THE green scene

HORTICULTURE IN THE DELAWARE VALLEY

SEPTEMBER • OCTOBER • 1982 $1.50

Shapes and textures as well as color create autumn gardens. See page 18.

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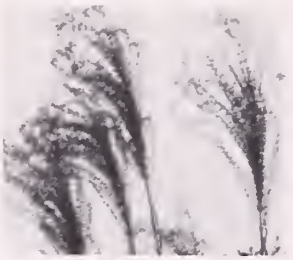

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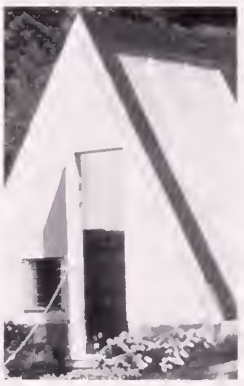

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Front cover: Leaves of cord grass (Spartina pectinata 'Aureo-Marginata') highlight the autumn reds of sedum (Sedum Telephium 'Autumn Joy').
photo by Jacqueline Denning

Back cover:
photo by H. Peter Loewer

Correction
Thanks to John M. Fogg, Jr. for correcting our misspelling of Andre Michaux's name on page 27 of the May issue.

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Small Moments in the Garden

by Julie Morris

There is always music amongst the trees in the garden, but our hearts must be very quiet to hear it.

–M. Aumônier

My friends thought I was crazy when I explained why I had seen the movie *Romeo and Juliet* four times. The scene that kept drawing me back lasted only seconds and took place in the film's first moments. Servants of the houses of Montague and Capulet were battling in the public square when Escalus, the Prince of Verona, rode his horse into the fray and ordered the fighting to cease. The handheld cameras followed every motion the horse made so that its movement accentuated the prince's words. Sunlight bounced off the camera lens further highlighting and emphasizing the emotion of the scene. The combination of light, movement and sound created a memorable piece of film art.

A few years ago when I was planning my new garden, the memory of that scene from *Romeo and Juliet* returned and somehow helped me to get started on the new design. For some time I had thought it might be possible that the same use of the elements of light and movement in the film could be applied in garden planning. The effects of light and shade can have a dramatic impact on the texture and forms of plants we use. The combination and placement of plants selected for their color and tone can affect movement and mood creating what could be called music in the garden.

During the gardening season I spend most of my time taking care of other people's gardens. In general, our clients prefer lots of color in the flower borders we maintain. Perhaps, as a reaction to all this color, I have chosen to use a great deal of white flowering plants in my own garden areas. The effect is restful, and, because I am rarely at home during the day, I can enjoy the white and other pale colored flowers well into the evening.

While the Prince of Verona hasn't ridden though my garden lately, I am satisfied that using sunlight and shade to enhance the color and texture of the plant material I've selected has been effective.

photos by Jacqueline Denning

Sheepdogs and plants get along with certain compromises.

My gardening has always been in small spaces. The lot that my house, greenhouse and small barn sit on measures only 60 ft. x 100 ft. However, this gives me much more gardening space than the 16 ft. x 20 ft. garden I had for 10 years in Philadelphia.

Other than norway maple seedlings and two dead arborvitae that had never been planted, there were no plants around the little house I moved to six years ago. The small building at the back of the lot was patched with linoleum and falling down. Either it had to be repaired or taken down. My business partner, Jackie Denning, and I decided to fix it up and add a greenhouse on the south side for use in our garden consulting business.

Building the greenhouse meant digging a foundation. We decided to build a raised bed with the soil removed. The dimensions for this bed are 8 ft. x 16 ft. and three railroad ties high. The fact that there were other concrete foundations from an old building on the property made raised beds almost a necessity.

a seat, shade and water

Following the advice of the famous English garden designer and writer, Gertrude Jekyll, I included a place to sit, a shady area, and a space for water in the garden design. Wisteria grows on the small lathe house surrounding the

continued

The greenhouse, herb garden, raised bed and sitting area are seen from the back of the house.

sitting area, and half a whiskey barrel filled with water moved by five active goldfish sits under the canopy of a cut-leaf Japanese maple.

The first tree planted in the garden was my flowering crab apple, *Malus floribunda*. I had grown the tree for 13 years in half a barrel and packed it into the moving van when I moved to Newport from Philadelphia. I planted the tree in direct line with the front entrance to the garden, where I can see it from inside the house as well as from every part of the garden, a lesson I learned long ago from my good friend and PHS member, Emily Cheston. Planning the garden from inside the house is as important as planning the design from outside.

The garden area includes a 50 ft. x 5 ft. border along the house from the front gate to the backyard, two raised beds, an herb garden along the front of the greenhouse and two borders along the fence on either side of the backyard. Gravel paths link these areas together.

I have added new plants to each of the garden areas over the past five years. The reasons for selecting the plants have varied but I have kept certain basic garden ideas in mind.

continued

Verbena and plumbago. Such color combinations, caught out of the corner of the eye while the gardener's attention is elsewhere, often constitute the small precious moments in the garden.

Primula 'Victorian Valentine'

Apricot Beauty tulips blooming in the raised bed. Plants from the greenhouse are under the lath house sitting area for the summer. Annuals in flats on the raised bed await planting in a client's garden.

Old-fashioned nicotiana planted in a corner of the raised bed fills the air with its perfume every evening.

Skipper sitting next to Apricot Beauty tulips on the raised bed.

During the gardening season I spend most of my time taking care of other people's gardens. In general, our clients prefer lots of color in the flower borders we maintain. Perhaps, as a reaction to all this color, I have chosen to use a great deal of white flowering plants in my own garden areas. The effect is restful, and, because I am rarely at home during the day, I can enjoy the white and other pale colored flowers well into the evening.

a beacon of restfulness

By mid-summer the white petunias I plant each year have cascaded down the sides of their strawberry jar container. The large pot sits under the flowering crab apple at the end of the path leading from the front gate. The fragrant white flowers work their magic in early evening when they almost shimmer. Viewed from the front gate they are a beacon of restfulness after a long day of gardening.

I look forward to coming home through the garden gate every day to see what new flower has opened. I plan for fragrance as well as flowers, so starting with the March blooming *Daphne mezereum* all the way through the seasons until the fragrant *Elaeagnus pungens* blooms in fall there is something filling the air with its perfume.

I planted most of the fragrant shrubs in the border along the path that runs from the front gate to the backyard. The *Magnolia virginiana* is planted right next to the steps leading to the back door. It blooms on and off throughout the summer filling the evening air with its sweet scent.

Another important aspect of my planning was that I would be able to enjoy my plants on the run. Some days I only have time to catch a glimpse of what is happening in the garden. These glimpses are my "small moments" in the garden and perhaps involve the most important part of my garden planning.

A few years ago I was sitting on the back steps and could see out of the corner of my eye a very pleasing sight. The lemon-yellow daylily 'Hyperion' was blooming in front of a dusty pink monarda. For many days I would glimpse this particular combination as I went about my work. I realized that most of the combinations I liked best in the garden were viewed this way; the pale blue plumbago growing in a pot next to an apricot colored verbena, a white clematis growing in and around the mock orange, and the one true potpourri of the garden, the raised bed with its mixture of colorful annuals, herbs and vegetables.

In addition to enjoying the plants in my garden, I share the space with the four cats and two dogs that live with Jackie and me. We have come to certain agreements and compromises with the animals over the years about digging up and munching on various plants. I enjoy watching the animals in the garden and am again reminded of Gertrude Jekyll's comment that cats were the perfect companions in the garden. (Dogs, I don't know!)

While the Prince of Verona hasn't ridden through my garden lately, I am satisfied that using sunlight and shade to enhance the color and texture of the plant material I've selected has been effective.

We recently hired an arborist to prune the large norway maple in the yard next door. The tree's canopy has been thinned out and now interesting patterns of sunlight dance around on the borders below its shade. The light sets off the colors of the flowers and the texture of the foliage creating movement yet somehow unifying the tone of the garden.

The kind of gardening I like to do best involves far more than the use of a variety of plants. I choose plants for the color and tone and use the natural light and shade in the garden to enhance their texture and form. Creative gardening sets the mood necessary to sustain the soul. These "small moments" in the garden do indeed make a lifetime much more pleasant.

Trees and Shrubs Selected for Fragrance

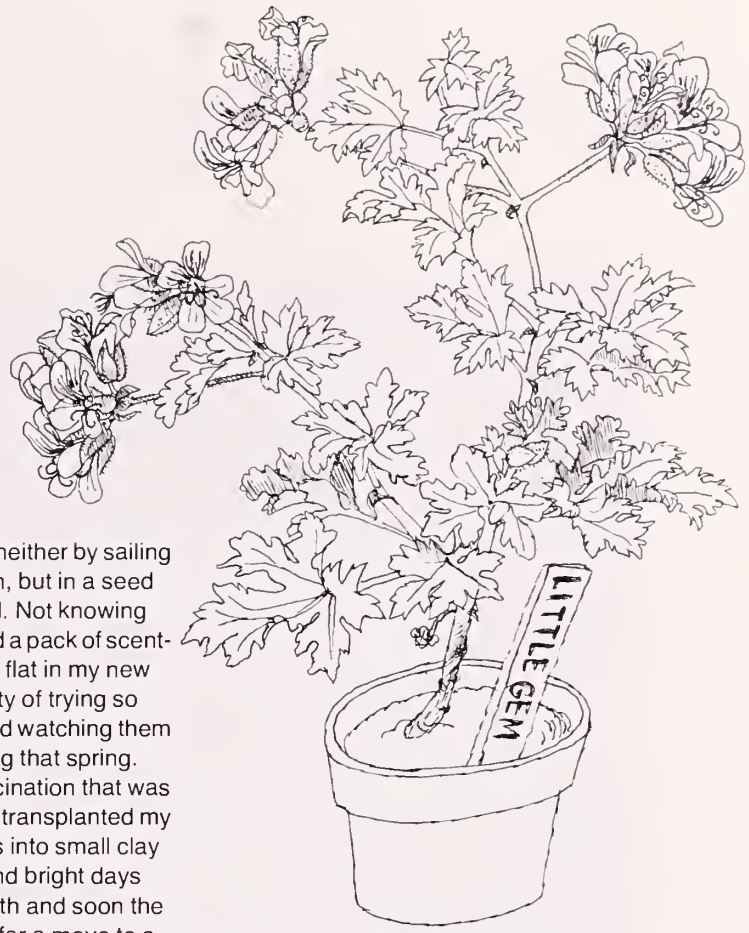
Azalea daviesii
Azalea ledifolia alba
Chionanthus virginicus - fringetree
Daphne burkwoodii 'Carol Mackie'
Daphne burkwoodii 'Somerset'
Daphne mezereum - February daphne
Elaeagnus pungens - thorny elaeagnus
Exbury hybrid azaleas
Magnolia virginiana - sweet bay
Philadelphus virginalis 'Glacier'
Rhododendron arborescens
Rhododendron viscosum
Syringa palibiniana - dwarf Korean lilac
Syringa prestoniae 'James McFarlane'
Viburnum carlesii

●

Julie Morris and Jackie Denning are partners in Summer House Garden Consultants in Newport, Rhode Island. Morris is also the horticulturist on the staff of Blithewold Gardens and Arboretum in Bristol, Rhode Island.

Scented Geraniums

by Lorraine Kiefer



drawing by Barbara Bruno

I enjoy it when someone accidently brushes one of the scented geraniaums and quickly does a double take. They usually look elsewhere for the source of the rose or strawberry aroma filling the air. Rarely do they look at the rather nondescript scented geranium *(Pelargonium)*. Once the favorite houseplant of the Victorians, this delightful plant has the potential of again becoming a family favorite. It comes in many scents and just explodes with fragrance when touched.

It needs good, bright light by day and cool temperatures at night. One of the reasons it was such a popular plant in Colonial and Victorian days was that it did survive the cold temperatures at night when the fire or stove went out. Given a well-drained soil, a clay pot and fertilizer after the new year, the plant should grow well in most homes. Common sense watering when the soil feels dry is usually a good practice. Like many other fragrant plants, its fragrance is better when the plant is on the dry side and not overfertilized.

Although I only became acquainted with this charming family of plants about 16 years ago, they have been around since about the early 1600s when brought to Europe by sailors who had been to the South African cape. New species of plants for the royal gardens were always being sought, and the popularity of this interesting plant spread quickly.

The Colonial Americans brought scented geraniums with them to this country. By the Victorian Era, the rose and lemon scented geranium had become a mainstay of the collection of plants found in so many bay windows. Some of these reached the size of small trees in the cool, bright Victorian homes. They were snipped often to be used in potpourris, as book marks and to add fragrance to special letters.

My own plants came neither by sailing ship nor covered wagon, but in a seed packet via the U.S. mail. Not knowing what to expect, I planted a pack of scented geranium seeds in a flat in my new greenhouse. The novelty of trying so many kinds of seeds and watching them sprout was quite exciting that spring. Still unaware of the fascination that was to come, I nonchalantly transplanted my tiny geranium seedlings into small clay pots. The cool nights and bright days encouraged good growth and soon the little plants were ready for a move to a bigger pot. It was this encounter that began the lifelong attachment I now have for these plants. My first touch surprised and pleased me as the small greenhouse soon filled with the fragrance of rose, nutmeg, spice, lemon and pine. Knowing little or nothing about these plants, I soon set out to find a book to tell me more about them. This was not an easy task 15 years ago, as only a few books even had chapters about these plants.

It took awhile to glean the information that I needed. Plant catalogs, Adelma Simmons' books, the Van Pelt Wilson book, *The Joy of Geraniums* (Barrows & Co., 1965), and a few other sources soon had me on the scented geranium trail.

Not only was I obsessed with finding and collecting many different fragrances, but also with the art of propagating these gems. It was soon apparent that some cuttings rooted quite readily, while others, like the strawberry scented geranium, hardly ever rooted under normal conditions. I tried my rooting with heating cables, used rooting hormone, tried some in sand, in mixtures of sand and perlite, in sand and vermiculite and some in pure sand or perlite. Those that were rooted outdoors in the mist bed, used to propagate shrubs for our nursery, showed the best percentage of rooted cuttings. These were rooted in a sandy soil.

Although some methods seemed to be better than others for certain plants, the optimum conditions provided by the mist bed were what most of them needed. These conditions include a good, well-drained rooting medium, fairly constant misting or humidity in the air, excellent light, good air circulation and warmth. The ones that were rooting in the greenhouse or indoors in the bay window did best in late spring when the days were the longest, temperatures warm and lots of fresh air circulating from an open window or vents. Early in the spring, heating cables help speed up rooting in a cool greenhouse.

The rose and nutmeg rooted most readily, with the others such as mint, fruit and spices a little slower. The hardest to root is the strawberry. This one did best in pure perlite, but even then only a few rooted. Each spring a list of customers awaits the strawberry geraniums. They are vigorous to grow once rooted, with a delightful strawberry fragrance and a pretty but delicate bloom.

planting in the garden

Although these plants take well to pot culture, their growth is spectacular when they are planted in the garden. This can

continued

Scented Geraniums

continued

photo by author

Nutmeg' rambling

photo by author

'Mint Rose' variegated

photo by Barbara Bruno

Creamy-edged leaves of miniature scented geranium 'Variegated Prince Rupert' brighten a closely packed collection of plants growing in a window "greenhouse," while to the far right can be seen intricately notched leaves of a rose geranium.

be done either by placing the root directly in the ground or by putting the plant in a large clay pot that can be sunk into the garden. Growth will be very lush, thus providing many leaves for cutting for potpourri or other uses. When you use a clay pot, the transition from outdoors to winter windowsill is a bit easier. Simply lift the pot, scrub it well and cut back the plant by at least half. Move in to the brightest, coolest window possible. Try to have some fresh air circulating and mist for a while to ease the transition. These practices can be continued throughout the winter, if time permits, for insured success.

One of my customers told me that her mother always used rose geranium leaves in her apple jelly.

Do use those leaves that are cut back from the plant. Spread on a screen or hang bunches of stems, and they will dry well. Place a few crushed leaves in potpourri or sachet bags. Mixed with some orris root, tonka bean or some other fixative, these will go well with dried lavender bloom, rosemary, rose petals, or other fragrant flowers and leaves for a garden potpourri (see sources). A single leaf placed in a card or letter will add a special touch to any occasion. One of my customers told me that her mother always used rose geranium leaves in her apple jelly. Old recipes tell of crumbling the dried leaves in pound cake batter, lining cake pans with them and even placing them in sugar to give it a rose taste and fragrance. A few leaves added even to the most common of teas will add an exotic aroma and taste to it. Simply place a leaf or two in with the tea bag, pour in the boiling water and steep for the usual time.

