bulbs' annually and to try to take a crop of seed from them. You should always try that with new or scarce material; home-raised batches of seedlings offer the best chance of establishing new material in cultivation.

When to Sow Seed: A general rule is "as soon as possible." There is no harm in keeping seed of most summer-dormant species until October and then sowing all together. If it is not your own seed, it is seldom possible to obtain it until much later. Sow it as soon as you receive it and be patient. Some seed is always best sown immediately. *Cyclamen* are best sown as soon as the capsule opens; if these must be stored, they are best left uncleaned in the capsules and refrigerated. This also applies to several *Ranunculaceae*: some *Ranunculus* spp., *Anemone* spp., *Thalictrum tuberosum* and *T. orientale* drop their seed while it is still green and must be refrigerated without delay if they are to germinate from late-sowing. Soaking mature seed of *Iris* and *Cyclamen* for one to two days in warm water before sowing sometimes helps germination When winter-sowing any summer dormant species, keeping the newly sown seed at room temperature for one to two weeks before exposing to cold may aid germination the following spring by allowing the seed to take in moisture before exposure to cold.

Sowing Seed: Fill the containers; settle or firm the medium. Most 'bulb' seeds are comparatively large, so if the number of each species is small, it is worth sowing individually and spacing out evenly. Flat seeds, like *Tulipa* and *Fritillaria* can be sown on their sides; this does help prevent rotting. Cover seed with coarse grit; level surface; stand containers as level as possible and water them in. (If the square pot is not level, watering will be uneven leaving some dry spots.)

Germination: Germination usually occurs when the mature bulb appears above ground. With cold-climate species, this means in spring after snow has melted. During this comparatively short period, examine containers of ungerminated seeds regularly, so that those with germinating seeds can be separated and given more light. Seed of summer-dormant species is unlikely to germinate in summer, so little attention is necessary. Species, which grow at low altitudes in a Mediterranean climate, are activated by a drop in mean temperature and will germinate in fall. *Cyclamen* and some *Alstroemeria* are in this group. High temperatures inhibit germination. In the Delaware Valley, germinated seed should be grown over winter in protected conditions, preferably frost-free. Germination among bulbs is both epigeal (the seed-leaf appears above ground, e.g. *Allium*, *Fritillaria*, etc.), and hypogeal, where it remains below ground to form a 'bulb' first, so that the leaf which appears is the first 'true' leaf (*Cyclamen*, etc.). Some species (some *Lilium* are the best-known) show delayed hypogeal germination, where a 'bulb' is formed the first year and the first leaf does not appear until the second year. **Keep ungerminated seed for at least three years.**

Growing-on Seedlings: It may be preferable to remove seedlings to a more protected environment to make sure your young seedlings make the most of the first short growing season. Liquid-feeding is a must. Try to keep them growing for as long as possible. Apart from these simple cultural needs, only normal safeguards regarding 'bulbs' are necessary: containers of both germinated and ungerminated seed should be kept tidy and free from weeds; control rodents by trapping or covering with wire-netting if necessary; use a systemic insecticide early to control aphids; use a soil insecticide as often as necessary, depending on its persistence; a systemic fungicide may be worth using at least once in the growing season; most 'bulbs' produce only one leaf in the first season so efficient control of slugs and snails is essential. Make such preventative measures standard procedure if you are growing a collection of bulbs. When seedlings go dormant, do not expose them to dehydrating, high summer temperatures. They are best placed outdoors in a shaded place; even then the soil in a container is likely to reach the temperature of the surrounding air, which is likely to be much higher than the soil-termperature in the 'bulbs' natural environment. Watering lightly may be necessary for high-altitude species even when dormant. Most 'bulbs' can be expected to flower in three-five years from germination; if you sow some seed every year, after the first few years, you will have new batches flowering each season. Apart from the fact that some 'bulbs' can only be increased satisfactorily by seed (for example — the whole genus *Cyclamen*, some *Fritallaria* and some 'Juno' *Iris*), seed is the only method of securing a disease-free, breeding stock of different clones. In all of horticulture nothing is as rewarding as that first flower on a bulb seedling after you have waited three to five years from germination.

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Lee M. Raden is president of the American Rock Garden Society. A Flower Show exhibitor for 22 years, Lee and co-exhibitor Julie Morris won the "Best of Day" at the 1989 Philadelphia Flower Show opening day in the Horticultural Section for the highest scoring blue ribbon entry (two or more varieties) for their collection of 46 bulbs of botanical interest. Raden's interest in bulbs dates back 15 years, and he considers it an obsession and addiction.

photos by Lee M. Raden

Romulea bulbocodium clusiana

Oxalis versicolor

Alpine house

Bulb Frame and Alpine House

Both of these structures are designed to control the growing environment of the bulbs. The bulb frame is unheated, and the growing bed is approximately 3 feet deep. In the coldest winters the soil temperature at 12" never goes below 40°F allowing constant root growth December-March.

The Alpine house has controlled temperature - night temperature - 33°F; day temperature - 50°F. In both structures watering is rigidly controlled depending on the growth pattern of the particular bulb.

The joy of both structures is the bloom is never blown away or rained, sleeted, or snowed upon. The bloom is always to perfection and long-lasting.

Bulb Seed Sources

Mr. M. R. Salmon
'Jacklands,' Jacklands Bridge
Tickenham, Clevedon
Avon BS21 6SG - England

Jim & Jenny Archibald
Bryn Collen, Ffostrasol
Llandysul, Dyfed
SA44 5SB - England

Scottish Rock Garden Club
c/o Miss K. M. Gibb
21 Merchiston Park
Edinburgh EH10 4PW
Scotland

Alpine Garden Club of B. C.
4875 Skyline Dr.
N. Vancouver, B. C.
Canada U7R 3J2

Alpine Garden Society
Lye End Link, St. Johns
Woking, Surrey GU21 1SW
England

The American Rock Garden Society
c/o Buffy Parker
15 Fairmead Rd.
Darien, CT 06820

Free drainage is the single most important aspect of cultivation.