Scented geraniums are members of the Pelargonium family. The name Pelargonium was derived from the Latin name for stork because the seed case of the bloom looks a bit like the bill of a stork. A perennial plant in its native warm climate, this plant can reach a large size. The leaves do give off a fragrant oil that can be distilled. For this reason, large fields of scented geraniums have been grown in North Africa and southern France for their use in the perfume industry. (Add a handful of leaves or rose geranium to a cup of alcohol, cork, allow to mellow for six weeks and you will have an extract of rose odor.)

hard to identify

It is sometimes hard to identify a scented geranium. Not only are there about 50 different ones with a rose odor, but there are also many with fruit, spice or other odors. The leaf forms are great in variety, some lacy, some fern-like, others delicate, while still others are thick or even velvety to the touch. Most are as strong smelling as the fruit or flower after which they are named, with the Roper's lemon rose holding its scent even longer than rose petals in potpourri and sachet.

Since some of the plants have two fragrances, many are not even correctly classed by putting them in a flower or spice category, for example, rose mint, lemon rose, or camphor rose. I find that after working with the plants for awhile, they are readily identified by their leaves as well as their fragrance. Of course, there are a few exceptions and it is sometimes quite difficult to tell the nutmeg from the pine or the apricot from a few of the floral scents.

P. crispum 'Gooseberry-leaved' has ruffly leaves, often variegated in yellow, green and a touch of pink. My favorite of the fruits next to the strawberry is the lemon. This is a sturdy, very easy to grow plant that is definitely lemon. Both the *P. crispum* 'Prince Rupert' and the 'Variegatum' are good patio and windowsill plants. They don't become as large and lanky as some of the scented geraniums and do quite well in a terra cotta pot. Both will become a small, lemon-scented shrub that can be shaped and trained into many interesting styles. Lime, orange, and apple are also delightful fragrances to have in your geranium garden. All are attractive, have nice but small bloom and very good scent.

The spice scents are rather easy to grow and probably are the easiest to propagate. Like the others, they will tolerate quite cool conditions and grow best with bright light. Also, like the others, they do best if cut back often to retain a convenient size for indoor culture during the winter. One exception would be when these are placed in a hanging basket or on a shelf where they can vine or trail. The nutmeg and coconut, as well as the variegated snowflake rose are the ones that seem to do best in a hanging basket for me. They all grow rapidly in a vining manner.

So whether you want one rose geranium for a powder room windowsill, a lemon for just over the kitchen sink, or a whole collection for that bay window that seems just perfect for them, you will enjoy these fascinating plants. Just remember, well-drained soil, clay pots indoors, good light, and cool nights will insure success. The pleasantest chore of your gardening will be tending these fragrant plants. Like me, you will soon want to share them with others, picking a leaf or two whenever someone brushes the plant unexpectedly and exclaims about the heavenly fragrance.

Sources for Scented Geraniums

Carroll Gardens
P.O. Box 310
444 East Main Street
Westminster, MD 21157
Phone: 301/848-5422
Catalog available

Triple Oaks
South Delsea Drive
Franklinville, NJ 08322
Phone: 609/694-4272
Send stamped, self-addressed envelope for list.

Sources for Potpourri Materials

Penn Herb Co., Ltd.
603 N. 2nd Street
Philadelphia, PA
Phone: 215/925-3336

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Lorraine and Ted Kiefer are owners of Triple Oaks Nursey in Franklinville, New Jersey. Lorraine lectures, writes and is a flower designer. Her special interests are herbs, fragrant plants, and scented geraniums.

DAFFODILS AT TOLLGATE FARM
A Rustic Garden in Bucks County

by Derek Fell

When Robert L. Green – an international consultant on fashion and living styles – purchased Tollgate Farm, Bucks County, in 1963, the furthest thought from his mind was cultivating a garden. A comfortable two-hour drive from his office in New York City, Tollgate Farm represented a peaceful rural retreat, a place to unwind on weekends from his work, and to entertain other creative people drawn mostly from the world of fashion and the theater.

Before acquiring the property with its fieldstone farmhouse built in 1740, Green had never planted a seed in his life and admits he barely knew the difference between a pansy and a petunia. But when actress Vivien Leigh arrived as his first weekend guest she was charmed by the 65 acres of rolling fields and recognized the potential for a beautiful garden. An avid gardener herself, she promptly pointed out an area adjacent to the house that could be made into a secluded perennial garden and showed where flowering bulbs could be "naturalized" as mass plantings across slopes and meadows.

Ignoring protests that he didn't have the time or the experience Leigh began making out long lists of plants and to maintain their friendship Green found himself purchasing the necessary seeds and nursery supplies. Gradually, the prospect of creating a beautiful garden took hold. To correct his lack of knowledge he began reading everything he could about gardening.

After laying out the perennial garden Green's first major purchase was 1,000 daffodil bulbs. He had seen mass plantings at Cambridge University, in England, that were hundreds of years old and he sought to emulate these, but even 1,000 bulbs didn't go far. "After surveying the results I decided that the plantings looked more like a pet cemetery," he says, "with little groups of flowers planted too far apart."

120,000 daffodils

The following year he bought 10,000 bulbs more and for the next 12 years planted daffodils at the rate of 10,000 a year until finally he had the desired effect – a sea of daffodils extending across meadows and slopes below the house, creating such a mass of color the effect stuns the senses. The entire valley looks like a scene from the English Lake District, with more than 120,000 daffodils shimmering in the sunlight during peak bloom.

"After surveying the results I decided that the plantings looked more like a pet cemetery with little groups of flowers planted too far apart."

In places the daffodils are planted as "drifts" – a single color sweeping across the ground, merging into another color, creating a broad solid stroke of flowers in different color groups, resembling brush strokes on a canvas. In other areas – such as the banks of a stream and the margin of a pond – the daffodils are planted in individual "clumps," a different variety making up each clump, randomly spaced like "dabs" of paint.

There are no mixtures. Each group of daffodils is a choice "named variety" selected personally by Green from a local bulb specialist, Charles H. Mueller, who maintains an extensive trial garden north of New Hope, on River Road. Mueller's bulb business is unique in the United States. Planted as "a living catalog," gardeners can see hundreds of varieties of flowering bulbs in bloom during spring and place orders for delivery at planting time in autumn.

The most successful named varieties at Tollgate Farm are 'Spellbinder' with lemon petals and sulphur-yellow trumpet; 'Aranjuez' with yellow petals and a large crimson-edged crown; 'Duke of Windsor' with white petals and crested orange crown; 'Apricot Distinction' with apricot-buff petals and small scarlet cup; and 'Thalia,' a triandrus "cluster-flowered" hybrid of pure white.

To maintain the plantings and encourage them to multiply they are fed twice a year with superphosphate – in early spring before the bulbs bloom and again in autumn before freezing weather occurs. This is done with a lawn spreader.

foliage a problem

Green points out that one of the problems with naturalized daffodil plantings is the tall foliage that remains after flowering. If cut before the leaves turn brown the bulb may be deprived of energy and fail to perform well the following year. At Tollgate Farm careful attention has been paid to locating the daffodils where the leaves can remain uncut until the middle of June without being unslightly. Planted at the edge of meadows and as islands along slopes the excessive foliage and intermingling grass growth has a rhythm of its own, creating waves as the wind passes over it. The effect is a valley of "textures," reminding Robert Green of a Van Gogh landscape.

In planting the bulbs Green wanted to avoid a military look, so he would take a bag and simply scatter the bulbs thickly over the ground, planting them wherever they rolled. At the height of their flowering, which usually occurs in mid-April, the plants appear entirely natural.

Some of the most spectacular clumps border a stream that gushes from a stone springhouse and cascades downhill, under trees and past thick clumps of forsythia. Charles Mueller, who helped with the planting, explained the extraordinary vigor of the daffodils here: "Pure leaf mold," he says. "When we started planting along the stream banks the soil was thick with it, and there's nothing daffodils like better than leaf mold.

"Another surprising fact about the Tollgate daffodils is the lateness of planting," according to Mueller. "Ideally daffodils are planted as soon after Labor Day as possible. Some bulbs never got into the ground until close to Christmas, and then the ground would freeze, and we couldn't continue again until March. That first season they might look a little weak as a result, but the soil and the fertilizing kept them coming back strong."

The extent of the plantings can be summed up in an anecdote Green tells

photos by Derek Fell

More than 120,000 daffodils at Tollgate Farm were massed and planted in drifts across meadows and slopes to create a natural effect.

about fashion designer, Bill Blass. Green had invited him to pick some daffodils to take home to New York at the end of a weekend visit, but he was horrified to discover that Blass had picked "bucketsfull." "I thought he had performed major surgery, but when I rushed out to look for the devastation I could not even tell where he had picked them – the flower display looked just as beautiful – like ballerinas taking a bow."

Green loves the English style of gardening with its parkland, perennial borders, enclosed gardens, naturalized plantings, and at Tollgate Farm he has successfully created such a landscape. "The landscape is English rolling hills, and through reading and travel I have learned a lot about English gardens and parks," observes Green.

Other favorite plants include tree peonies, bearded iris, roses and daylilies. The peonies are interplanted among the drifts of daffodils and provide a surprise element. "What a terrific gift a tree peony makes," he says. In his perennial garden delphiniums, garden lilies, phlox and columbines are favorite subjects. "Daylilies are the survivors of the world," he declares. "You can move them so easily and create dramatic color schemes with them. They include every color imaginable, except pure white and a blue.

"I'm proud of my garden," he says. "Gardening is therapeutic, but it has to be well thought through. I want to share my garden with other creative people. It's a way of creating beauty without being a painter or a sculptor. All is a collaboration between Mother Nature and yourself."

Another surprising fact about Tollgate Farm is that Green does most of the work himself. "It's common knowledge that to be invited to Tollgate Farm you have to be either an excellent weeder or an excellent cook. The reason for the excellent cook is because it allows me to spend time in the garden."

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Derek Fell is a garden writer and plant photographer living near Gardenville, Bucks County. His most successful books are *How to Photograph Flowers, Plants & Landscapes* and *Vegetables – How to Select, Grow & Enjoy,* published by HP Books. He is also designer of a labor-saving gardening system called "Derek Fell's Automatic Garden," which eliminates most of the chores normally associated with gardening, including weeding and watering. The system is available as a kit from International Irrigation Systems.

Triandrus daffodil 'Thalia'

Crisis Management in the Garden: *a wedding day*

by Marjorie B. Hunt

When my daughter told me she planned to be married at home, I thought of April and the luminous bank of daffodils above our lily pond. I placed twelve phantom chairs on fresh spring grass, and mentally coaxed the star magnolia into bloom.

Though able gardeners grow tender squashes, their children are often tough minded. The wedding, declared my daughter, would be in August, and it would not be small. Reluctantly, I gave up daffodils for zinnias, but I held my ground on the most important matter: no caterer would bring his plastic punch bowls and prefabricated sandwiches into my country kitchen. The cooking would be mine. But in August?

August on our small farm means a compost pile full of corn cobs, hung jelly bags slowly dripping purple syrup, rampant pole limas yielding basketsful of leathery pods, the warm, itchy smell of tomato sauce perking on the stove. Most of all, it means long, hot days of work that last into evening and end in bone-weary sleep.

If I were to reserve three weeks for wedding preparations and cooking, I'd need to put all gardening chores on "hold." Fortunately, I'd worked my garden patch long enough to know that harvest timing was not beyond some tampering. We'd count on June-ripening peas for winter eating, freezing only those limas that ripened after things calmed down. Potatoes and onions could stay in the ground until early September. The big freezer-bound green bean harvest could be timed to come early. Mulch would hold off weeds. Only the tomatoes, already started in flats, hung like big, red question marks over my head as I fretted about invitations and menu.

Impulsively, I upended the wheelbarrow of Romas into a large plastic trash bag and wrestled the monstrous pouch in the freezer. Then, I promptly forgot it.

In mid-July, two months after I'd taken the risk and set out my seedling plants, I spotted the first deep red 'Rutgers' under a mulch-sprawled vine. That was fine. I knew that daily Easter-egg-style hunts would constantly supply our table from then on, and that I could count on a huge mound of fresh-basil-topped tomato slices to fill a large white porcelain-lined tomato-red casserole and to brighten the wedding buffet.

Until a week before the wedding, I thought the smaller, pear-shaped 'Romas' I favor for sauce would hold off ripening until after the event. Maybe it was the summer's drought that did me in. By three days before the wedding, one whole side of my garden looked like a forest of foliage ridiculously overtrimmed with glossy red Christmas tree lights. I pretended I hadn't seen them.

During the informal wedding reception, a nine-year-old guest, bored with all the handshaking and chatter, asked if he might pick my ripe "peppers." At the time it seemed like a good idea. I guess almost anything would have then. Only as the first guests left did I see what a thorough job he had done. Our large wheelbarrow practically sagged with the weight of that dazzling heap of red. I wondered how such a small boy had managed to push it clear to the back porch. Yet not one post-wedding thank-you note failed to mention the casual munificence of the wheelbarrow full of tomatoes, the found symbol of a true farm wedding.

What guests could take to be a well placed decoration, however, had other symbolic value for me: more work. Work, moreover, against the backdrop of numerous lingering houseguests and

my own deep fatigue.

While preparing wedding food, I'd often been helped by the chest freezer in my basement. Like an out-of-the-way cupboard or a seldom used dishwasher, it had become a place to stash things until I was prepared to deal with them – wrapped layers of homemade wedding cake awaiting frosting, long loaves of bread, flavored butters, sacks of ice cubes. Impulsively, I upended the wheelbarrow of Romas into a large plastic trash bag and wrestled the monstrous pouch into the freezer. Then, I promptly forgot it.

About the time the last champagne cork had been raked from the flower borders along with early fallen leaves, I looked for freezer space for newly harvested sweet potaoes. To my horror, I found the freezer blocked by a bulging bag. The sauce-making chore could be delayed no longer.

The Romas clunked together like red croquet balls as I poured the first-washed lot of them into my largest canning kettle. Then I doused them with a torrent of boiling water, counted to ten, and drained them through a colander. It was all an experiment, and I well recalled that some of my earlier experiments had ended in fruit flies and compost. Either we'd have sauce, I figured, or I'd have a well deserved object lesson.

Imagine my delight in discovering that my briefly scalded croquet ball tomatoes slipped from their skins as easily as rapidly chilled hard boiled eggs pop from their shells when rubbed between the palms of hands. I picked up a skinless tomato blob and discovered it could be squeezed to remove much of the lymph-like juice that it takes so long to reduce in normal sauce making.

Adding some basil and a few onions, I boiled the pulpy tomato wads, ran the mass through a food mill to remove the seeds, and simmered the thickening sauce about an hour and a half longer until it was thick enough to cool in paper cups. There'd been no day-long watching and stirring in a vapor-filled kitchen, yet the sauce was thick enough to hold a knife upright or to retain its blade imprint for several seconds before the fissure oozed shut.

My other daughter says that if she marries at all, it will be in the registry office of a foreign city. Yet August always seems to bring a crisis in some form, if only the usual one of too much produce and too little time. Twice-frozen tomato sauce has become a standard in our home. Only acid fruits, I've learned, should be refrozen. Two freezings will not diminish their vitamin content, and their acid makes them less hospitable than other produce to the bacteria of spoilage.

Other work-delaying strategies have helped me in jelly making. I've frozen strawberries and red currants early and, using a recipe designed for frozen fuit, made jam or jelly in November. By freezing roadside-picked wineberries and then, after thawing, combining them with later-picked garden blackberries or raspberries, I've taken advantage of their abundant juice and pulp without having to settle for their bland flavor.

Twice-frozen tomato sauce, however, is this procrastinator's prize. We use it in soups and pasta dishes all winter, and its smooth richness will always carry with it the ghost-taste of fresh tomato slices from a wedding buffet and memories of a wheelbarrow heaped with Romas.

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Marjorie Hunt's most recent book is *Basic Organic Gardening* (Rodale Press, 1982) published in paperback. She coauthored *The Rodale Guide to Composting* (1979), has provided the text for two gardening calendars, and has contributed sections or chapters to four other Rodale Press books. She grows vegetables and a few flowers on a forty-three acre farm in Upper Bucks County.

photos supplied by author

The wedding reception

Watermelon filled with home-grown fruit

The author shows empty and planted troughs.

1. *Chamaecyparis pisifera* 'Snowflake'
2. Rock tufa
3. *Chamaecyparis obtusa* 'Gracilis'
4. *Sedum dasyphyllus*
5. *Sedum nevii*
6. *Sedum cauticola*
7. *Dianthus alpinus*

photos by Edmund B. Gilchrist, Jr.