The Author's Personal Favorites

Fritillaria michailovskyi – A native of northeast Turkey growing on screes and earth slopes at approximately 4,500 to 7,500 ft. Admiral Paul Furse first collected this plant in the 1950s. Blooms depend on the heat of the spring (hot, you get bloom first like photo; cool, leaves first, followed by flower). Usually blooms mid-April.

Crocus tomasinianus 'Claret Form' – A rich deep rosy purple, easily the deepest color form of this species, which often causes late March visitors to stop in their tracks. My good friend, Ray Cobb, of Nottingham, England has preserved and spread this superb crocus.

Iris reticulata 'Natascha' – A wonderful new cultivar with ivory to ice blue falls with a golden blotch. Treat like all reticulate iris and wait for that day in March when they scream "Spring is here!"

Narcissus bulbocodium romieuxii 'Julia Jane' – An exceptionally beautiful form selected from a collection made by Jim Archibald under the collection #JCA805 in the late 1960s from the cedar forests of the Atlas Mountains in Morocco. Large, very widely flaring trumpets of soft yellow looking very much like a petunia, make this the yellow counterpart of *Narcissus cantabricus* 'Petunioides,' but 'Julia Jane' is easier to flower and more floriderous. Blooms late January.

Iris winogradowii (Reticulata) – A fabulous and rather rare plant known from only two small areas of the Caucasus and very nearly extinct. Needs a damp rich soil with leafmold, somewhat damp in the summer, and does not like root disturbance. Takes two to three years to settle down. Bloom early April.

Crocus kotschyanus ssp. kotchyanus syn. zonatus – Fall blooming bulbs have a special place in all gardeners' hearts, because they never fail to surprise us by suddenly appearing with no leaves. This crocus from Turkey grows in open meadows, often stony, at elevations of 1,500 to 7,500 ft. Mid-September is the time for this crocus to sing.

Iris willmottiana 'Alba' (Juno) – The positive identification of this plant still awaits us. It was collected by Dr. Rodionenko in 1968 in the Pamir-Alai range of central Asia. In full sun, in well-drained soil the gorgeoous splendor of this Juno in mid-May is mind-boggling. After blooming this plant needs fairly warm almost dry summers.

Romulea bulbocodium clusiana – Native to Spain and Portugal, this little *romulaea* needs considerable sand mixed into its soil, and rather a warm dryish summer. These plants survive best in a bulb frame or cold frame. Bloom time – late April, early May.

Oxalis versicolor – A beautiful South African bulbous oxalis for a frost-free environment such as Alpine house, insulated cold frame or bulb frame. Flower in January. The photo shows the unique red-edged twisted white flower. Fully opens in direct sunlight.

Iris regeliocyclus 'Chione' – The cross of *regelia* x *oncocylus* hybrids by the Dutch firm Van Tubergen has given us the easygoing nature of *regelia* species with the superbly beautiful but sometimes tricky *oncocylus*. They are free-flowering and vigorous plants. When planted outside in a cold frame, bulb frame or very sunny spot in a well-drained garden and fertilized generously, they will give great results.

Lewisia brachycalyx – This exclusive American genus belongs to the family *Portulacaceae* and has been a poor cousin in our gardens until the British got hold of it, hybridized many of the species and now we can't get enough of them. *Lewisia brachycalyx* is my favorite. The bloom in its delicacy is breathtaking. It grows along mountain lake shores in damp, not wet, soil and also among open pine stands in the White mountains of southern California; it is also found in Utah, New Mexico and Arizona. I grow it in the bulb frame where it blooms in late April.

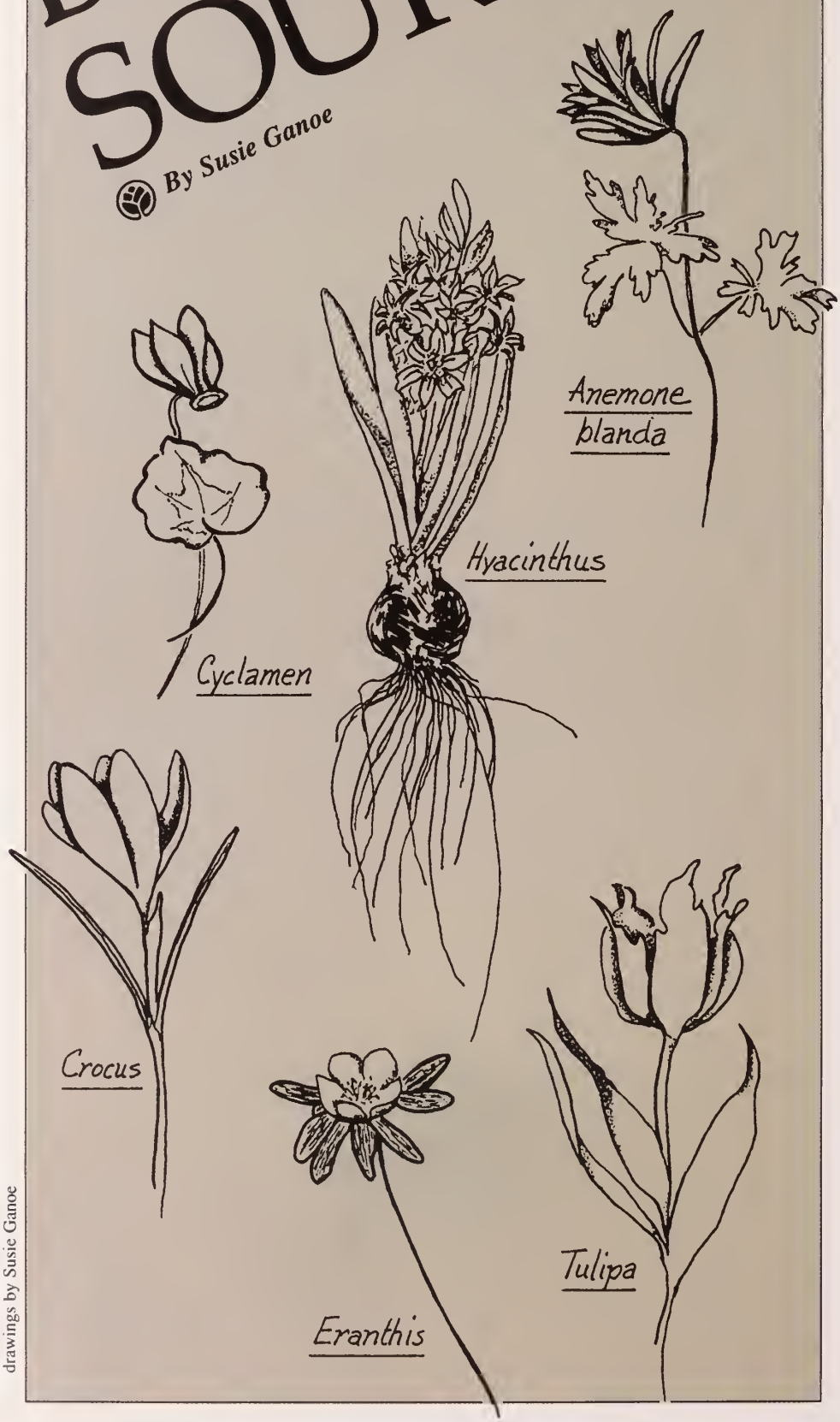
Narcissus 'Nylon' – John Blanchard, the great English narcissus expert, crosses *Narcissus bulbocodium romieuxii* with *Narcissus bulbocodium foliosus* to give us this wonderfully scented milk-white hybrid. It blooms very early in the Alpine house, usually for Christmas.