TROUGHS:
Making Them Lightweight and Portable

by Jane G. Pepper

Lifting heavy troughs filled with soil and rock garden plants is no fun even for the younger gardener. When you get past three score years and ten it becomes downright difficult, and Charles Becker decided he had to come up with an attractive trough that he could move around by himself.

Stone sinks and watering troughs as planters have been popular among rock gardeners in America and England since the 1920s. Most of the original troughs and sinks weigh between 100 and 200 pounds. Fill them with soil, add a few plants and you have a real load. When the original troughs became hard to find some gardeners started to make their own, using equal parts cement, perlite and peatmoss. These models were lighter than the original product but weighed in around 50 to 75 pounds – still too heavy for Charles Becker.

After much experimenting, Becker came up with a trough that weighs only five to six pounds when empty. The base is styrofoam. To this he adds a layer of epoxy glue and covers it with a coating of dry sand. The ingredients for the Becker trough are not exactly readily available but with a little good fortune and searching you can probably come up with what you need to make your own Beckerlite trough.

Your first challenge is to find a good styrofoam base. With any luck your wealthy great aunt will send you a box of expensive steaks from the Midwest. The steaks you can give to whomever you please. The styrofoam chest in which the steaks were packed will serve as the base for your trough. Unlike the average ice chest you purchase in the hardware store, these steak chests have 2-in. thick walls, which provide not only strength to hold the soil but also excellent insulation.

Cut each chest in half horizontally with a cross-cut saw and it will make two troughs. Use the lid as the base for your second trough, securing it to the walls of the chest with epoxy glue.

Epoxy glue is sold in small tubes in hardware stores. Larger quantities are hard to find and the product so expensive you might call it liquid gold. National Hardware Store, between 4th and 5th Street on Spring Garden, Philadelphia, will order you a one-gallon container for around $40.00.

Handling the epoxy is a challenge and the following hints may be helpful:

1. Mix only the amount of epoxy you can handle quickly. (An aluminum pie tin is a handy mixing container.)
2. If you keep the epoxy mixture cool by floating the mixing container on ice water you will keep the resin fluid for a longer period.
3. Clean-up can be done with water before the epoxy hardens. Lacquer thinner is a useful solvent but the job will be a lot easier if you do it when the epoxy is still soft.

Before you add the epoxy glue, drill 10 to 12 half-inch diameter drainage holes in the base of the chest and coat the bottom of the chest, both inside and out, with asphalt roof paint. Because the styrofoam does not breathe, these drainage holes are essential.

Let the roof paint dry overnight before you brush the chest with epoxy glue – again both inside and out. Becker warns that too much glue will melt the styrofoam. While the glue is still tacky sprinkle the dry sand generously over all surfaces. If you want to add ground oyster shells or fine gravel (available at agricultural supply houses) incorporate these into the sand ahead of time.

To make the top edge of the chest more like chiseled rock, add a one-quarter-inch layer of a thick mortar of epoxy and dry sand. Apply the mortar with a putty knife after the first coat of glue has dried. When partially hard, indent the edge in a pie-like fashion with the knife to give it a more interesting texture. Let the chest dry for at least 24 hours before planting.

Into his featherlite sink Becker places his standard rock garden soil mix (three parts loam, two parts sphagnum peat and one part sand or perlite) and fills it with some of the plants listed below. Once planted he covers the soil with a top dressing of granite chips and puts the trough on concrete blocks to provide good air circulation.

Over winter Becker places some of his troughs in an unheated coldframe. One however stays out through the winter protected from sun and wind by a chicken wire and burlap screen.

Trough gardening is for city gardeners with small terraces, for suburban gardeners who want to expand into their driveways and for all those who want to feature some extra special plants. Try the Becker construction method and see what you can create in a trough.

Instructions for Other Kinds of Troughs

Instructions for making three kinds of troughs are available, courtesy of American Rock Garden Society. Specify which instructions you want: (1) simulated stone troughs of hypertufa; (2) lubera method (plastic chicken wire, sand and cement); (3) frostproof naturalistic planter (Foster method). Send a stamped, self-addressed envelope to Audrey Manley, Pennsylvania Horticultural Society. 325 Walnut Street, Philadelphia, PA 19106.

Appropriate Plants for Troughs

Antennra plantaginifolia
Arenaria montana
Chamaecyparis obtusa 'Gracilis'
C. obtusa 'Lycopodioides'
C. obtusa 'Stokes'
C. pisifera 'Snowflake'
Dianthus alpinus
Erigeron uniflorus
Geranium dalmaticum
Linum perenne
Sagina normaniana
Sedum cauticola
S. dasyphyllum
S. nevii
Sempervivum arachnoideum
Thuja orientalis
Thujopsis dolabrata
Thymus serphyllum

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Charles Becker, Jr. was vice-president of the Pennsylvania Horticultural Society from 1958 to 1961.

THE WHITE WONDER *and its Mystery*

by Ruby Weinberg

Do you know or grow the plant pictured here? *Growing* is not always *knowing* it; this is a plant that is often sold without a botanical label. Or, possibly, you've seen it tagged with one of a variety of common names. If you came upon it in a small pot, sitting amidst other house plants in a grower's display, you might have thought: "What a pretty little thing!" But the demure appearance of the pretty little thing belies the fact that this is one of those ornamentals that takes time to develop. Eventually, it will grow into a large and very attractive specimen.

My hobby of collecting subtropicals for my indoor garden has led me many places. On a visit to a rare plant nursery in South Florida several years ago, I found it in a 3-in. unlabeled pot. The knowledgeable grower had a huge assortment of subtropicals, all with neat botanical labels. This plant was an exception. The nurseryman admitted that he was unable to identify it.

I bought it, placed it in my greenhouse, and for five months, nothing happened. At that time it had a bushy habit, wiry, 8-in. long stems, some decidedly pink. One stem was longer than the others, a sign that the plant was a candidate for a hanging basket. The leaves were tiny. Some were pure green, a few were mottled, but the rest were completely chalk-white.

The leaves were tiny. Some were pure green, a few were mottled, but the rest were completely chalk-white.

As summer approached, the plant at last began to grow. I transplanted it into a 4½-in. pot. Now, some of the stems stretched upward while others tumbled in an airy fashion over the sides of the pot. Leaves were opposite on the stem attached with petioles or leaf stalks, but only the base of the stems remained pink. At this time, another feature became more obvious. Many variegated leaves appeared, the green spotted and blotched with white, and no two patterns exactly alike. The solid green and the variegated leaves grew from an inch to 2 in. in length. But the white leaves remained small and appeared, as in clusters, all over the plant. If anything, the white intensified. Growth was now vigorous.

photos by Ruby Weinberg

Above and to the right: The only identification the author could find was from Logee's Greenhouses. They identified it as *Alternanthera* 'Snowball.' Can you do better?

At this point, I was determined to learn more about my specimen. None of my references helped, and even a local botanical garden could not pinpoint its identity. However, a cut stem and description sent to Logee's Greenhouses in Danielson, Connecticut, brought me my answer. They identified the plant as *Alternanthera* 'Snowball.' That is how it is listed in their catalog. *Hortus III* lists *A. ficoides* 'Versicolor,' with snowball as a common name, but its leaves are copper- or blood-red, not white. So I ruled that out. After a discouraging search, I must confess I can't identify the specimen. I'd be interested if any reader has the answer.

At a later date, I found the same plant in another nursery labeled *Alternanthera* 'Snow-in-the-Jungle.' You might have seen it with another "snow" name. In the garden world, it seems, all too many plants with white parts are called snow something-or-other.

I was disappointed with that identification. In rechecking my reference books, I discovered that *Alternanthera* usually has insignificant flowers. While I do grow some things for their lovely foliage, I always hope to find plants that have attractive flowers as well. When my *Alternanthera* bloomed in its third year, I found the documented description of flowers to be all too true. The chaffy white blooms, resembling tiny astilbes, lacked distinction. However, when the plant was ready for a 5-in. pot, I discovered that the small white leaves were every bit as lovely as any blossoms might be.

Alternanthera is a genus of plants that

seems to have fulfilled a manifest destiny: they were, and still are, being used largely for bedding purposes. There are many kinds, with a variety of colored leaves, hence the common names parrot leaf, calico, copperleaf, and Joseph's coat. In formal patterned beds, the colored foliage is used as a foil against flowering annuals and is sheared for uniformity. For this purpose, one color and type is rooted each summer and held over indoors during the winter for the next year's display.

There are about a half a dozen well known species, and many cultivated forms of this plant. But I had never before found an *Alternanthera* with the kind of distinctive beauty that warrants its use as a specimen cascading plant.

It is now almost four years that I have been growing *Alternanthera* 'Snowball.' The original plant has never been pinched, sheared, or pruned, but has maintained its bushy habit in a 10-in. pot, with stems cascading to about 3 ft. Time has enhanced its charm.

A. 'Snowball' is a native of Latin America and needs full sun, winter and summer. It will endure winter night temperatures down to 50°-55°F., but prefers it warmer. It basks in summer heat. It is not fussy as to soil mix.

Cuttings root easily at any month, in moist vermiculite or perlite. In July and August, however, rooting is especially quick, a matter of only a few days.

Leaves of the listed *Alternanthera* are described as spoon-shaped or spatulate. But 'Snowball's' are lance-shaped, tapered at both tip and base, and slightly twisted. It is, in my opinion, the tiny white leaves that are its glory. They have an air of expectancy about them, like birds just at the point of departing from a slender branch and taking flight. At a distance, the white leaves could easily be mistaken for diminutive flowers. Not so amazing when one realizes that in poinsettias and flowering dogwoods, for example, it is the modified leaves or bracts that are the chief attraction and are sometimes mistaken for flower petals.

Indoors, by the time this *Alternanthera* fills a 5-in. pot, one can begin to appreciate its beauty. At this stage it looks delightful in a white basket and can be used as a centerpiece for a table.

Hanging outdoors in the summer, *A.* 'Snowball' is especially outstanding when suspended against the background of a dark house or fence. It makes a lovely addition to an "all white" garden.

Cut stems, at any time of the year, are long-lasting in water, either alone or with the addition of small, white flowers such as miniature carnations. I have arranged them, in the summer, with blooms of dainty *Dianthus* 'Snowflake.'

As with so many plants, its name is not particularly descriptive. There is nothing round or ball-like about *A.* 'Snowball.' Perhaps some imaginative official will see it and rename it *Alternanthera* 'White Flight.' Regardless of the name, to me, it will always remain a white wonder.

Plant sources:

Logee's Greenhouses
55 North Street
Danielson, Connecticut 06239

Return to Eden Gardens
1472 74th Street, Oceanside
Marathon, Florida

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Ruby Weinberg is a landscape designer and grower of broadleaf evergreens. Her hobby is collecting and studying subtropical plants for the home and greenhouse.

photos by author

Purple moor grass (*Molinia caerulea* 'Variegata') explodes before a backdrop of frost- burned hay-scented ferns.

An Autumn Portfol

by H. Peter Loewer

When field goldenrod stood but two feet high and crickets chirped at a fevered pace, the summer days were noticeably shorter; twilight gained upon the heat of summer and though all was still ablaze with color, the plants in my garden began to lose their sharpened edge and a softer mood appeared.

By mid-September the goldenrod blooms and shares its fading glory with aster's purple glow, while monarch butterflies vibrate against the clear blue skies of early autumn. In the garden the snow white blossoms of phlox dot the evening dark and the pace of summer slows.

By early October the first frost will have come and gone, the insects will be stilled and leaves will start their brilliant change only to fall to the winds and rain of winter. The sounds of summer are past once more and the garden becomes a quieter place to walk and to see the beauty of the shortened days.

I took my camera into the garden to record this passing of a season. I looked for quiet colors: muted shades of beige and brown; deep maroons and ambers that tinted the shapes and textures of leaves and stems long hidden by the garish glow of summer's time. I saw a garden not grand or bold but a place of cool and calm waiting for winter's mantle of white.

continued

I saw a garden not grand or bold but a place of cool and calm waiting for winter's mantle of white.

A cotoneaster's scarlet berries dance down a garden ban

A lone myrtle bloom *(Vinca major)* is fooled by shortened days.

io

Maiden grass plumes (*Miscanthus sinensis* 'Gracillimus') wave and consort with the autumn wind.

An Autumn Portfolio

continued

A pile of sunflower heads waits for more bluejays and chickadees.

More like denizens of a coral sea, the plumes of zebra grass stand against an autumn sky (*Miscanthus sinensis* 'Zebrinus').

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Peter Loewer is a botanical artist and scientific illustrator who writes and illustrates his own books. These include *Evergreens: A Guide for a Landscape, Lawn & Garden* (Walker, 1981) and *Growing and Decorating with Grasses* (Walker, 1977). Loewer won the 1981 Garden Writers Association of America Award for best Feature Article in a Magazine for "Ornamental Grasses for the Garden," which appeared in the September 1980 *Green Scene*.

HOSTAS:

The *New* Colored-Foliage Perennials

by Warren I. Pollock

You are in for a big surprise if you haven't noticed what has happened to hostas during the past dozen years or so. Hosta specialists have introduced hundreds of new cultivars with a gamaut of leaf colorings, shapes and sizes to rival any of the *indoor* foliage plants. And there seems to be no end to the possibility of even more unique varieties.

Hostas have been in Western cultivation for nearly 200 years. Most originated in Japan, a few in China and Korea. Their gardening merits remain unchanged: attractive foliage, hardiness, low maintenance, very long life, and the ability to thrive in deep shade. Today they are no longer considered Victorian plants for out-of-the-way or difficult sites. The new hostas have become fashionable perennials, with greatly extended usefulness in the landscape.

If the genus *Hosta* has any fault, it is the confusion with its nomenclature. Many plants are sold incorrectly labeled. Over the years, species and subspecies names have been changed. Some plants may not have grown in the wild and, therefore, should be classified as cultivated varieties (cultivars) instead of subspecies. And the names of several varieties are often misspelled. *Funkia,* the genus name that was discontinued in 1905, and plantain lily, the old-fashioned and uncomplimentary common name, continue to appear in gardening literature. (Hosta is the proper common name.) The American Hosta Society (AHS), founded in 1968*, is trying to straighten out the nomenclature, and it serves as the official register for new cultivars.

Over 200 new cultivars have been registered, and at least that number are named but not registered. Finding new hostas has not been overly difficult. Many hostas are unstable and readily sport bud mutations, sometimes with distinctive attributes. Seedlings are also a good varietal source. The American Hosta Society annually furnishes seeds collected from various varieties to those who desire to discover new, and possibly highly sought-after, cultivars. Hybridization is being carried out actively by hobbyists and professionals. And several new species have been identified, which are now in commerce.

Leaf sizes of the new hostas vary enormously from about two square inches to over a square foot. Shapes can be sword- to cordate-like; some are roundish. Leaf thickness can be paper-thin to cardboard-thick, the surface smooth, corrugated, puckered or waffled, and the edges crimped or ruffled. A much desired characteristic is rigid, spooned, or cup-shaped leaves that will hold water after a rainfall or watering. In addition to all-green, leaf coloring can be all-yellow, all-blue or highly variegated.

'Gold Standard,' a good grower, was $75 six years ago. It is now available from several growers at $20 or less.

Here are some of the new hostas, all from the top of the 1982 AHS popularity poll. Other good new species and cultivars that make outstanding landscaping plants are listed in the table.

***H. sieboldiana* 'Aureo-marginata.'** This is the most popular hosta among AHS members. It is frequently called *H. sieboldiana* 'Frances Williams' or simply 'Frances Williams.' It was discovered by the late Mrs. Williams of Winchester, Massachusetts, in 1936 growing in a bed of *H. sieboldiana* 'Elegans.' The big, round-shaped bluish leaves have wide and varying golden-yellow or chartreuse margin widths, with a heavy seersuckered and ribbed texture. In spring and early summer, the leaves take on a beautiful, glaucous grape-like bloom, which is sometimes described as pruinose. Large clumps and drifts of this variety are eye-stoppers.

'Gold Standard.' 'Gold Standard' has a parchment-gold leaf with an irregular narrow, bright dark-green margin. Found in 1969 by Pauline Banyai of Madison Heights, Michigan, it was not introduced until 1976. Although considered a medium-size plant, it is a vigorous grower and the mother-plant is now over 5-feet across and 3-feet tall at the center. This hosta won the coveted AHS Eunice Fisher Award in 1980.

***H. ventricosa* 'Aureo-marginata.'** This is another outstanding medium-to-large plant. Alan Bloom, England's foremost grower of perennials, discovered it in a Dutch nursery. (It is listed in England as *H. v.* 'Variegata.') The green leaves have an interesting variegated pattern of white and cream, from margin to mid-leaf. This variety is a gorgeous plant when established. ***H. montana* 'Aureo-marginata,'** which is second in the AHS poll, has oblate shiny green leaves that have a handsome, wide yellow margin. There are some undulations on the edge. After planting a single division, it may take this hosta more than three years to get established – but growers find it's well worth the wait.

***H. tokudama* 'Aureo-nebulosa'** (sometimes listed as **'Variegata'**). This is one of the most beautiful hostas – and possibly most valued. The roundish leaves have a heavy puckered texture and are deeply cupped. They have a glaucous blue-green coloring, irregularly streaked and clouded with a light yellow. An expensive plant, it is a slow grower, forming a medium-sized clump.

***H. lancifolia* 'Kabitan.'** It is an excellent small-leaf variety. The 1-inch wide, arching lance-shaped leaves are thin textured and ruffled, with a narrow green margin. The 8-inch high mounds make nice edging plants. Another outstanding small-leaf hosta is **'Golden Tiara,'** the AHS Nancy M. Minks Award winner in 1980. The leaves have a heavy texture with a striking gold border. It is a rapid, compact grower, and also well suited for borders.

'Flamboyant.' 'Flamboyant' has had hosta enthusiasts taking extra-special note. Registered in 1978 by Paul Aden of Baldwin (Long Island), New York, this varietal represents the first of a series of "new look" cultivars. Each leaf has a somewhat different variegated pattern

continued

*AHS's organizing meeting was hosted by past PHS officer Dr. John C. Wister and his wife, Gertrude, at their Swarthmore home.

1. 'Bold Ruffles'
2. *H. crispula*
3. *H. tokudama*
4. *H. clausa*
5. unnamed yellow seedling
6. 'Buckshaw Blue'
7. 'Green Piecrust'
8. *H. undulata*
9. 'Nakiana'
10. *H. undulata* 'Albo-marginata'
11. 'Blue Boy'
12. unnamed seedling
13. unnamed seedling
14. ajuga

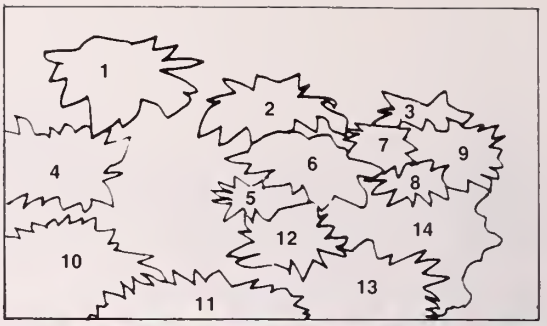

photo by Gretchen Harshbarger

Bouquet of colors from hosta foliage

of greens, chartreuse, gold, yellow, and white. It forms a medium-sized clump, described as looking like a "flower."

'August Moon.' 'August Moon' is a very good, large-size hosta with all-yellow or all-gold leaves. It has a heavily embossed texture, and the color holds until the end of the season. *(H. sieboldiana* 'Aurea,' commonly called Golden Sieboldiana, has a similar appearance, yet comes from a different parent.)

'Krossa Regal.' 'Krossa Regal' is the most popular non-variegated hosta. Imported from Japan by the late Gus Krossa of Michigan, it is truly a regal plant with large, handsome, frosty grayish-blue foliage that is very smooth and has a leathery look. The upright leaves spread to form a 2- to 3-foot tall, vase-shaped plant. The flower stems are very tall.

landscaping ideas

With the large repertoire of plant sizes and exotic foliage colors, shapes and textures now available, the use of hostas in shady home and commercial setting appears limitless. Many will thrive on just a few hours of shade at noontime, and a few will even grow in all-day sun after becoming well-established. There is probably no other perennial that offers the gardener so many possibilities for easy, care-free landscaping.

Small- and medium-sized varieties make excellent edging plants. Hosta borders of yellow, blue, green and variegated foliage can be striking next to a lawn, or enclosing island beds of small shrubs, annuals, or other perennials.

An increasing trend is to use hostas as groundcovers. Once established they will hold soil on banks and block out weeds. Although not evergreen, they can provide an interesting alternative to pachysandra and ivy, which in a large area can have a dull monochromatic sameness. Any of the low growers are stunning masses.

The medium-sized plants make good foreground accents if allowed to grow to good-sized clumps, and especially if planted in odd numbered groupings. Although the larger hostas are considered background plants, they can be used anywhere in the terrain where their size and shape is needed and can be appreciated. They complement trees and shrubs nicely in a woodland setting. Most of the big hostas display their best character when they stand alone as a single clump.

The "yellows" can brighten up any dull area. They are showoffs and can be very useful in the right locations.

Many landscape designers are using hostas in wide stair-step, undulating curves of contrasting color varieties, in a fashion popularized by Roberto Burle Marx of Brazil with lush tropical foliage plants. Drifts or waves of small-sized hostas are in front, larger plants behind, and then, if room, still larger and taller sizes in the back row. If viewed from all around, the tallest plants are placed in the center. Another favorite effect is an earth mound planted entirely with hostas of different leaf colors and variega-

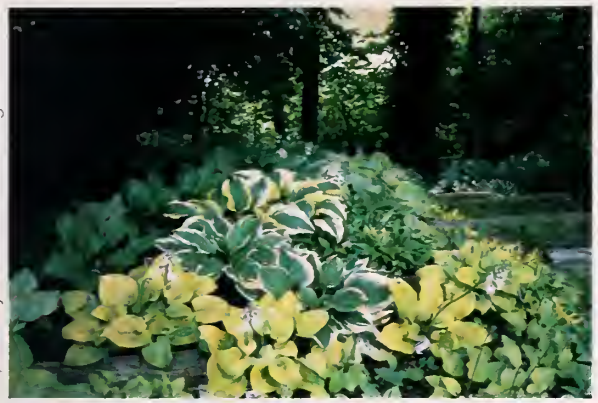

photo by Gretchen Harshbarger

Small mound planted with hostas

photo by Michael Heger

H. tokudama 'Aureo-nebulosa'

photo by Michael Heger

H. sieboldiana 'Aureo-marginata' ('Frances Williams')

tions. The appearance is like a flower bouquet – one that lasts the five months from mid-spring until first frost.

hosta how-to and sources

Hosta culture is dirt simple. They are rugged and do not need pampering. Most varieties prefer filtered or dappled shade from tall trees. All hostas will grow in deep shade; however they may not flower. The "blues" look their best where they receive little, if any, direct sunlight. Many of the "yellows" have a better color if they get *some* sunshine each day. Strong mottled or shifting light for most of the day is best.

Differing from many perennials, hostas do not need to be divided or replanted after several years. They will thrive undisturbed in their original site – outliving gardeners and becoming heirlooms. Two good planting principles, therefore, are: dig a big hole, and prepare the soil properly. Hostas appreciate a moist, humusy, well-drained planting medium. I use a mixture of 1/3 good garden soil, 1/3 compost or peat moss, and 1/3 vermiculite or perlite, with a handful of superphosphate blended in. Plant so that the crown or buds are just below the original ground level. Water well, and keep the plant well watered the first year. If planted in the fall, mulch lightly the first winter with a loose material. Do this after the first frost, and remove the mulch soon after the last frost.

Small quantities of a complete fertilizer applied each year in early spring and midsummer are beneficial. Whenever rainfall is scant during the hot summer months, soak the ground well to help keep the plants looking their best and increase crown size.

Slugs love to eat hosta leaves. The best way to stop them is an annual preventive maintenance program using slug bait.

Very few, if any, of the new hosta varieties are available at local nursery and garden centers. They must usually be obtained from hosta specialists and hobbyists. Although there are several in the Delaware Valley, the largest selection is available from mail order suppliers who ship bare-root plants in spring and fall. Hostas are almost always sold as single bud divisions.

Many of the new hostas are expensive. Some varieties grow fairly rapidly, making several new divisions annually, which can be separated from the crown to sell or to propagate more plants. However, many other hostas multiply slowly, adding maybe just one new division each year. Similar to daylilies and irises, the new varieties start out high priced. But those hostas that multiply rapidly come down in cost fairly soon. 'Gold Standard,' a good grower, was $75 six years ago. It is now available from several growers at $20 or less.

Tissue culture* is a propagation method now being used by several large commercial nurseries for rapidly increasing the stock of some species and cultivars. This year a dozen hostas, that began their lives in test tubes, have

continued

been introduced. Within three years we should see three dozen more varieties available. Initial prices will be $10 to $30, but they should come down in a short time as the supply increases.

Don't be dissuaded from going after the new hostas because some are expensive. There are scores of good ones from $2 to $10 (see table). Most gardeners increase their own stock for landscaping needs. Divisions can be easily split from clumps, preferably in spring and autumn. Make sure that a piece of crown is taken along with each root section.

*See "Tissue Culture: Micro-propagation and Disease Free Plants," R. Niedz, *Green Scene*, November 1980.

JOIN THE AMERICAN HOSTA SOCIETY

Members receive newsletters and an annual bulletin. They list mail-order nurseries that grow the new varieties, and biannual national and regional meetings where gardens are visited. Annual dues: $7.50. Write to The American Hosta Society, Mrs. Joe M. Langdon, Secretary, 5605 11th Avenue South, Birmingham, AL 35222.

Last year the Mid-Atlantic Regional Hosta Club was formed for enthusiasts in New Jersey to mid-Virginia. Meetings, held at members' homes during the growing season, are an excellent way to see some of the new varieties. The plant auctions always offer a few of the unusual hostas at reasonable prices. For the meeting schedule, contact the author at 202 Hackney Circle, Surrey Park, Wilmington, DE 19803.

A SAMPLING OF NEW HOSTAS IN THE $2 - $10 PRICE RANGE

Hosta Name	Plant Size	Leaf Description
'Antioch'	M-L	white creamy-edge
'August Moon'	L	gold; crinkled
'Birchwood Parky's Gold'	S	gold; cordate
'Blue Cadet'	S	blue; roundish
'Butter Rim'	S-M	yellow-edge; blunt-tipped
'Candy Hearts'	S	green; cordate
crispula	M-L	wide white-edge; slightly wavy
'Crinkle Cup'	M	green; crinkled, cupped
fortunei 'Obscura Aureo-marginata'	M	yellow-edge; wide
'Francee'	M	white-edge; cordate
'Gold Crown' (aka 'Golden Crown')	M	yellow-edge; wide
'Gold Edger'	S	gold; roundish
'Green Gold'	M	yellow-edge; wide
'Green Piecrust'	L	green; ruffled
helonioides 'Albo-picta'	S	white-edge; lance-shaped
'Happy Hearts'	S	green; cordate
'Krossa Regal'	L	blue-gray; smooth, upright
lancifolia 'Kabitan'	S	yellow, green-edged; lance-shaped
lancifolia 'Subchrocea'	S	yellow; narrow, wavy edge
'Louisa'	S	white-edge; lance-shaped
'North Hills'	M	white-edge
sieboldiana 'Aureo-marginata' (aka 'Frances Williams')	L	blue, yellow-edge; glaucous, seersuckered
sieboldiana 'Elegans'	L	blue; glaucous, seersuckered
tokudama	M	blue; cupped, seersuckered, glaucous
'Wogon Gold'	S	yellow; lance-shaped

Key: S (small), M (medium), L (large). Although leaf descriptions are the same for many of the varieties, each hosta has distinctive coloring, pattern and shape characteristics.

Sources

No Mail Order nor Catalog

Richard M. Korte
1407 Bramble Lane
West Chester, PA 19380

Maria Plater-Zyberk
R.D. 2, Art School Road
Chester Springs, PA 19425

Mail Order

Alex J. Summers
Rt. 1, Box 222-E
Bridgeville, DE 19933
(List, 25c)

Hatfield Gardens
22799 Ringgold Southern Road
Stoutsville, OH 43154
(Catalog, $1.00, deductible)

Homestead Division
9448 Mayfield Road
Chesterland, OH 44026
(Catalog, 25c)

Iron Gate Gardens
Rt. 3, Box 250
Kings Mountain, NC 28086
(Catalog, $1.00, deductible)

Piedmont Gardens
517 Piedmont Street
Waterbury, CN 06706
(List, 25c)

Powell's Garden
Rt. 2, Box 86
Princeton, NC 27569
(Catalog, $1.50)

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Warren I. Pollock gardens on a small suburban, wooded lot in northeast Delaware. He frequently writes on shade gardening, and has contributed articles to *The New York Times* Sunday gardening section and The American Hosta Society *Newsletter* and *Bulletin* of which he is assistant editor. He is a member of the Advisory Board of The American Hosta Society, and chairs the Mid-Atlantic Regional Hosta Club. In July 1982, he gave a talk, "Hostas in the 1980s: An American Perspective," to the recently formed British Hosta and Hemerocallis Society which is affiliated with The Royal Horticultural Society.

HYBRID POPLAR: *the energy crop*

by Edwin A. Peeples

Fast growing hybrid poplars can be converted into fuel to run trucks, greenhouses and residences. This story tells how one entrepreneur is successfully doing that right now.

In front of the rural offices of Miles W. Fry & Son, Inc., at Ephrata, Pa., stands a pick-up truck with a curious tank-like piece of equipment directly behind the cab. A bold sign says:

This Truck Runs on Wood Only.
No Gasoline Tank.
No Petroleum Fuels.

The company literature elaborates on the sign. This truck "gets 20 miles to a two by four," it says, advising the reader that any woodlot along the road is a potential filling station: one good dead limb from it can provide fuel for another 100 miles.

The truck epitomizes the thrust of an energy program founded upon using wood to supply most of our fuel needs, particularly the wood from hybrid poplars. Not that hybrid poplar wood is, as a fuel source, superior to the wood of any other tree. Measured in BTU's per pound, poplar ranks sixth after pines, firs, cypress and maple, but it does rank better than all of the other hardwoods. Unlike these other woods, however, once hybrid poplar is established it can be harvested again and again to provide as constant a fuel crop as corn, oats, wheat and rye provide a constant food crop. And this is what Miles Fry, founder of the hybrid poplar operation, and his son Morton advise: that this country grow its fuel in the same way that it grows its food. To accomplish that, we need to start thinking of fuel as a farm crop rather than as a mineral. The technology for doing that is available and proven.

The available technology satisfies the two crucial needs: a species of tree that can be planted and harvested like a food crop; equipment that can convert the wood crop quickly and efficiently into usable fuels. The tree is the hybrid poplar; the equipment, the biomass converter and the wood gasifier.

photos by author

This truck runs on wood. The large tank behind the cab converts wood chips to gas. One dead limb will take the truck 100 miles.

$1.00 started it all

The Frys started raising hybrid poplars in autumn, 1954, when Miles Fry answered an ad in the *Farm Journal* wherein the Northeast Forest Experiment Station offered eight cuttings to anyone who would send in $1.00. The station had some of the early clones of hybrid poplar and needed people to try them and to suggest a use for them. Presently eight sticks (four clones) arrived, and in March 1955 Fry planted them along the walls of an old smokehouse. By October they had grown to 10 feet and their stems were absolutely straight. Did anybody need such a stem? The nearby Grace Iron Mines, a division of Bethlehem Steel, did. They used straight rods to thrust blasting charges into mine crevices. To get these, they had been sending people to search woods for straight saplings. Buying poplar rods from the Frys was cheaper, easier, and faster. When they bought $2,000 worth of rods in 1961, Fry decided that he had a product that might make him much more money than dairy farming, which was his business at the time.

When Grace Iron Mines bought $2,000 worth of rods in 1961, Fry decided that he had a product that might make him much more money than dairy farming, which was his business at the time.

He began by raising seedlings and unrooted cuttings for sale as fast-growing shade trees. He also started a crossbreeding program of his own to explore the development of clones that could endure a variety of severe conditions. The crossbreeding has produced clones that can tolerate pH conditions

continued

HYBRID POPLAR:
continued

Whips, ready for planting

Plantation of year-old hybrid poplar

Stand of three-year-old trees

Joint showing new growth above point on trunk where old growth was harvested

from 3.5 to 8.9, or from severe acid to moderately severe alkaline. While none of the clones will endure being planted in swamps or marshes, most will survive and even thrive on occasional flooding. The crossbreeding produces a fast-growing tree that could survive and flourish on sanitary landfills, strip mining sites, culm piles from deep mining, the peaty soils of the Scotch and Irish highlands and a wide variety of wastelands.

There are those who quarrel with any general use of poplar as a shade tree, particularly in urban environments. Morton Fry agrees with them.