Iris regeliocyclus "Chione'

Lewisia brachycalyx

BULB SOURCES

By Susie Ganoe



drawings by Susie Ganoe

As a long-time bulb-grower I didn't think the task of assembling a list of reliable sources would present a challenge. As I compiled the list printed here, however, the names of suppliers grew almost as numerous and varied as types of bulbs. Yet in the end, as in the case of bulbs, there seemed to be a handful of old standbys known to all serious bulb-growers because they offer only first quality bulbs at all times.

The names of the best known and most frequently recommended suppliers follow, but first a few observations gleaned from the various comments and suggestions offered by the many kind people who contributed to this compendium.

In seeking out suppliers, many growers want to avoid those selling wild-grown bulbs.* There's never a 100% guarantee, but the reliability of the old standby suppliers, many of which are relatively small family businesses selling from an informal mailing list, is greater than large merchandisers.

Other considerations about suppliers enter. While there are many excellent garden centers, some of these merchants have difficulty policing customers who put bulbs back in the wrong bin. In addition, many of the smaller garden centers limit the selection to the faster selling tulips, daffodils, and crocuses. Consequently, experienced growers frequently search out more specialized suppliers from Oregon to Australia to South Africa to Holland.

Importing dormant bulbs directly is not a big problem providing the shipper is known to be reliable. The duty is low and import permits are no longer necessary. Only a phytosanitary certificate issued at the place of origin is required, and the established overseas shippers know how to comply with these procedures.

On the other hand, purchasing from unknown growers and shippers abroad is fraught with perils and pitfalls ranging from bulbs of unknown origin to delayed shipment. Neither is it prudent for travelers to return with bulbs in their luggage, even those permitted or accompanied by certificates, since airport customs agents often unfamiliar with both horticulture and the import regulations, may see the bulbs as bearers of disease or worse.

Overseas purchasers should request air mail shipment. Orders to Europe should go by July 15th, but there is always the risk of delayed shipment if the local season is late. Bulbs imported from the Southern Hemisphere countries, such as Australia and South Africa, usually require two years to flower.

The list of overseas suppliers does not

include names from Holland because Dutch bulbs can be found in almost all U.S. garden centers, nurseries, and catalogs, and the selection as well as the prices in the Netherlands is no better.

Given the shipping and other uncertainties, there is little need to look overseas for exotic or specialized bulbs. There are many reliable American sources. In nearby Wilmington, Dick Both is a very good limited private, noncommercial source of specialized bulbs, which he has collected over the years. Charles Mueller, an old standby supplier of all kinds of bulbs from his River Road location in New Hope, is also an excellent source of specialized items.

Many of the preferred bulb suppliers popular with Philadelphia's most successful exhibitors are located some distance from the Northeast. Frequently the old standbys have been operated by the same family for several generations. These include Grant E. Mitsch Daffodils, Huggard, Oregon; Murray W. Evans, Corbett, Oregon; Bio-Quest International, Santa Barbara, California; Hatfield Gardens, Stoutsville, Ohio; Daffodil Mart, Gloucester, Virginia; McClure & Zimmerman, Friesland, Wisconsin; and Oakwood Daffodils, Niles, Michigan.

No mention of old standbys can omit two legendary names in catalogs, Burpee and Scheepers. While the W. Atlee Burpee Company is better known for its flower and vegetable seeds, Charles Cresson and the company's other highly knowledgeable bulb specialists rank with the best in the country and their products are always of first quality. John Scheepers, Inc., which once bore a Wall Street address and is now located in Middletown, N.Y., produces one of the most comprehensive of all catalogs under the guidance of Stephen Van eeden, a virtual encyclopedia of bulb knowledge.

The full list of catalog suppliers of quality bulbs is actually quite long, and there are a number of newsletter type publications offering specialized bulbs. Among the general catalogs, Park Seed Company, Wayside Gardens, and White Flower Farm are frequently mentioned.

The following list of bulb suppliers is by no means complete, but should provide any bulb-grower with a comprehensive range of sources. It was compiled through the courtesy of a large number of bulb-lovers too numerous to mention, but acknowledgement and special thanks goes to Kitty Washburn, Kathryn Andersen, Lee M. Raden, Walt Fisher, Dick Kersten, and Mary Mills for their advice and assistance.

*See article *Species Bulbs: Question Your Sources*, by Faith Campbell on page 32 of this issue.