"The poplar is a vigorous water seeker," he told me. "You shouldn't plant it near water mains or pipes or sewage systems. But, planted at the ends of drainage areas or in wastelands, hybrid poplars will control erosion and restore the quality of the soil."

Horticulturists will recognize few of the parent names of the strains from which the Frys breed clones. Some of the names sound like Latin or Greek conversions of contemporary Russian, Czech, Polish or Huron Indian. For example: *Populus charkowiensis, P. X berolinensis, P. X petrowskiana, P. X maximowiczii, P. X trichocarpa* and *P. tacamahacca*. Indeed, the only really familiar names are *P. nigra*, which is black or Lombardy poplar, and *P. deltoides*, which is cottonwood. The resulting clones seem to be endless mutations of these two types with the benefits that the mutants do not seem to have the short life of *P. nigra* or to produce so much cotton-like material as *P. deltoides*. What they do have and what suggests the whole concept of farming for fuel is the ability to recover completely, that is, start growing again after being cut at about two feet above the ground every year or every other year. The Frys have poplars that they have harvested every year for seven years and every other year for 14 years. Both sets of trees continue to thrive. That they could go on in this way for 20 to 30 years, as some enthusiasts wish to believe, Morton Fry doubts.

"We simply don't know how long they can go. We've got a lot more experimenting to do. What we do know is they will last long enough to produce a huge harvest of wood chips. And, if you have to plow up and replant after 10 or 15 years, it isn't that expensive to do it."

how poplars are converted to fuel

Given unlimited hybrid poplar chips, how do you convert them to useful fuel? One process, being developed by Dr. E. Kendall Pye at the University of Pennsylvania, uses a novel technology to recover ethanol (ethyl alcohol) and butanol (butyl alcohol) from fermentation liquors derived from the readily degradable cellulose, poplar chips. Pye pretreats this cellulose with special enzymes, which accelerate fermentation in much the same way yeast accelerates the rising of bread. In addition to the two liquid fuels produced from the biomass, ethanol for vehicle fuel and butanol/lignin for heating oil or for industrial or diesel fuel, the process also yields such valuable by-products as animal feed and polymer grade lignin and xylose. Pye began his pilot tests with a batch process and demonstrated that he can produce ethanol suitable for vehicle fuel at a cost of 70¢ per gallon. From there Pye moved to develop a continuous process for alcohol, and he has devised a process which can convert wood pulp to alcohol in two days at a rate of 100 gallons of alcohol per ton of wood chips. He has been delayed in taking the process to constant alcohol production because the intermediate chemical products have proven so valuable that Pye has been selling them before reaching the alcohol stage. Nevertheless, according to the Pye/Fry literature, the mathematical probability is: an acre of marginal farmland planted to hybrid poplar can produce at a rate of 15 tons of dry wood chips per year. Fed into the Pye process, these could produce 1500 gallons of fuel alcohol. Our annual gasoline consumption is 220 billion gallons per year. If we grew hybrid poplar on only 150 million of our 432 million acres of marginal and abandoned farmland, we could produce enough chips to yield 225 billion gallons of fuel per year.

Pye began his pilot tests with a batch process and demonstrated that he can produce ethanol suitable for vehicle fuel at a cost of 70¢ per gallon.

As good as that is, it isn't the only process. It isn't even the process that runs the Fry truck. The Frys have developed a wood gasifier that burns wood in a controlled combustion with limited oxygen. This produces a flammable gas, which is a combination of hydrogen and carbon monoxide. The gas, fed into an internal combustion engine, will fuel it as well as gasoline or diesel fuel will. The Frys have two large gasifiers of this type. One of these fuels a hot water boiler designed to burn fuel oil. The boiler, currently heating two 50 by 100 foot greenhouses, has enough capacity to heat four such greenhouses. The second gasifier fuels a 140 horsepower Waukesha engine, which drives a 70 kilowatt generator. Mort Fry says that this generator powers about half of his total operation of greenhouses, residences, offices, etc. Both of these gasifiers are fueled entirely with hybrid poplar chips.

It is popular to jeer at such developments as these and regard them as toys for the amusement of cranks. The notion of growing our fuel instead of drilling for it seems absurd only because we don't think that way. But it is no more absurd than the automobile itself. Certainly the Fry concept – both the hybrid poplar production rates and the operating effectiveness of the Pye process and the wood gasifier – need confirmation by impartial observers. But the results claimed are highly probable, and there is little doubt that we will soon need an alternative of this kind.

In fewer than 50 years of intensive consumption we have exhausted a major portion of the world's petroleum supply. No one knows how much we've used, but it could be nearly half. In any event, the remaining amount is a finite quantity, and we will surely exhaust it. Then what happens to our energy greedy society? Without an alternative fuel source such as hybrid poplar, what happens? Another stretch of dark ages?

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Edwin A. Peeples, author of *A Professional Storywriter's Handbook* (Doubleday, 1960), wrote *A Summary for A Sesqui* for PHS's 150th Anniversary. Peeples is a frequent contributor to *Green Scene*.

TRENCH FEVER

by Lucie B. Steele

My husband Jim stared at me in stunned disbelief. "You want a what?"

"A trench," I replied. Six feet long, two and a half feet wide, and three feet deep. At the far edge of the property." It seemed to me a perfectly logical request. We could plant bulbs below the frost line and fill our home all winter with flowers – daffodils, tulips, hyacinths. We could slash our florist bill. We wouldn't have to buy another refrigerator for the bulbs we wanted to force. And finally, a trench would be roomier and wouldn't run up our electric bill or require defrosting. I had it all worked out in my mind.

"I'm trying to relax. It's too hot. Please don't talk while I'm reading the Sunday paper," he responded.

"Jim, I want a trench," I stated emphatically. "Let's think about winter now on this sweltering late August day. Let's plan ahead."

"You're not making sense."

"Yes, I am!" I insisted. "Jim, I need a ditch NOW. We have to trench the bulbs in four weeks."

Jim finally folded his newspaper and shouted, "You can't have a trench now – there's been a drought for six weeks, and we can't afford the rental of a backhoe."

I threw in the clincher. "Do you love me?"

"I'll dig."

Jim first used a shovel. Alas, the shovel failed to dent the hardpan, annealed by weeks of heat without rain. Profanities followed, and a call to our son to pitch in. Hatchets and pickaxes replaced the shovel. Gradually the hole grew larger. Bewildered neighbors emerged to offer condolences – certain that we intended to bury our golden retriever, not a batch of bulbs. Finally, after three weekends and many applications of Ben Gay, I had my trench.

An awesome sight it was, a massive depression well below the frost line. We placed pebbles on the bottom to prevent the pots that would rest there from sticking to the ground. We lined it on top with pressure-treated railrod ties to prevent erosion. And we set about to fool Mother Nature into delivering spring three months early.

photos by author

'Princess Elizabeth' in early March

how the trick is accomplished

In late September we mix equal parts of potting soil, builder's sand and sphagnum peat moss in a wheelbarrow. Next we hose water into the mixture until the concoction becomes soggy.

Then we place terra cotta shards in the bottom of eight-inch (or larger) plastic pots (plastic, rather than clay pots, which may crack) and cover the shards and containers half way to the top with potting mixture and one heaping tablespoon of bonemeal. After this, we fit as many large, top quality bulbs as possible (one variety per pot) in the soil, space them one-half inch apart, cover them with more soil, label and water them.

Next we put all the filled pots in one layer in the bottom of the trench and blanket them with at least three feet of leaves to insulate them from sub-zero temperatures and from scavenging squirrels who find such bulbs tasty. Finally, we mark the trench with stakes so we can locate it when the ground gets covered with snow.

The bulbs remain in the trench for at least two months, receiving frequent hosings (if autumn is rainless) and the "cold and dark treatment" essential to sturdy root formation. When roots peep through the holes in the bottom of the pots, when the shoots measure one inch, the containers can be taken from the trench.

staggering the blooms

To stagger bloom, we bring containers inside at two-week intervals. We water them thoroughly and encase the pots in paper bags to make gradual their transition from the dark trench to the sunny indoors. After a week we remove the bags, feed the bulbs a weak solution of fish emulsion and impatiently await their flowers. The time required from the beginning of forcing (when the bulbs are brought into the home) to bloom varies according to house temperature, amount of light, varieties, and the time of year. Usually we count on five weeks for hyacinth flowers (seven for daffodils and tulips) if we bring them into the house on January 1. As the season advances toward spring, the bulbs bloom more rapidly. Once they do flower, they glorify a 68° room for 10 days.

When the petals begin to drop and the foliage to flop, we deadhead our plants and take them to the cellar, where we water them just enough to stave off total drought. Eventually the leaves wither and turn brown and then we lift out the bulbs, foliage and all, from their con-

The author and friend reach into the trench on a January day to bring up containers of forced plants.

Bewildered neighbors were certain we intended to bury our golden retriever.

Up from the trenches in February 1982

tainers, put them in holey panty hose, label them, and hang them on nails to dry in a cool, airy spot. In fall, before the ground freezes, we recycle the bulbs: we strip away the leaves and plant them in the garden, where they will await their second season to bloom again. Bulbs cannot be *forced* to bloom more than once.

It's been several years now since we put in the trench. Jim still grouses about all the digging he had to do that particular summer. He also is not happy when he has to lie on his stomach in snow and reach down into the trench to bring up the containers (his grumblings were particularly vehement in January 1982). But he does admit that he looks forward to welcoming King Alfred, Princess Elizabeth, Princess Irene and other blooming wonders who dispel our winter discontent.

Each year we become increasingly addicted to our method of forcing. Each year we experiment with new varieties of bulbs. Each year we place more pots in the trench. We've caught such an incurable case of trench fever that I'm beginning to think we need another you know what.

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Lucie B. Steele studied for three years at the Arboretum School of the Barnes Foundation and learned through untold years of horticultural trial and error in her own backyard. Lucie is also an inveterate scavenger. She explores beaches, meadows and forests to gather flowers and fruits, which she then assembles in containers unearthed from attics, auctions and flea markets. Her penchant for collecting, her training in the applied arts and her love of nature has led her to start her own business in Haverford, Pa.

BUILDING OUR OWN PASSIVE SOLAR PIT GREENHOUSE

A "passive" solar pit greenhouse uses no supplementary energy source such as coal, oil, wood or electricity to collect, move or store the heat.

by Lisa H. and Robert S. Freeman

photos by Lisa A. Freeman

Passive solor pit greenhouse

Early in the winter of 1977-78 we built a small A-frame wooden structure, which we covered with polyethylene, 5 ft. wide by 10 ft. long by 5 ft. high. It was placed in full sunlight and sheltered on the west and north by tall evergreen trees. Our purpose was to grow lettuce and parsley throughout the winter months without the use of any heat source other than the sun. Before the cold weather had progressed very far we added three 60 watt light bulbs to boost the temperature on the most frigid nights. The lettuce crop never died out on us but, on the other hand, we weren't overwhelmed with salads either. The second winter we placed a row of black plastic milk jugs in the back of the structure hoping to provide some additional nighttime heat. We didn't notice any appreciable improvement.

Very early in 1979 as we were mulling over ways to improve the structure and its heating system, a notice came in the mail about a program sponsored by each region of the U.S. Department of Energy, called the Appropriate Energy Technology Small Grants Program. The program's purpose was to encourage individuals, small businesses, communities and community groups both to develop energy-related ideas and to become involved in energy research and development. Since what we wanted to do seemed to fit right into such a program, we sent to the Region III office in Philadelphia for an application. Soon afterward it arrived, and we began our research and to focus our ideas. A visit to the New Organic Gardening Experimental Farm in Maxatawny, Pa., on a cloudy, drippy day in early March was of tremendous help. Diane Matthews, who had worked closely with their solar greenhouse over two winters, gave us a very thorough tour and answered our many questions. Shortly after this visit we purchased *The Solar Greenhouse Book,* edited by James C. McCullagh, Rodale Press, 1978, which became our prime source of information from then on.

For the next few weeks we were busy pinpointing the site for the greenhouse, which was to be freestanding. We decided to use the basic A-frame shape with the south slope 60° from horizontal

so as to allow the best solar penetration when the sun is at its lowest portion in the sky in late December. The angle of the north roof was determined by the height of the stack of water containers against the interior north wall. By sinking the entire structure three feet into the ground and insulating the exterior of the foundation walls, we would have a pit greenhouse and thus conserve a considerable amount of heat. We decided that 300 five-gallon, square-bottomed, polyethylene bottles would suit our purpose best and found that they were available in Philadelphia at reasonable cost (see box). Rather than using flat black paint on the bottles, we decided on a deep blue since some blue light should be reflected to the plants, which they would appreciate. We used a seven-foot vestibule at the east entrance for a work area and to keep frigid outside air from rushing in to the plant area, which was to extend 30 ft. further, a total of 37 ft. The planting bed is 3 ft. deep, filled with topsoil, manure and potting soil. This solid bed of dark soil holds a certain amount of heat from the sunlight and from geothermal heat rising from below. Below the frostline the soil temperature is approximately 55° the year-round. The depth of the soil also gives the plants more than enough room to grow healthy root systems. We ordered enough .040-in. fiberglass to provide two layers of glazing on the south side. And we sent to California for two heat "motors" which, as the result of the expansion of a fluid within the cylinder, open the peak ventilators as the interior temperature rises (see box).

On April 23, 1979, we mailed off our completed application. We said the purpose of our project was to demonstrate that many families can build such a structure for themselves with little if any professional help and then can raise their own fresh vegetables in the winter using only solar and geothermal heat. We included, as required, detailed plans, a list of persons involved in the labor, a time schedule of the work, and a list of materials and their costs, and we promised to have an open-house for the general public to come and see the project for themselves.

At long last, on September 24, 1979, we were notified that we were one of the 83 grant recipients out of about 2,100 applicants in Region III. We had become Grant No. DE-FG-43-79R306099! Because winter was approaching and the maximum time allowed to implement the plan was one year, we put our plans into action as quickly as possible. The foundations were started in mid-October and finished in a month. We started the framing December 1 and finished it on New Year's Day. During Easter week we installed the fiberglass glazing and then spent the rest of the time until early summer on myriad details and painting. By late summer the greenhouse was ready for its first planting.

During the coldest months the average daily high temperature inside was 73° while outside the average high was 44°. The average low temperature inside was 49° while outside it was 24°.

The first winter we grew mostly those vegetables that would tolerate cool night temperatures (see table). We also experimented with five varieties of tomatoes and found that 'Sweet 100' produced the best yield of excellent tasting cherry tomatoes. The best crops were lettuce, Bok Choy and swiss chard. We planted the vegetable seeds and seedlings in the greenhouse in September and were harvesting greens in October. During the coldest months the soil in the planting bed is too cold for seeds to germinate, so we put our seed flats on top of the water containers – free bottom heat! It is important to have seedlings on hand, ready to replace any crop that has finished producing.

The second winter we grew the same cool tolerant vegetables plus some more varieties of lettuce and a cherry tomato named 'Minibel.' This tomato is ideal for growing in a basket but unfortunately it just would not grow with such cool night temperatures. Next winter we will grow 'Sweet 100' and 'Tiny Tim,' but not in baskets. The only harmful insects we found on the plants were aphids and white flies. For the aphids we used a spray of mild soap and water. We kept the white flies under control by coating yellow strips of wood with a very sticky substance called Tanglefoot and hanging them near the plants. The white flies are attracted to the yellow color and are caught by the Tanglefoot. We use only organic fertilizer and insect controls.

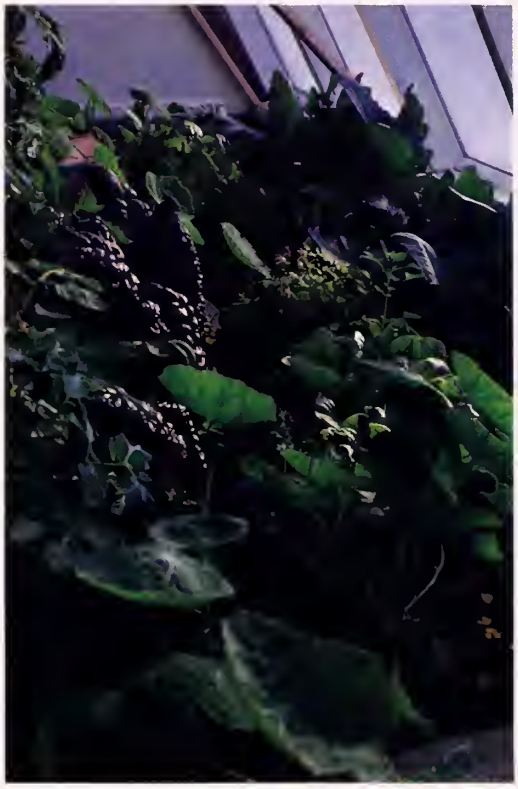
During the first winter the water bottles did their job well. We had been concerned about the weight of eight of them in each stack since each bottle of water weighs about 40 pounds. The lower ones developed a bit of middle-age spread after a while but no problems seemed to occur. In late June of the following summer, however, as the heat increased in the greenhouse, a few of the bottom bottles developed leaks and began to sag causing the bottles above to lean quite precariously. We were so thankful that this hadn't happened in the dead of winter. Over the summer we removed the bottles and have now reinstalled them on shelving so that they are never more than three high. We hope that is the end of the weight problem.