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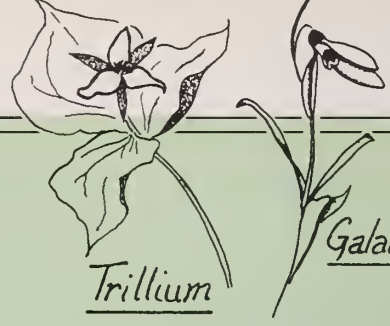

drawings by Susie Ganoe

Suppliers of General Bulbs
(most varieties unless noted)

NOTE: Readers are cautioned that the availability of bulbs from given suppliers is not always certain and names and addresses are sometimes subject to change. Inquire about cost.

United States (listed alphabetically)

** B & D Lilies
330 "P" Street
Port Townsend WA 98368

Bio-Quest International (S. African bulbous material)
P.O. Box 5752
Santa Barbara CA 93150

** Borbeleta Gardens - Lilies
Route 5, 15974 Canby Avenue
Fairbault MN 55021

* Bonnie Brae Gardens
1105 Southeast Christensen Road
Corbett OR 97019

Bundles of Bulbs - Kitty Washburne
112 Greenspring Valley Road
Owings Mills MD 21117

W. Atlee Burpee
300 Park Avenue
Warminster PA 18991

* Daffodil Mart
Route 3, Box 794
Gloucester VA 23061

Peter de Jager Bulb Co.
188 Asbury Street
P.O. Box 2010
South Hamilton MA 01982

Doornborsch Bros.
Morgantown PA 19543

* Murray W. Evans
3500 Southeast Manthey Road
Corbett OR 97019

* Hatfield Gardens
22799 Ringgold Southern Road
Stoutsville OH 43154

John D. Lyon, Inc.
143 Alewife Brook Parkway
Cambridge MA 02140

Mary Mattison van Schaik
Cavendish VT 05142

McClure and Zimmerman
108 West Winnebago
P.O. Box 368
Friesland WI 53935

Messelaar Bulb Co.
150 County Road
Ipswich MA 01938

* Grant E. Mitsch Daffodils
P.O. Box 218
Hubbard OR 97032

Montrose Nursery
P.O. Box 957 Hillsborough NC 27278

Charles H. Mueller
River Road, New Hope PA 18938

* Oakwood Daffodils
2330 West Bertraned
Niles MI 49120

George W. Park Seed Co
S.C. Hwy. 254 N. Greenwood
South Carolina 29647

John Scheepers, Inc.
Philipsburg RD 2
Middletown NY 10940

Anthony J. Skittone
1415 Eucalyptus Drive
San Francisco CA 94116

Ty Ty Plantation
P.O. Box 159
Ty Ty GA 31795

Van Engelen Inc.
Stillbroook Farm
307 Maple Street
Litchfield CT 06759

Mary M. Walker Bulb Co.
P.O. Box 256
Omega GA 31775

Wayside Gardens
1 Garden Lane
Hodges SC 29695-0001

White Flower Farm
Rt. 63
Litchfield CT 06759

* Nancy R. Wilson
571 Woodmont Avenue
Berkeley CA 94708

Guy Wrinkle
11610 Addison Street
North Hollywood CA 91601

Overseas

Avon Bulbs
Upper Westwood
Bradford-On-Avon,
Wiltshire BA 15 2AT England

* Ballydorn Bulb Farm
Killinchy, Co. Down
Northern Ireland

Broadleigh Gardens
Bishops Hull, Taunton
Somerset, England

* Carncairn Daffodils Ltd.
Carncairn Lodge
Broughshane Co. Antrim
Ballymena, Northern Ireland

P & J Christian
Pentre Cottages
Minera, Wrexham
Clwyd LL 11 3DP North Wales, England

* H. G. Cross
254 Geilston Bay Road
Geilston Bay, Tasmania 7015 Australia

Indigenous Gladiolus Nursery
44 Nederburgh Street
Welgemoed Bellville 7530 Republic South Africa

* Jackson's Daffodils
P.O. Box 77, Geeveston
Tasmania 7116 Australia

* Koanga Daffodils
Box 4129
Hamilton East, New Zealand

* Clive Postles Daffodils
The Old Cottage
Purshull Green, Droitwich
Worchestershire WR9 ONL England

Potterton & Martin
Moortown Road, Nettleton
Near Caiston, North Lings LN7 6HX England

* Rathowen Daffodils
Knowhead, Dergmonex
Omagh Co. Tyrone
Northern Ireland BT781PN

* Mrs. J. Abel Smith
Letty Green nr.
Hertford, England

* Daffodils only
** Lilies only

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Susie Ganoe is a Garden Club of America artistic judge, a member of the Garden Club of Philadelphia and of the Garden Club of Princeton. She is a long-time Flower Show exhibitor with many ribbons to her credit, many in the bulb section; she is also a dedicated Show volunteer.

photo courtesy of Winterthur Museum and Gardens

BOOKS AND THE GREEN WORLD:

bulbs

By Julie Morris

Clean and round,
Heavy and sound,
In every bulb a flower.

Adventures with Hardy Bulbs,
Louise Beebe Wilder, p.3

When I was first writing the *Books and the Green World* articles for the *Green Scene* in the early 1970s, I often pulled older garden books from the shelves of the PHS library to read for inspiration and ideas. After all these years, I am still drawn to the older titles. But something has happened in the intervening 17 years. I have found a new group of "older" books to turn to in addition to some fine new books. The books in this article are ones I've used in garden planning for my work as horticulturist at Blithewold in Bristol, Rhode Island; books that helped me when PHS member Lee Raden and I were trying to make sure at least 40 of the 200 pots of bulbs we were forcing for the Flower Show would be in bloom for the Botanical Collections class on March 4; and books that my gardening friends have told me they find useful.

Hal Bruce's book, *Winterthur in Bloom,* is a great place to begin. The March Walk at Winterthur is a thrilling sight in late winter and early spring. "Winter refines our senses, preparing us for the glories of

continued

Narcissus at entrance to Winterthur Museum and Gardens.

photo courtesy of Winterthur Museum and Gardens

bulbs

spring. In February, a tiny snowdrop seems as lovely as any of summer's roses..." Hal Bruce was an inspired horticulturist and a gifted writer. Not only are his descriptions of the spring bulbs at Winterthur breathtaking, he offers practical advice as well. We may not be planting bulbs on a scale comparable to Winterthur, but we can benefit from his advice. "Visitors to Winterthur will notice two things about the daffodils: mixing of varieties is rigorously avoided, and the beds or drifts are extremely irregular in shape. Nothing gives so patchy an effect as a large mixed planting of daffodils... uniformity is a great virtue here. A drift of yellow trumpets may contrast beautifully with a drift of white nearby, but mixing within the beds is disastrous. Uniformity can of course become the vice of monotony. To counteract this, the daffodils at Winterthur are planted by means of an interesting and so far as I know, unique method developed years ago by Mr. du Pont. Once the dimensions of a new bed have been roughly determined, fallen branches are used to outline it. The result is a series of gracefully irregular curves — the pleasing lines of nature itself." Hal Bruce introduces us to scores of the lesser known bulbs in a graceful way describing them as they come into bloom and citing the color combinations that draw thousands of visitors to Winterthur each spring. Time spent with the winter and spring chapters in *Winterthur in Bloom* will be equally rewarding.

The days may be past when we could plant our first bulb garden for $10.00 as Gertrude Wister suggests we can in *Hardy Garden Bulbs*. Her planting plans for combinations of bulbs, however, are still most useful. How to plant bulbs in flower beds, under trees or mixed with herbaceous plants is clearly explained. The author's straightforward description of the differences between bulbs, corms and tubers, etc., is one of the clearest and shortest I've read, a once-and-for-all sort of explanation. Summer and autumn flowering bulbs aren't forgotten. I remember seeing lilies blooming in the author's Swarthmore garden in graceful combinations with other plants. Her companion planting suggestions take color, form and texture into consideration. The fact that Gertrude Wister gardens in the Philadelphia area makes her suggestions even more timely for most *Green Scene* readers. Her book, like her garden, is designed for all seasons.

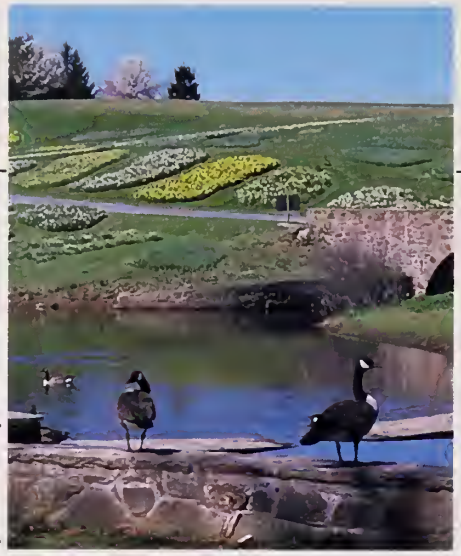

photo courtesy of Winterthur Museum and Gardens

The Front Drive and Pond at Winterthur Museum and Gardens.

The Bulb Book, by Martyn Rix and Roger Phillips, is definitely heavy duty. It is the only book I know that contains photographs of nearly every hardy bulb you can think of; roots, bulb, stems, flowers, cross sections of flowers and all. The photos are $\frac{1}{4}$ to $\frac{1}{2}$ life size, and more than 800 bulbs are pictured. The book is designed for gardeners and as a guide, although a bit too large to slip into a jean's pocket. Endangered species are marked with an asterisk; a warning flag to help us determine which dealers might be selling collected rather than cultivated bulbs. Most of the bulbs are available from the nurseries listed in the back of the book. Seed lists offered by plant societies to their members are often the best sources of hard-to-find seed. Those listed in the book are in England or Scotland. Most offer overseas memberships, and of course there is the American Rock Garden Society's seed list to look forward to every year.

The authors offer basic cultural information that is clear and to the point. The native habitats and growing requirements for all the plants pictured are given. After seeing all that is available in this book, it will be hard to settle for Red Emperor tulips or King Alfred daffodils, as lovely as they are. There are many tempting plants that, with a bit of perseverance, you can find and grow.

The book is organized by time of bloom with splendid photos of the autumn crocus and colchicums rounding out the year. It is exciting to see so many of the plants pictured in their native habitats; especially striking are the lilies and their relatives growing in the Himalayas and China. You won't tire of looking through this book. It gives us a sense of the excitement the early plant explorers must have felt as they rushed headlong into the fields of asphodels.

Brian Mathew's book, *The Smaller Bulbs*, is for the grower who is a collector as well. It is really a companion book to the book by Rix and Phillips, but written on a more personal level. The author is a taxonomic botanist at Kew Gardens who is also a keen gardener. The photographs in the book are his, so you know he has seen *Tulipa montana* in Iran and the rare *Sternbergia candida* growing in Turkey. Mr. Mathew's sense of excitement about growing all he describes is catching, and his book is the right guide for the adventure.

Closer to home we have the American classic by Elizabeth Lawrence, *The Little Bulbs*. No book has taken its place in the 30 years since it was published, so it is back again newly re-published. Like Brian Mathew, Elizabeth Lawrence grew what she wrote about and draws the reader into her descriptions with great skill. She takes you along while she looks for some of the newest and tiniest hybrids of *Narcissus triandrus* in her collection. You find yourself picking up your own feet as she despairs over stepping on some tiny buds on her search. Fortunately, many of the plants Elizabeth Lawrence grew are still available on plant society seed exchange lists or from bulb specialists. Not only does Elizabeth Lawrence describe her plants in detail, you learn their history as well and read such delights as the fact that *Cyclamen europaeum* was known as sowbread. It was once so plentiful in woods of southern Europe that its tubers were fed to the pigs! *The Small Bulbs* is a book to enjoy for a long time. You come to know the author's correspondents as she searches for a special bulb and hear about her successes and failures. You will want to keep it beside *Gardens in Winter*, a second Elizabeth Lawrence book worth reading for its chapter on bulbs alone. I grew *Narcissus bulbocodium* 'Nylon,' one of the hoop petticoat narcissus, for the first time this year and was happy to read about

One page with descriptions of species crocus has a muddy fingerprint on it. My friend's garden was full of crocus, spring and autumn blooming, and I can see her now, book in one hand, a brown bag of crocus corms in the other.

it in this book where growing in a pot versus outdoor culture was discussed. Its reedy foliage does mash down under snow and so perhaps is better off in a pot in a cool greenhouse where it can be best appreciated. It was Elizabeth Lawrence's aim to have, "a little bulb blooming in my garden every day of the year..." and she very nearly managed it, at least in her books.