Having discarded one or two earlier ideas for a "night curtain" as too expensive or too awkward, we decided to use one-inch thick panels of foam with aluminum sheathing on each side. We made four pairs of panels, hinged together on one edge, which easily fold up against the rear roof during the day and at dusk are lowered to reach across the greenhouse from the top of the water bottles to the front glazing and then down to the sill. We figure that the use of these panels in the extremely cold weather saves about 10°.

To see how well the greenhouse was living up to expectations we recorded the high and low temperatures in the greenhouse and outside every day from September 1 to early May the first winter. During the coldest months the average daily high temperature inside was 73° while outside the average high was 44°. The average low temperature inside was 49° while outside it was 24°. Thanks to the night curtain the lowest

continued

Lettuce 'Black Seeded Simpson'

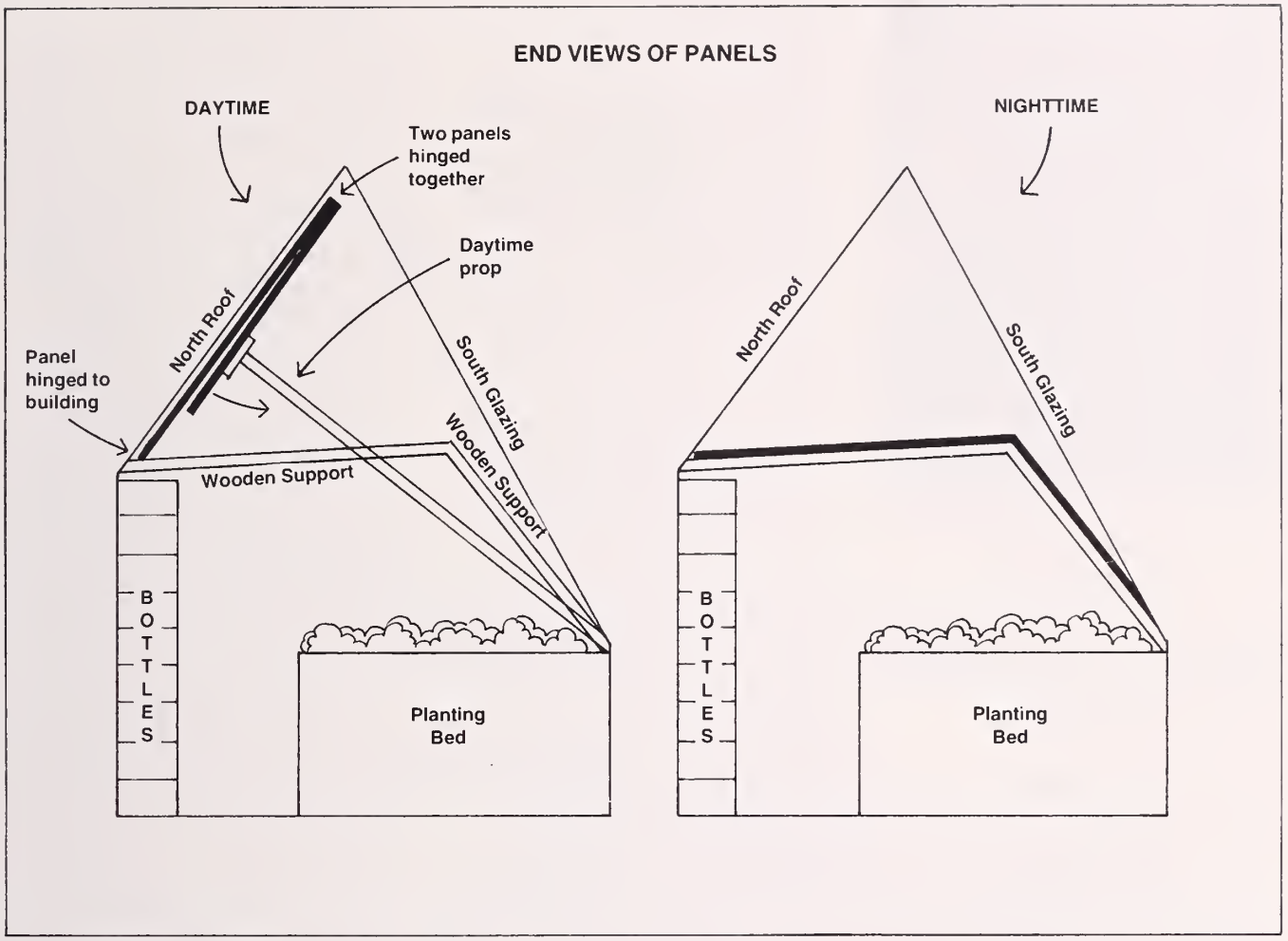


January '81: *back* - kohlrabi; *left* - rhubarb chard; *upper middle* - cherry tomato; *right* - bibb lettuce, nasturtiums

Night curtain. The end section is closed halfway.

temperature ever reached was 41° while just outside it was only 7°. The second winter the lowest temperature recorded in the greenhouse was again 41°, even with the lowest outside temperature of -10°.

Each day as we observe the variety of vegetables that are growing well in the greenhouse no matter what the winter conditions outside, we are grateful to the Department of Energy and hope that our experience will be of benefit to many others.



PLANTING TABLE

Vegetable	No. of Days to Harvest	Comments
Beet 'Detroit Dark Red'	60	used greens and roots
Carrot 'Short 'n Sweet'	68	sown directly in planting bed
Carrot 'Pioneer'	67	sown directly in planting bed
Chinese celery	90	seeds started in August
Chinese mustard green (Gai Choy)	45	used leaves; started in August
Chinese white cabbage (Bok Choy)	50	used leaves; started in August
Kale 'Dwarf Blue Curled Vates'	55	used leaves; started in August
Kohlrabi 'Early White Vienna'	55	good crop; started in August
Lettuce 'Black Seeded Simpson'	45	
Lettuce 'Buttercrunch'	64	
Lettuce 'Green Ice'	45	sowed many successive crops;
Lettuce 'Royal Oak Leaf'	50	all varieties excellent;
Lettuce 'Ruby'	45	picked leaves
Lettuce 'Salad Bowl'	48	
Lettuce 'Tania'	65	
Parsley 'Banquet'	76	one planting for whole winter
Spinach 'Melody'	42	fall and spring crop
Swiss chard 'Rhubarb'	60	excellent; one planting
Tomato 'Jumbo'	75	produced a few fruits
Tomato 'Long Keeper'	78	poor growth
Tomato 'Minibel'	55	poor growth
Tomato 'Presto'	60	produced a few fruits
Tomato 'Sub Artic Plenty'	45	small plants; poor flavor
Tomato 'Sweet 100'	70	best tomato of all; sowed seeds in July

Sources

5-gallon polyethylene bottles ("cubitainers")

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Solar Components Division
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●

Lisa H. Freeman, a graduate of the Ambler Campus of Temple University with a degree in horticulture, is a practicing, professional horticulturist.

Robert S. Freeman, her father, has just retired from teaching mathematics at the Stetson Middle School in West Chester, Pa.

Spinach in mid-April. The peas in the double row, parallel to the spinach, were planted in March and are only an inch high.

spinach: planting in the fall

In mid-April one of our neighbors asked us what the "secret" of our spinach was. It was then 5 to 6 inches tall, ready to pick and eat; in fact, we had been eating it since March. There is no secret to our success, but it evidently is a little known gardening practice, that you can plant spinach in the fall and have it at the earliest possible date the following spring. Here's what we did.

About September 10th I planted a 20-ft. row of spinach (Bloomsdale Long Standing). Seeds germinated promptly, and we ate a few leaves regularly in our salads into November. As winter came, leaves of a nearby willow oak settled as a mulch around the plants. The plants lay dormant all winter; I thought about them under the snow, in the bitter cold weather. It certainly was a long, hard winter, but the plants survived the sub-zero temperatures and as soon as things began to warm up in February the spinach began growing again, and we enjoyed the first light pickings in early March. By May the plants had already gone to seed. Now in September, I will plant again. I encourage everyone to try it. Just remember to plant in an area of the garden that is readily accessible for convenience in the spring, at the edge or near a path. It is a good way to make year-round use of the garden. Certain lettuces are said to be equally sturdy and will survive the winter. Recommended are Black Seeded Simpson and Ruby. I haven't planted these outside a cold frame as I have spinach, so cannot claim personal success, but I intend to try this year.

Betsy Shuman

Betsy Shuman gardens in Bucks County. She is a frequent *Green Scene* contributor.

LETTERS

The Smiths of Watnong

Dear Editor:

The fine article on Don and Hazel Smith of Watnong Nursery was especially enjoyed by all of those many people who have had the privilege of knowing this fine couple.

Ever so many people have benefited from their dedicated efforts, and the article does a good job of showing how many plants are available today to our gardens because of their work. It unintentionally omits another way in which they have had an even more significant and positive impact on horticulture – an effect that will endure long after they have retired from active gardening and nursery labors. They have provided a source of encouragement, enthusiasm, and good, sound advice to a steady stream of young people and newcomers generally who wish to make their way in commercial horticulture. There is no one more generous with their advice on propagation, cuttings or seed from their plants, or whatever might seem needed in the way of help and encouragement.

It would not be possible for those of us who have benefited so much from their help to repay them full-fold – except possibly to enjoy to the fullest the many beautiful ornamental plants that are available to enjoy because of them – and to try to emulate and extend the example they have set.

James E. Cross
Environmentals
Cutchogue, New York

More Sources for Wildflowers

Dear Editor:

You printed two sources for *Allium tricoccum* in the March issue. I would like to add Woodlanders, 1128 Collecton Avenue, Aiken, SC 29801. It is an excellent wildflower nursery and they propagate the plants they sell. We have bought from them several times and everything arrived in vigorous and growing condition. I am writing because I feel it is important where possible to support nurseries that *propagate* rather than *collect* wildflowers.

Dot Plyler
Chadds Ford, Pa.

[Editor's Note: The PHS Library has an excellent listing of sources, which notes collectors and propagators.]

Gypsy Moth

Dear Editor:

James McKeehen's excellent article about the gypsy moth (*Green Scene,* March 1982) gives the homeowner a good overall understanding of the insect's life cycle and various methods of control which are currently used. The article eliminates much of the hysteria and misinformation associated with the gypsy moth problem by giving factual information in an organized and easily-read format.

Mr. McKeehen has contributed much to horticulture in the Delaware Valley. It is unfortunate that in their recent letter to the editor (May 1982), Messrs. Browning and Smith have chosen to use Mr. McKeehen's article as a vehicle to attack the agricultural chemical industry. The McKeehen article points out that spraying should be done after a heavy defoliation of the tree (60% or more of the tree is defoliated).

Mr. McKeehen goes on to say, "Finally select an appropriate insecticide and apply only when defoliation will be severe enough to cause death to important landscape trees and shrubs."

I hope the readers of *Green Scene* will re-read James McKeehen's article and recognize the value of the information presented.

As stated in the article: "None of man's controls are a complete panacea; we must recognize all the alternatives available. . . . The gypsy moth is a serious nuisance that must be understood, scientifically combated, and tolerated."

Thomas Buchter
Representative
McFarland Landscape Services, Inc.
Philadelphia, Pa.

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classified ads

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Advertising copy should be submitted 8 weeks before issue date. November, January, March, May, July, September. Minimum rate $10. Charges based on $3.00 per line. Less 10% discount for two or more consecutive issues, using same copy. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Audrey Manley, GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

Cats contribute to Small Moments
in the Garden. See page 3.

THE green scene

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THE
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in this issue


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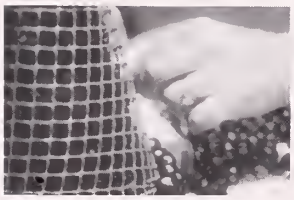
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Front & Back covers: Christmas Tree Lane is one of the most popular features of a Longwood Christmas. Every evening from 5-9 pm, 35,000 lights generate pinpoint stars of magic throughout the parking lot and main approach to the conservatory. See page 3.
photos courtesy of Longwood Gardens

OOPS! THE SEPTEMBER *GREEN SCENE* HAD AN IDENTITY CRISIS

The photo credits for the front and back cover of the September issue were reversed. The grasses and sedum pictured on the front cover were photographed by H. Peter Loewer; the serene angora cat sunning itself on the back cover was photographed by Jacqueline Denning.

In the caption on page 14, we identified Charles Becker as the author of the article about troughs. Mr. Becker was the *subject* of the story, which was written, as noted, by Jane Pepper, who is the executive director of the Pennsylvania Horticultural Society.

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Splendor under glass: Longwood's huge 150-foot-wide Main Conservatory presents a Christmas picture unlike any other. Here, poinsettias, Wedgewood irises, and cyclamens embroider perfect turf.

photos courtesy of Longwood Gardens

CHRISTMAS IN THE GARDEN

A Longwood Christmas

by Colvin L. Randall

Longwood Gardens has been celebrating Christmas in grand style for more than two decades. Public response has been so enthusiastic that a large-scale holiday tradition has been firmly established in Kennett Square, one that attracts more families each year to partake of a spectacle unlike any other.

If you asked most visitors what's so special about Christmas in this garden setting, they'd probably say the festive color and the Christmas trees. At a time when the Pennsylvania landscape is a subdued brown, Longwood's glass-enclosed conservatory is at its most colorful. It is a jewel box of ruby reds mixed with pinks, whites, and emerald greens: poinsettias, cyclamens, and early spring bulbs. Outdoors, scores of lighted trees provide starry enchantment for young and old alike.

As traditions go, Longwood's is relatively recent. Founder Pierre S. duPont always decorated an enormous Christmas tree each year in the conservatory.

Longwood is mounting a novel display in the reflecting pool in the central Exhibition Hall. Four large evergreens will be decorated with live poinsettia plants.

In 1955, a year after his death, plans to convert a grape house to poinsettia production were begun, and in 1956 poinsettias were displayed amongst roses and ferns in the smaller greenhouses. The main conservatory was filled with narcissi, begonias, irises, bouvardias, astilbes, primroses, cinerarias, and cyclamens. Then, for Christmas 1957, red, pink, and cream-colored poinsettias were used for the first time along the main walk in the conservatory, flanked by calla lilies, hyacinths, narcissi, and other spring flowers.

In 1962, the Christmas display was greatly expanded. For the first time, the conservatory was completely transformed over a two-week period from the annual chrysanthemum show to a Christmas display of 1,000 poinsettias combined with white-flowering begonias and spring bulbs. That same year, the newly opened 1000-car parking lot was turned into "Christmas Tree Lane" for six days with the lighting of three evergreens for two hours each night, along with an eight-foot wreath on the new Visitor Center. A memo noted: "Despite

continued

1981's display featured this spectacular setting of a slowly-revolving Christmas tree, Australian tree ferns, and poinsettia baskets hanging above a sheet of reflective water. This year will find poinsettia-laden trees in the shimmering expanse.

Red and green are the dominant colors in Longwood's conservatory during the Christmas season, contrasting vividly with the seasonal bleakness on the other side of the frosted glass.

the icy and snowy road conditions, plus the cold weather, the overall attendance was good. This display should be continued next year."

From these modest beginnings, Longwood's Christmas show has blossomed into an annual extravaganza featuring nearly 3,000 poinsettias and thousands of other seasonal flowers, 35,000 lights on dozens of outdoor trees, and 120 musical events, all of which attract 120,000 visitors.

conservatory display

Planning for this year's Main Conservatory display began a year ago with a complete on-site evaluation of the 1981 exhibit. Floriculturist Donald Gregg, production foreman Joseph Hannas, and display foreman Ted Acorn assisted display coordinator Landon Scarlett in the annual analysis.

"It used to be like a giant jigsaw puzzle," says Scarlett. "We grew the crops then fitted them into the setting in the most attractive way, sorting as to size and so forth. For the past few years, however, we've put our needs down on paper in plan form, estimating the number of plants required by counting those in the existing display and noting where we want more, less, taller, shorter, or whatever.