Other bulbs that benefit from pot culture are described by Kathryn Taylor and Edith Gregg in *Winter Flowers in the Sun-heated Pit*. I've always wanted a pit house, but so far haven't lived where one would be possible. They are ideal for forcing hardy bulbs in winter, and Taylor and Gregg devote a good portion of their book to bulb culture. Even if you don't have a pit house or greenhouse, the chapters on forcing bulbs are worthwhile and far more complete than the quick guides given in most books. Each plant is described with specific cultural instructions, a boon to flower show forcers.

Once we're back in the garden again after a winter of growing bulbs in pots, there are several guides to more ideas for growing bulbs in our gardens. Harriet Morse's book, *Gardening in the Shade*, is another classic now reprinted. The first photo I turned to shows dwarf *Iris pumila* combined with forget-me-nots on a stone terrace. From the terrace the author takes us into the woods, and we are treated to a year-long series of plant lists for seasonal interest and differing soil conditions. The one constant is the presence of shade in varying degrees. Good writing, clear black and white photographs and many useful ideas testify to the reasons this book had to be reprinted. Who wouldn't want, "continuous bloom in a shaded garden of little care."

From the spring and the shade, we stride into summer with John Baumgardt's *Bulbs For Summer Bloom*. Here we find some of the not-so-hardy bulbs such as *Acidanthera* and *Zephyranthes* in addition to those summer- and fall-blooming bulbs that don't need special care in winter. The lily chapter includes very complete lists for selection and culture. The A-Z section describes all the bulbs, corms and tubers that need winter care. The author makes it clear to us that the work is worthwhile and the plants worthy of our persistence.

True to myself, I can't resist looking through Louise Beebe Wilder's *Adventures With Hardy Bulbs*, written in 1936. This copy came to me from an old gardening friend who used it in her garden in Ambler for over 40 years. It is water and soil marked. One page with descriptions of species crocus has a muddy fingerprint on it. My friend's garden was full of crocus, spring and autumn blooming, and I can see her now, book in one hand, a brown bag of crocus corms in the other. Wilder's book is an adventure although she admits that growing bulbs is less an adventure and uncertainty than growing other plants at least for the first year unless we have made disastrous choices. The adventure part comes in growing some of the lesser known bulbous plants such as *Calochortus* and *Fritillaria*. Wilder challenges herself to try all sorts of plants and exhorts her readers to do the same. The excellent black and white photographs illustrate the possibilities for us. Perhaps many of the bulbs the author describes are now available only from plant society seed lists or specialist nurseries, but don't let that hinder your enjoyment of the book, after all as she writes so aptly: "Where there is no uncertainty, there can be no thrilling interest; never that delicious round-the-corner feeling, tingling and anticipatory, that is the portion of those who advance, not knowing just what they are going to meet, or how they will meet it." Just think, Wilder is talking about gardeners! Now, I know why I agreed to produce an exhibit of forced bulbs for the Flower Show.

As I've been writing about books over the past week or so, the pot of 'Unsurpassable' daffodils I brought into the house to brighten up these last few days of February has come into full bloom. I cut a few of the flowers to put in a vase on my desk to enjoy their fragrance while I work. I am reminded again of the plantings of daffodils at Winterthur and a quote by Hal Bruce. "Much of the charm of spring bulbs such as daffodils lies in their evanescence. They begin to bloom almost as soon as they emerge from the bare ground, and they disappear completely before the advent of summer; thus they seem as brief and fleeting as spring itself."

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Julie Morris is horticulturist at Blithewold Gardens and Arboretums in Bristol, Rhode Island. Julie and co-exhibitor Lee Raden won a Blue and Gold, best of day, for their bulb collection in class 200 (for two or more varieties) at the 1989 Philadelphia Flower Show on opening day. Julie Morris was PHS librarian from 1970 to 1976.

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SPECIES BULBS: *Question Your Sources*

By Faith Campbell

While most of the billion or more bulbs that Americans plant each year are hybrids or cultivars produced by breeders, some have been collected from the wild. Particular species are collected in such quantities that wild populations in certain areas become severly depleted. If the collecting is sufficiently intensive, and reaches all populations of the species, it may even drive that life form to extinction.

The bulb trade thrives on "novelty," so any newly discovered species or variety may instantly become the focus of competitive collecting campaigns. The "discovery" is likely to be a form found only in a small area or a relict of a more widespread species already severely depleted. No matter how remote the habitats may be, the history of the plant trade is that "diggers" and brokers will find the prize and exploit it.

Collecting for the bulb trade is centered in Turkey, Portugal, Spain, and Asia; collecting also occurs in South America, southern Africa, and even the United States.

The plants likely to have been collected from the wild are many of the small, early-bloc ming types. Sometimes, they are advertised as "wild," "species," or "botanicals." Sometimes, however, they are not distinguished in any way.

The Natural Resources Defense Council (NRDC) first became aware of the trade in wild bulbs in 1986. At that time, we learned about the large quantities of various bulb species coming out of Turkey — a trade that caused Dr. Tuna Ekim and other Turkish and European botanists to express concern about its impact.

To determine the extent of the trade, NRDC surveyed 25 catalogs issued by bulb dealers to learn which species they offered for sale. Then we began seeking advice from botanists and horticulturists familiar with the trade, to determine whether these particular species were propagated or collected and, if the latter, the impact of such collecting. NRDC has sought information from knowledgeable people in the United States, Europe, Turkey, South Africa, and India. European botanists, funded by the TRAFFIC network and Fauna and Flora Preservation Society also researched the problem.

All of us recognize that it is difficult to assess the extent and impact of this trade. One major problem is that the bulbs are usually not exported directly to the United States but are sent to the Netherlands. There they become mixed with plants from other countries and from Dutch growers and it becomes virtually impossible to establish the origin of particular bulbs. Worse, the mixed collection is then advertised and sold to Americans and others under the general label, "Grown in Holland." So far, neither the Dutch wholesalers nor American retailers have provided much assistance in our efforts to determine the quantity of wild-collected bulbs entering the United States.

Despite the difficulties, we have obtained sufficient information to substantiate conservationists' concerns and to justify protective actions. And we can warn gardeners to avoid particular species that are probably of wild origin,

the miniature narcissus

The genus *Narcissus* illustrates both what is known and the difficulties still remaining. Daffodils are one of the most popular groups of spring bulbs. The vast majority of those grown here are cultivars and showy hybrids. In recent years, however, there has been considerable interest in the "miniatures," some of which are true species and thus potentially subject to collecting from the wild.

Our catalog survey yielded 28 apparent species offered for sale by one or more outlets. *N. triandrus* was sold by at least six; the subspecies *albus* was sold by six, *concolor* by two. Unfortunately, European botanists who have interviewed European experts and bulb dealers report that species are always collected rather than propagated. According to the European botanists, *N. bulbocodium conspicuus*, offered through five catalogs, is propagated to some extent.

British ecologist Mike Read visited Portugal last year, where he confirmed that *N. triandrus* and *N. bulbocodium* were among the species being exported from that country.

Collecting *Narcissus* apparently peaked some years ago, but the practice does continue. Mike Read met with one Portuguese dealer who claimed to export 10-12,000 *Narcissus* each year. A second dealer, with whom Read was unable to meet, reportedly exports more. Read heard reports that more than one million bulbs had been exported to the Netherlands in 1986-87, but he could not find written confirmation.

Read found no evidence of exports from Spain during his visit, but believes that this hiatus resulted from a temporary breakdown in trade links. In the past, several species have been severely depleted by overcollecting in Spain. One, *N. moschatus*, is now extinct in the wild as a result. *Narcissus* populations in Spain are vulnerable because they are isolated in separate valleys.

Although Turkey is a major exporter of several bulb genera, it is not a significant source for *Narcissus*. The last major export was in 1981, when The Netherlands reported importing 447,000 *Narcissus* from Turkey.

Austria, Belgium and other European countries may "farm" *Narcissus* plants — transplant them from the wild, allow them to grow on, and then divide them before selling.

NRDC believes it is wrong to act deliberately in ways that threaten survival of species. The threat that collecting poses to bulbs, especially to the wild *Narcissus*, is particularly heartbreaking because similar propagated miniature cultivars are available to gardeners. (Editor's Note: see article "Miniature Daffodils in the Garden," by Kathryn Andersen, page 34 in this issue.)

While it is theoretically possible to institute controlled collecting to ensure survival of species, such a plan does not yet exist. Consequently, any purchase of wild-collected *Narcissus* or other wild-collected bulbs at this time contributes to the threat and does nothing to promote wise man-

illustration by Michael Herquet

agement. Therefore, NRDC urges American gardeners to avoid buying wild-collected bulbs.

what you can do

Until the trade provides more information, people wishing to purchase only propagated bulbs should buy only hybrids. Ask the retailer, "Did you propagate these plants from seeds or by tissue culture in your own facilities? If not, do you know that your supplier did so?"

Be aggressive. Do not accept assurances that the plants have been "nursery grown" or obtained from "commercial sources." "Nursery grown" often means only that the plants were established in a nursery for several months before being shipped; they may still have been dug from the wild originally. "Commercial sources" include organized networks of "diggers" and middlemen such as the ones currently handling shipments of *Narcissus* from Portugal to the Netherlands. If you do not get a satisfactory answer, buy something else.

Meanwhile, NRDC and others working to prevent extinction of bulb species will try to interest nurseries, development assistance organizations, conservation-oriented grant-giving foundations, and others in working with local people in the native habitats of bulbs to develop farms. That approach would ensure both survival and availability of the glorious little bulbs, and a source of income for those people.

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Faith Campbell is a senior researcher with Natural Resources Defense Council, working on the plant trade problem with them for 11 years.

MINIATURE DAFFODILS IN THE GARDEN

Is the concern for wild bulb collection overstated? Kathryn Andersen says "yes" and offers suggestions for selecting miniature bulbs without endangering limited wild sources.

By Kathryn S. Andersen

The Natural Resources Defense Council (NRDC) and other conservation groups are telling us not to buy species daffodils (varieties of daffodils that occur in the wild) unless we know that the bulbs have been nursery grown from seed because the Dutch and others are decimating wild populations to the brink of extinction. (See article "Species Bulbs: Question Your Sources" on page 32 of this issue.) Although the Dutch are readily available scapegoats and may well have encouraged over-collecting in certain instances, I would suggest that far more significant factors in the disappearance of species from the Spanish countryside are encroaching civilization and real, not scape, goats. Dr. Campbell presents no evidence that species are not being grown from seed in the Netherlands and alludes to the "farming out" of collected species before they are sold as "Dutch grown." A member of the American Daffodil Society Miniature Committee visits the gardens of specialty growers in the Netherlands on a regular basis and has observed seedlings of several species. Let us not bash the Dutch and say, "No," to species daffodils for the wrong reasons.

The average nurseryman has no idea where the "Dutch" bulbs he sells originated and can only assume that they were grown in the Netherlands. A number of species daffodils are grown from seed there. Others will not grow there because it is too cold in the winter, too cool in the summer (many species must receive a thorough baking while dormant) or soil conditions differ too drastically from the native habitat. Most species that cannot be raised successfully from seed in the Netherlands probably will not succeed in the Delaware Valley unless the gardener undertakes heroic measures. In addition, species that grow well in the Netherlands will not necessarily thrive here. Species demand very specific growing conditions, which may be difficult to ascertain and duplicate. Unless you, as an experienced gardener, feel comfortable raising hybrid miniature daffodils (cultivated hybrids that are two or more generations removed from the species), do not even attempt to grow the species. A novice who plants species daffodils is almost surely doomed to fail. Even hybrid miniature daffodils are not so easy to grow as their larger counterparts, and establishing a fine stand is indeed a feat.