"What we're after is dependability," she says. "The display is laid out differently each year, but we still use basic crops that must perform. And yes, we occasionally have crop failures and then have to fudge it, especially since we've used every square inch of growing space available for Christmas crops, and besides, there's not enough time to start a new crop. But then sometimes the plants grow larger than expected, so we have some left over."

The horticultural requirements for the 1982 display are substantial. Nearly 3,000 poinsettias (mostly C-1 and Annette Hegg cultivars) were ordered from the Paul Ecke firm in February. The rooted cuttings arrived from California by air freight in six shipments between June and August and were potted up immediately. Three growers have tended them carefully over the past six months in greenhouses under natural lighting conditions.

Longwood's Christmas show has blossomed into an annual extravaganza featuring nearly 3,000 poinsettias and thousands of other seasonal flowers, 35,000 lights on dozens of outdoor trees, and 120 musical events, all of which attract 120,000 visitors.

Longwood grows red, pink, and cream-colored poinsettias as single-stem plants, standards, and hanging baskets. These last elicit much comment when suspended like velvet baubles high above the conservatory beds.

Other crops grown for this year's display include 40 dusty millers, 60 Jerusalem cherries, 75 blue coleuses, 80 calla lilies, 210 stevias, 294 begonias, 330 primroses, 455 cyclamens, 600 lilies of the valley, 2,800 Wedgewood irises, and 10,360 narcissi. Most are moved into the display areas and plunged into the borders in the three busiest days of the Longwood year.

The complexities of scheduling can well be imagined if you keep in mind that not only do the majority of plants have to be ready and in position by the opening day, December 4, but also many of the pre-cooled bulbs are scheduled for successive plantings to maintain the display at its prime for five weeks.

special exhibits

For the past three holiday seasons, Longwood invited regional garden clubs from New Jersey to Virginia to decorate competition Christmas trees. The first year the theme was international; the second year, scenes from the Nutcracker ballet; and most recently, trees inspired by classics of children's literature.

This year, a completely different approach is in the works. Garden clubs have decorated rooms in the "Living with Plants" exhibit for the Chrysanthemum Festival, November 6-21, and will not be represented in the Christmas display. This change was made to bring additional attention to the annual mum show.

Fully aware of the popularity of Christmas trees, however, Longwood is mounting a novel display in the reflecting pool in the central Exhibition Hall. Four large evergreens will be decorated with live poinsettia plants supported invisibly by a metal framework hidden in each tree.

Centered in the adjacent Music Room will be an even larger tree. Designed by exhibit specialist John Peele, the stunning assemblage of handmade ornaments in red and gold on a 20-ft. douglas fir brings to mind those trees we read about in fanciful fiction but seldom see. The tree is positioned so that visitors can walk through the walnut-paneled and damask-hung room to enjoy the confection from all sides.

In the honeycombed Azalea House, colorful cyclamen surrounding graceful tear-dropped pools overflowing one into the other lead the eye to tailored holly trees bedecked with tiny lights.

Throughout the conservatories, handmade wreaths, fruit festoons, holly, and natural decorations cap the holiday spirit.

christmas tree lane

A far cry from the original three trees of 1962, this year Longwood will light up

continued

Thematic trees, such as this "Dance of the Sugarplum Fairy" created by the Mickleton (NJ) Garden Club for the 1980 display, have graced Longwood's conservatories during past holidays.

Not as ferocious as he looks, this spiny Christmas critter was assembled from teasel and hemlock cone scales, with map pins for eyes. Such creativity is typical of the many Longwood employees who put together the annual holiday extravaganza.

Longwood Gardens Christmas Schedule

Longwood's 1982 Christmas display runs from Saturday, December 4, through Sunday, January 2, 10 a.m. until 9 p.m., including Christmas and New Year's Days. Christmas Tree Lane comes on each evening from 5 p.m. until 9 p.m.

Half-hour organ concerts are scheduled from December 4 through 31 at 2, 3, 4, and 5 p.m. and on January 1 and 2 from 2 to 3 p.m. Choral concerts are scheduled from December 4 through 23 at 7 p.m. All seating is on a first-come basis.

Admission to the Gardens, which includes all activities for that day, is $4 for adults, $1 for children 6 to 14, and free for children under age 6. Annual Neighbor Passes, which make thoughtful gifts for gardening family and friends, are available in the Visitor Center.

For further information, telephone Longwood at 215-388-6741.

75 trees in all the colors of the rainbow. Tree crews and electricians have worked long hours through October and November to string 35,000 lights over both evergreen and deciduous trees. Frequently, a twine framework is first constructed around and down the trees, permitting spectacular conical shapes to be superimposed over otherwise sprawling limbs.

Although most of the lighting is centered in the landscaped parking area, more and more has been added inside the gardens for visitors to enjoy as they walk up to the glittering conservatory in what is a veritable winter wonderland.

The lights are on from 5-9 pm, December 4 through January 2. Fortunately, everything is on automatic timers so the electricians don't have to plug in 75 trees!

musical programs

Music has become an important part of a Longwood Christmas, and the popularity of the programs has prompted us to schedule more events. Last year, 20,000 people attended 65 concerts. This year many more will attend 100 organ sing-alongs and 20 evening choral concerts. All musical programs are in the crystal-chandeliered ballroom and seating is on a first-come basis.

Visitors are usually amazed when they learn the size of the Longwood organ (10,000 pipes and larger than the one in Radio City), amused when they hear the numerous percussive devices (like castanets, harps, and a Chinese gong), and overwhelmed as they try to out-sing it in the final verse of *O Come, All Ye Faithful* (the organ always wins).

The 7 pm choral concerts are presented by local choirs who often wait two years for the opportunity to perform. Programming leans towards cherished traditional music appropriate to this time of year.

And so Christmas at Longwood is a special season when children of all ages enter a magical setting quite unlike anything else in the world. It's been a lot of work for Longwood's 200 employees, but it's all worth it when the steady stream of thousands pours off Route 1 into Kennett Square's enchanted garden.

●

Colvin Randall has been Longwood's publicity coordinator for the past five years. He is a graduate of the Longwood Program in Ornamental Horticulture at the University of Delaware.

CHRISTMAS TREES
choose and cut your own

by Jane Lennon

Last December when we headed to Wetherill's (near Birchrunville, Chester County, Pa.) to choose and cut our Christmas tree, the snow-covered countryside added a special quality to the day's adventure. We were happy to find Horseshoe Trail Road plowed clear of snow and were reassured that we were on the right track when we saw a yellow road sign – "**Caution - Christmas Tree Crossing.**" The Ludwigs Corner volunteer fire department helped direct traffic and park cars in the hilltop lot.

At one edge of the parking area was a display of Christmas trees, one of each kind the Wetherills grow. Each tree had a sign with its name, in English and Latin, its special characteristics and sometimes its limitations. For example: "Douglas Fir - *Pseudotsuga,* fragrance -moderate; needle retention - excellent; general appearance - traditional Christmas tree shape, short needles; limitations - scarce, hard to grow in the east; easy to trim."

Proctor Wetherill said that people seem interested in the information. Yet preferences override the wisdom. For example some people prefer norway spruce, the traditional Christmas tree of Northern Europe; it has a wonderful fragrance, but can be a mess of shedding needles at clean-up time – as the sign warns.

There is a large open shed near the parking area where hundreds of small, sharp saws hang on pegs. It is here the Christmas tree prices are posted.

Armed with a saw the "choose and cutters" disperse among thousands and thousands of Christmas trees growing on 200 acres of rolling countryside, surrounding the hilltop shed.

With so many trees to choose from

continued

A satisfied customer chose his own tree, cut it and heads for the shed to have it checked out.

photos by Patrick Radebaugh

Santa Claus tops the hill at Wetherill's Christmas tree plantation.

A quick trip through the baling machine makes the Christmas trees much easier to stow in the car and get in through the doorway at home.

even the pickiest family will probably find the Christmas tree of their dreams. If you are too lazy or frail or rushed to wander through the fields, there are many cut trees near the parking area. These include a good selection of very large trees, which might be too heavy to drag in from the fields.

When we had chosen our tree and cut it down, we were delighted to look around and see Santa Claus perched on a nearby hilltop. The gigantic Santa acts as a marker for choose and cutters who have lost their direction wandering through the hilly fields.

We carried our tree back toward Santa and the shed, where plenty of friendly helpers waited to measure and tag our tree and bale it with a nifty red machine, which gently folded the branches up, then tied them neatly.

We returned our saw to the shed and warmed our fingers and toes on one of the big wood stoves while enjoying hot chocolate dispensed by the local scouts. Christmas tree stands, cut branches and fresh green wreaths were also sold at the shed.

And there we found Proctor Wetherill, Mr. Christmas tree himself, who answered all of our questions about his plantation and the choose and cut Christmas tree business.

Proctor Wetherill has been growing and selling Christmas trees near Birchrunville for more than 30 years. On a weekend day in December families choose more than 4,000 trees, cut them down, and drag them out of his fields.

three million christmas trees in pennsylvania

Wetherill told us that Pennsylvania harvests yield about three million Christmas trees per year, or about 10% of the nation's total crop. Ten percent of those are harvested at choose and cut operations like Wetherill's.

As choose and cut becomes more popular the number of Christmas tree lots on corners in towns shrink. Wetherill said that one of his few wholesale customers had reduced his order from 400 trees 10 years ago to 40 trees last year.

Wetherill is the largest grower in his area with more than 200 acres of trees. Planted on 5-ft. centers, that's 1,600 trees per acre or upwards of 320,000 Christmas trees, in all sizes.

Wetherill plants seedlings right next to the stumps of the cut trees, a practice that saves time and growing space. And it means that in any area there are trees of various sizes and ages. Twelve years is the average age of a good saleable Christmas tree. With plenty of work, care and *luck* one seedling in three will make a saleable tree.

As choose and cut becomes more popular the number of Christmas tree lots on corners in towns shrink. Wetherill said that one of his few wholesale customers had reduced his order from 400 trees 10 years ago to 40 trees last year.

Growing Christmas trees as a hobby business is not often a smashing success. It involves 10 months' work a year. The grower plants or replants trees each spring, when each cut tree is replaced. The entire growing season is a race against weeds. At Wetherill's two Gravely mowers go all day, every day, for five months mowing between trees. The trees must also be fertilized and sheared.

Seedling trees must be purchased, along with mowers, sprayers, shears and fertilizers. And of course land. Renting land to grow Christmas trees is

extremely risky. Twelve years is a long time and many things can change. Many a Christmas tree entrepreneur has watched his 6- or 8- or 10-year-old crop go under the bulldozer when rented land became building land.

Even with care and effort there is no guarantee that a Christmas tree plot will be a financial success. Wetherill once tried a test plot of Fraser firs. As small trees, after five years the Frasers looked

Many a Christmas tree entrepreneur has watched his 6- or 8- or 10-year-old crop go under the bulldozer when rented land became building land.

marvelous and Wetherill decided to plant 50,000. Of these only about one in 10 grew to be a saleable tree.

Sometimes the "new tree" is a failure, and sometimes it's a huge success. Fraser fir just won't grow well in Northern Chester County. There are always other seedlings to try, and many Christmas growers try them. A current "new tree," a douglas fir from seed collected in a small area in Southern Colorado, was selected because it's fast growing. It could be the Christmas tree of your dreams by 1989.

This December I'll go, with my family, to choose and cut a Christmas tree. We will wish for snow, and will surely find the most perfect tree. It will probably be a spruce and if we are very lucky it may have a bird's nest in the branches.

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Jane Lennon, her husband, photographer Patrick Radebaugh, and their son Pierre have all been *Green Scene* contributors.

Choose & Cut Christmas Trees in New Jersey

For a list of New Jersey choose and cut Christmas tree growers, send a stamped, self-addressed envelope to:

NJ Christmas Tree Growers Association
F. E. Johnston, Jr., Director
Allscope, Inc.
P.O. Box 4060
Princeton, NJ 08540

YULETIDE AT WINTERTHUR

by Martha J. Van Artsdalen

Preparations for "Yuletide at Winterthur," a special holiday museum tour, begin as early as the preceding spring, but start in earnest in October. Flowers and greens are an integral part of this seasonal tour, which authentically recreates holiday traditions in America in the 18th through early 19th centuries.

The tour is at the Winterthur Museum and Gardens, a museum of early American decorative arts in nearly 200 room settings surrounded by 963 acres of display gardens, woodlands, and meadows. Rooms are arranged for tea parties, dessert parties, a plantation ball, an evening musicale, and a farmhouse supper for the pastor. Tables are set with real food; the smell of rising bread and dried apples fills the air. Throughout the displays are ivy wreaths, juniper swags, potted orange trees, boxwood pyramids, and cut flowers; early Americans appreciated the benefits of colorful plants in the middle of a drab winter just as much as we do today.

The greenhouse or orangerie was a popular feature of well-to-do homes in early America, making possible such winter delicacies as oranges and lemons. Records show that Robert Morris's gardener grew pineapples and coffee trees in 1797. In keeping with the spirit of the past, miniature orange trees are placed in the Baltimore Drawing Room, scene of an elegant tea party for ladies and gentlemen, and on the long Federal table in the DuPont Dining Room. From paintings and newspaper advertisements comes evidence that flowering plants were popular indoors and were often given as New Year's Day presents. Geraniums, red roses, scarlet and pink cyclamen, camellias, white orchids, yellow shag-petal mums, and oleanders are used throughout museum rooms during the Yuletide tour.

Winterthur Museum and Gardens is a museum of early American decorative arts in nearly 200 room settings surrounded by 963 acres of display gardens, woodlands, and meadows.

In the early part of the 18th century, evergreen swags appeared in churches and homes at holiday time. At Winterthur, the graceful curve of the free-standing Montmorenci Stairs is hung with swags. Pots of Jerusalem cherries march down the steps. Swags also edge the walls of the room at ceiling height.

Yuletide at Winterthur requires substantial staff participation including the greenhouse staff, which needs additional volunteers. "It keeps us stepping," propagator John Feliciani admits. The pots of Jerusalem cherries are started in April. Five-hundred salmon, red, and white poinsettias are potted in July. Many of these will be shaped to single four-foot high stalks. The rooted ivy wreaths are coaxed along in early fall as is a topiary chair of English ivy anchored in moss and chicken wire. Paper white narcissus bulbs are planted in water three to four weeks before the tour

continued

photos courtesy of the Winterthur Museum and Gardens

Modern ornaments composed of baskets filled with candy canes decorate the center tree in the Winterthur Museum's Conservatory during Yuletide at Winterthur tours. The entire room is filled with red, white, and pink poinsettias. The wooden eagle once stood atop a 19th century New York building.

Three *Pseudotsuga menziesii* trees in the Museum's Conservatory illustrate the span of holiday traditions in America. Handmade ornaments hang on the tabletop foreground tree, while Victorian ones decorate the small tree in the background. The dominating center tree shows the contemporary use of electric lights, red bows, and glass prisms. Adding a dark backdrop to the vivid poinsettias are *Ficus elastica*, *Brassaia actinophylla*, and *Asparagus sprengeri*.

Following the line of *Pinus strobus* swags, a visitor's eye comes to rest on a table of punch, cut-out sugar cookies, and glazed candies at the foot of the Montmorenci Stairs.

A grouping of *Ilex aquifolium*, *Pinus strobus* and a cornhusk doll brighten a windowsill corner in one of many Winterthur Museum rooms decorated for guests on the Yuletide tour.

opens and more are started each week to insure fresh blooms through Twelfth Night. Table-top juniper trees are pruned according to a Victorian print in the museum's rare book collection, and they are decorated with 19th century ornaments. Other trees are left "natural" and hung with simple decorations of sugared fruit and strung berries, nuts, and popcorn. Following the Pennsylvania-German custom, an American holly tree is selected for the museum's farmhouse rooms. There it sits on a table hung with large cut-out cookies. Boxwood, pachysandra, holly, arborvitae, blue atlas cedar, cherry laurel, juniper, and yew are gathered as needed.

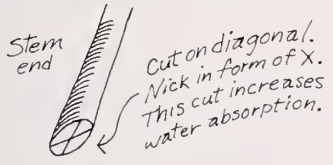
keeping it fresh

The challenge of the Yuletide display is keeping it all fresh. Flower arrangers have tried several methods over the years and the simplest seems to be the best. Assistant flower arranger Gail Lam says that the cold room is one of the secrets to keeping anything for any length of time. Each night, arrangements containing fruit or flowers are tucked away in the cold room, including

Small pots of *Citrofortunella mitis* grace the long Federal table in Winterthur Museum's du Pont dining room. A pineapple crowns the fruit arrangement in the epergne.

the grape, pear, and apple pyramids, and whole pineapples.