Over-collecting of species in the wild, especially since it is done when the bulb is in flower, can certainly hasten the demise of indigenous populations. In travelling to the low Sierras of southern and central Spain in 1988 with a group of people studying wild populations in their native habitats, I found no evidence of digging except for one public picnic area where shallow holes suggested that the white *Narcissus bulbocodium* (*N. cantabricus*) had been removed. In a one-week period we observed seven distinct species. Many were in craggy isolated areas inappropriate for agriculture or the encroachment of civilization. The Spanish goat, a symbol of wealth to farmers, is always present and appears to have grazed out many low-lying species populations mentioned in the older literature. Except for isolated sightings within a National Park, the blooms were seen in rocky cliff crevices, burned-over scrub or public dump sites among trash. Since olive orchards, massive highway construction and expanding cities filled the lowlands and deep valleys, daffodils were only sighted at higher altitudes removed from man's interferences. I am afraid it is not the greed of foreign bulb dealers but man's efforts to propel himself into the modern world and stay competitive with his neighbor that are behind the thinning of the daffodil populations in Spain.

Daffodil seeds can germinate after many years of dormancy. From sprouted seed to flower can take from four to seven years. It would be difficult to eradicate an entire population without repeated raids on dwindling stocks. Dr. Harold Koopowitz, author of *Plant Extinction: A Global Crisis* writes that the only daffodil species considered endangered worldwide is *N. calcicola*. This species has been successfully established in New Zealand and in several private gardens in England and the United States. It is important to preserve all species so their genes may be available for future hybridizing endeavors. If they cannot be preserved in their native habitats, they should be preserved wherever possible. The American Daffodil Society (ADS) deplores any activity endangering the wild species and stresses the importance of maintaining these species in cultivation as a hedge against extinction in the wild. ADS is launching a study of the cultural requirements of individual species to aid those dedicated growers who wish to try to establish these species in their own gardens. Soil pH, summer and winter temperatures, underlying rock and moisture content of the soil at various times of year all affect the growing conditions that various species demand.

N. asturiensis, a tiny trumpet native to the Cantabrian Mountains in northern Spain is being propagated from seed by several specialty growers in the Netherlands. Soils in the northern Spanish mountains are clayish, rocky and strongly acidic. Heavy snow cover gives winter protection. Over

I am afraid it is not the greed of foreign bulb dealers but man's efforts to propel himself into the modern world and stay competitive with his neighbor that are behind the thinning of the daffodil populations in Spain.

photo by Kathryn S. Andersen

Well-established clump of 'Mite' in the author's garden. (For scale note label in upper left-hand corner.)

the years a fine stand of this species has become established in Charles Cresson's Swarthmore, Pennsylvania garden. The location is on a gentle slope under a pine needle cover, which provides cool summer soil with good drainage and protection from the most severe winter weather. Before I knew that this species demanded an acid soil, I gradually lost several clumps planted near my brick house in soil with a pH above 7.0. After more than 25 years, lime continues to be leached from the mortar between the bricks, and the soil must frequently be reacidified with sulfur to maintain an acid pH. I hope that several of the acid-loving species will eventually establish themselves here.

N. canaliculatus is readily propagated and is grown extensively in the Netherlands. This species is best grown as an annual here. The fat Dutch bulbs produce a wealth of bloom the first season but seldom set bud after the first year down. The bulbs tend to split into many small pieces, which are too small to produce flowers. I have tried to encourage repeated bloom by deep planting (12" or more), compacting the soil by driving over the beds with a loaded pickup truck, planting on a rock, etc., but to no avail. Leaves still emerge more than 25 years after planting.

N. bulbocodium exists in many subspecies and is found in abundance throughout Spain. *Bulbocodium* grows easily from seed and thrives in the Netherlands where it is grown extensively. The yellow subspecies, offered in catalogs as Hoop Petticoat Daffodils require acid growing conditions. Unfortunately *bulbocodium* does not persist in our Delaware Valley gardens unless grown with protection.

Dr. Campbell seems particularly concerned about *N. triandrus*. *N. triandrus pallidulus* and other subspecies are ubiquitous in central and southern Spain. They are never plentiful but seem to emerge in a spotty array on most granite ridges, deep road cuts and in burned-over scrub areas. A few specialty nurserymen grow them from seed in the Netherlands. Some bulbs offered for sale are undoubtedly collected. These are surely not nearing extinction in the wild. *N. triandrus* is not reliably hardy here and can readily die out in a very cold winter unless drastic measures are taken to protect the bulbs. The bulbs appear to be short-lived and are not a good candidate for our Delaware Valley gardens.

In the wild, species are thought to multiply mainly by seed. After a few years of shedding seed, the mother bulb dies. Cultivated hybrids, especially the standards (ordinary large garden daffodils), multiply largely by division of the mother bulb into new bulbs. These daffodils seldom set seed in the garden unless hand pollinated. (In my garden in Wilmington, Delaware fewer than 0.2% of the stems set seed even with five hives of bees on the property.) Miniature hybrids are much closer to the species than the standards and consequently are more inclined to set seed and die out. The further the cultivar is removed from the species through extensive hybridizing, the more it gains in hybrid vigor and the more prone it is to persist in the garden and multiply through bulb division. The table lists hybrid miniatures that have persisted and thrived in my own garden (pH 6.8-7.1) for at least 10 years. The miniatures are best left undisturbed unless bloom quality or quantity diminishes. A large established clump brings joy to the heart of the grower and dazzles the eye even at great distances.

●

For Kathryn S. Andersen's biography, see page 21.

Sources for Miniature Hybrid Daffodils

Bonnie Brae Gardens
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1105 S.E. Christensen Rd.
Corbett OR 97019

Daffodil Mart
Brent and Becky Heath
Route 3, Box 794
Gloucester VA 23061

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- April Tears
- Fairy Chimes
- Hawera

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- Jumblie
- Mite*
- Snipe*
- Tete-a-Tete*

Jonquilla Hybrids
- Baby Moon
- Bebop
- Chit Chat
- Clare*
- Pixie's Sister*
- Stafford*
- Sun Dial
- Sun Disc*

*These cultivars have been lifted and separated at least once in a ten-year period and continue to thrive.

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See page 29.