The stem ends of greens are cut in an "X" to let water into the cells; plus "they fit better in pin holders," Lam explains. (See illustration.) Greenery arrange-



ments can sit in the museum all week with minimal care. Fresh water is added daily and completely changed once a week. Cut trees also get fresh water. The staff has tried adding sugar, plant life, and copper life, but Lam says "changing the water seems to be the best." "Holly is the hardest to keep fresh," she continues. "We have tried all sorts of things, denatured alcohol on the leaves, Wilt-Proof, and even shellac; only water works."

Most museum visitors associate boxwood with the colonial era, and Winterthur uses it as a decorative accent on the fruit pyramids, behind picture frames, and even in individual window panes. Each sprig is attached to the molding with a drop of beeswax. The boxwood stays fresh for the entire tour because it is first dipped in acrylic floor wax and then dried before use.

The Conservatory perhaps best sums up the importance of flowers and greens for Yuletide at Winterthur. The poinsettia more than any other plant means Christmas to us today. It first appeared in America sometime between 1823 and 1830 when Joel Poinsett brought the first ones to South Carolina from Mexico. In the Conservatory, banks of salmon, red, and white ones in varying heights are backed by rubber plants and boxwood bushes. Small ivy and fern plants provide an edging. Three douglas fir trees span 200 years of American holiday tradition. The small one shows the charm of early America with its homemade ornaments: gilded egg shells filled with gumdrops, nuts, and raisins; paper angels with ginko-leaf wings; and tiny white candles. On the other side of the Conservatory, a similar tree uses authentic tin Victorian ornaments as decoration: a tiny sleigh, steamboat, trolley car, locomotive, spinning wheel, and even an elephant. The central twelve-foot tree is contemporary in style decorated with red bows and glass prisms. It stands dramatically before the door to the museum and is always in view of visitors as they move through the museum rooms, experiencing the special delights of Yuletide at Winterthur.

One-hour guided tours of Yuletide at Winterthur begin Tuesday, November 23, and run through Sunday, January 2. Tour times, Tuesday through Saturday, are 10 a.m. through 3:30 p.m. and Sunday 1 to 6:30 p.m. Evening tours on Tuesday and Wednesday continue from 6 through 7:30 p.m. The museum will be closed Thursday, November 25; Friday, December 24; Saturday, December 25, and Saturday, January 1. Reservations are necessary; please call the Reservations Office, Winterthur Museum, Winterthur, DE 19735 (302) 654-1548. Adults, $5.00; children under 16 accompanied by an adult, $2.50. The Winterthur Museum and Gardens is located six miles northwest of Wilmington, Delaware, on Route 52. It is approximately one hour outside of Philadelphia, via Interstate 95.

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Martha J. Van Artsdalen is senior writer on the staff of Winterthur Museum and Gardens.

In the dining room, a raspberry mound surrounded by "iced" boxwood *(Buxus sempervirens)*

photos courtesy of the Hagley Museum

Christmas at Eleutherian

Adorned in its most festive dress, Eleutherian Mills Residence, the 1802 home of Eleuthère Irénée du Pont de Nemours, offers holiday visitors the charm and beauty of a 19th century Christmas. This historic house lends itself well to a traditional use of greens and natural plant materials. Although Christmas was not celebrated during the previous century in the lavish way that the 20th century has come to expect, a history of using greens and natural materials for decorative purposes does exist. Eleutherian Mills Residence is decorated for the holidays beginning the first weekend in December and is open Tuesday through Sunday, with candlelight tours on the evenings of December 14, 21, 23, and 28.

Historically the holiday season at Eleutherian Mills included Christmas, New Year's Day and Twelfth Night. On Christmas Day "Christ Kinkle" brought presents to fill stockings. The observance of New Year's Day and Twelfth Night reflected the French origins of the du Pont family. In England and on the Continent the celebration of Twelfth Night traditionally included baking a cake in which a silver bean or token was hidden. The lucky recipient of the token was named King for a day.

In 1822, Victorine du Pont Bauduy (1792-1861) described a Twelfth Night celebration at Eleutherian Mills: "It being *le-jour-des-rois,* we drew lots with sugar plumbs *[sic]*, Alexis drew the right one and was proclaimed king – he chose Julia for his queen. Bidermann said that as the king was not of age, the Queen must be proclaimed regent during his reign and give us in his place a party next Saturday..." Although it is not known precisely how and to what extent the house was prepared for Twelfth Night celebration, relying on historical research and tradition the dining room is prepared for *le-jour-des-rois*.

the dining room

The dining room at Eleutherian Mills shimmering with the reflection of soft candlelight and the sparkle of iced boxwood and mirrors announces to the visitor that a table for a special day has been laid. Gracing the center of the table is a mound of raspberry candies whose color beautifully complements a plum border of the 19th century French porcelain dessert service. The candy mound, reminiscent of a mound of fresh raspberries as painted by the well-known still-life painter Jean-Baptiste Chardin (1699-

Statice *(Statice sinuata)* tree using flocked tree form and sweetheart roses *(Rosa polyantha)*

Candlelight Tours
Candlelight tour - 6 p.m. to 8:30 p.m.; reservations required. Adults - $2.50; children under 14 - 50¢. Phone 302-655-2400, Ext. 259. Eleutherian Mills is on Route 141, off Route 52, near Greenville, Wilmington, Delaware.

Mills

by Maureen O'Brien Quimby

1779), is constructed by gluing candy raspberries (two pounds) on a styrofoam half-circle. Matching paint is touched in to camouflage any trace of the substructure.

Three mirrored plateaus reflect the sparkle of ice-encrusted boxwood. The dramatic effect of the delicately iced boxwood is achieved by a process similar to that for making candied violets: sprigs of the greens are dipped first into egg whites and then into sugar and dried (baked) in the oven at a low temperature for approximately 10 minutes. Boxwood may be kept from one season to another if stored in airtight containers.

Small goblets of dried flowers are placed on the mirrored surfaces to complete the picture. On an adjacent sideboard is a grape pyramid reminiscent of the great variety of fruit pyramids illus-

continued

Christmas tree ornament made from peacock feather and money plant *(Lunaria annua)*

Eleutherian Mills continued

Boxwood wreath decorated with dried yarrow *(Achillea filipendulina* 'Gold Plate'), yucca gloriosa pods, wheat and teasel *(Dipsacus sylvestris)* ▶

White pine roping *(Pinus strobus)* and poinsettia *(Euphorbia pulcherrima)* in the entrance stair hall create a cheery welcome. ▼

photos courtesy of the Hagley Museum

photo by Robert Lautman

Magnolia foliage *(Magnolia grandiflora)*, boxwood *(Buxus sempervirens)* and apples with pewter create simple elegance.

photo courtesy of the Hagley Museum

Cranberry tree ringed with ivy leaves *(Hedera helix)* and silhouetted against the Victorian Christmas tree

Father Christmas

photo courtesy Henry Francis du Pont Winterthur Museum Library

From *Godey's Lady's Book*

trated in books of the great French confectioners such as Caréme's *Le Pâtissier Royal* published in 1815.

natural materials

In addition to the Twelfth Night dessert set in the dining room, the Eleutherian Mills Residence is decorated with natural materials.

A Victorian Christmas tree, a favorite of young and old alike, graces the large double parlor. It is decorated with garlands of cranberries, popcorn and candles in addition to antique paper, tinsel and glass ornaments. Among other traditional decorations are baked sugar cookie figures – hearts, stars, angels – gilded nuts, apples, tinsel and ornaments made from a great variety of natural materials.

In addition to natural tree ornaments, an endless variety of Christmas tree forms may be created by an imaginative use of natural materials including: cranberries, statice, hydrangea and roses. The wreath, another traditional form, lends itself to fabrication in many materials.

"Old Father Christmas" made from instructions published in the December 1868 issue of *Godey's Lady's Book* is a delightful bit of Christmas past and present. A fat pine cone body, long narrow spruce cone arms and legs, molded papier-mâché head and mittens, and carrying a crocheted knapsack of miniature treats, Father Christmas lives up to the promise of its originators who, over one hundred years ago, promised that "Many ... would be happy to copy the well-known figure for their young darlings, and thus make Merry Christmas still merrier."

Instructions for constructing many of these holiday decorations are detailed in *Christmas Creations at Eleutherian Mills* available through the Hagley Museum Bookstore ($1.50).

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Maureen O'Brien Quimby is Curator of Collections at the Hagley Museum. At Hagley she researches and plans exhibitions and restorations and is responsible for the care of Museum collections. She is in Charge of Eleutherian Mills Residence, the 1802 home of Eleuthère Irénée du Pont, overlooking the Brandywine. A native of Silver Spring, Maryland, Quimby received her Master of Arts degree in the Winterthur Museum Program in Early American Culture in 1966 and has worked at the Hagley Museum since 1970.

THE HARVEY S. LADEW HOUSE AND GARDENS: CELEBRATING CHRISTMAS IN THE GRAND MANOR

by Amalie Adler Ascher

"It's a Harvey arrangement," Harvey S. Ladew's friends exclaim with delight when one of them drops a bunch of flowers in a vase and they fall gracefully into their own perfect design. Natural elegance was Ladew's style, and his friends keep that memory alive at his estate, now a public showplace, setting the table as he would have done, not a chair or trinket out of place. And when they decorate the house for the public Christmas display, members of the board and committees as well as other volunteers of the Ladew Topiary Gardens Foundation go all out.

The residence and grounds are as special as the man who created and developed them. Host to royalty (the Duke and Duchess of Windsor were among his guests), the elite and the erudite, Ladew lived in the grand manner amid the fine old things he collected, enjoying his life in the Maryland countryside of Harford County. Famous for the hunt, the area is known as My Lady's Manor, a name synonymous with the annual ride to hounds event.

The grounds, which include 22 acres and 15 gardens, rival the interior setting, the renowned outdoor topiary, epitomizing the art. It illustrates Ladew's exacting nature; it was he who designed, helped to maintain and fashion some of the frames for the great, green menagerie of figures symbolizing his beloved sport, the hunt. Swans float atop hedges, the fox crosses the lawn, pheasants roost in the shrubbery. Among them are more fanciful plants formed as pyramids, squares, rounds, cones and arches, living testimonial to the pruner's skill. For the Christmas display, the topiary animals don red velvet bows, the fox on his tail, the swans and hounds at the throat, and Rudolph the Reindeer also sports a red rose as a nose.

Pleasant Valley House, the name given to the old white farmhouse Ladew bought in 1929, was built about 1830. A resident of Long Island, he acquired it because he visited Maryland regularly during the fox hunting season and no longer wanted to impose on his friends for lodging and entertainment. Ladew modernized the house, and over the years enlarged it, filling it with antiques collected on his travels.

Yet despite the elegance of the surroundings, a sense of hominess prevails due to Ladew's unique style, which governed colors and the overall arrangement. Accustomed to living in mansions and vacationing at the Ritz, he had impeccable taste, influenced, no doubt, by the fact that he was an artist.

the english style prevails

In decorating the house for the holidays, special care is given to coordinate the designs with the furnishings. No artificial plants are used. As befits the house, arrangements are in the English style featuring fresh greens, fruits and vegetables and lots of berries. Members of the committee responsible for the decorations also like to use field grasses, which they say, supply all the forms and textures anyone would need. Because visitors return year after year, themes and colors are changed each season, but not so markedly that they would be out of character with the house. Usually the swan, in one form or another, is a dominant motif, since given its prominence in the topiary gardens, it has been taken as the Foundation's logo. But the decorations give other evidence that this was, and in a sense remains, Ladew's house. In a corner, his riding boot, perhaps, holds boughs of evergreens mixed with branches of bittersweet. The orange berries appropriately complement the soft rust tones of the fabrics, the fine woods of the furniture and paneling, the Oriental rugs, the cheery fires in the hearths. Christmas red is unsuited to the house. Other favorite Ladew objects that might be incorporated into the designs are his hunting horn, figures of foxes or similar symbols of the hunt, signifying that this is or was a man's domain.

The oval library, which is illustrated and described in Helen Comstock's book, *One Hundred Most Beautiful*

The famous oval library features an oval partner's desk, a large tree adorned with ribbon and swans, and accents of vanilla in the baby's breath, streamers and candles on the mantle.

Rooms in America, becomes even more special during the Christmas celebration. The room was designed especially to fit the shape and proportions of an oval Chippendale partner's desk Ladew bought in England and then could find no place for in the house. The room also has Palladian windows and an Iris marble fireplace decorated with hunting scenes and motifs.

To match the contour of the library the windows are often hung with oval wreaths, the ribbons chosen to repeat the colors of the leather bindings of the books lining the walls. Or the dominant hue might be vanilla to blend with the woodwork and accents of baby's breath

continued

A view of the dining room showing the apple green Coleport dessert service and the fireplace festooned with a garland of boxwood, berries and grasses and crowned with small trees studded with fruits and vegetables.

photos by Duane Suter

The drawing room is decorated with fresh flowers, Rieger begonias in pots entwined with greens on the mantle, a bowl of lilies and *Magnolia grandiflora* on the grand piano.

laced through the evergreens. Sometimes boxwood garlands frame the doorways, but inevitably there is the floor-to-ceiling Christmas tree adorned with ribbons, perhaps baby's breath, and swans of one sort or another.

In the drawing room, which features a huge 19th century English breakfront filled with Ladew's collection of mostly Staffordshire pieces associated with the hunt, the mantle, grand piano and Chippendale mirrors are decked with magnolia and pine. One year, they might be combined with lilies, another with Rieger begonias in a lovely salmon shade. The begonias remain in their pots, but so skillfully concealed, and the flowers pulled so artfully through the greens, that no one would ever know they weren't cut.

The dining room is outfitted in what his friends refer to as a "Harvey color." His love of vegetables and plants inspired Ladew to use their shades to decorate the house, yew-green in the dining room, aubergine upstairs. Fruits, vegetables and nuts might criss-cross the dining table on a bed of greens, or stud the small trees on the mantle, or make a foundation for a huge swan as the centerpiece. The table might be set with pieces from Ladew's large service of apple green Coleport china displayed in the cabinet, matching fruit coolers on the Sheraton sideboard with its distinctive brass rail injecting a festive note. Other rooms decorated for the occasion are Ladew's office, halls and the unique Elizabethan room with its red lacquer chest and brocade settee designed for sufferers of gout.

Planning for the event begins in early October when a small committee travels to Wilmington to obtain supplies and items for the gift shop. A week before Thanksgiving, the designs are conceived and assigned to the volunteers who will make them. They will also make kissing balls, wreath, swags and fresh green arrangements to be sold in the gift shop. Designs in the house are also sold, at the conclusion of the three-day fete.

All greens are donated by board members and friends of Ladew, who welcome the opportunity to have their shrubs and trees pruned. This is usually done by the four gardeners from the Ladew staff and volunteers, who spend the entire week before the display gathering eight to nine truckloads of mostly magnolia, boxwood and holly. Decorating begins on Monday of the week the display is shown, traditionally the first weekend in December. Although the fresh designs are completed well before Christmas, they keep well. Buyers are advised to store them outdoors under a tree and enclose wreaths, swag roping or other all-green arrangements in a plastic bag, adding a cup or two of water.

Hostesses greet guests and explain the features of the house, furnishings and decorations. Hot mulled cider and homemade cookies are served. Candles and fires are lit, and choral groups and bagpipe players in costume perform. Says one member of the committee, "We try to make it a social occasion." And they certainly succeed.

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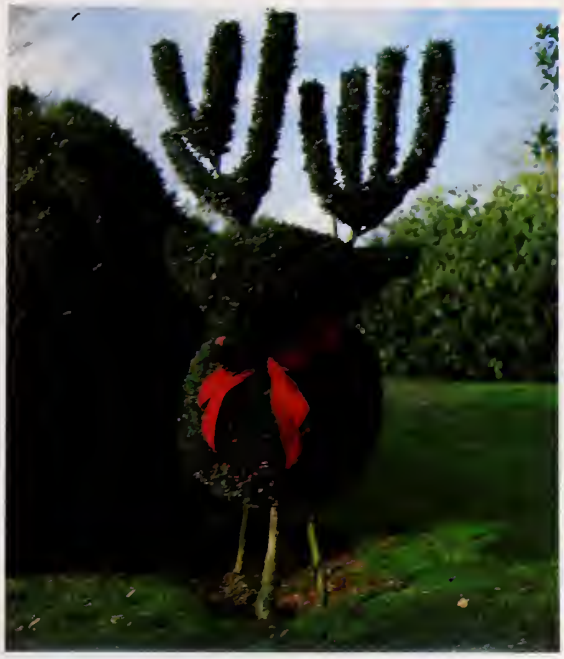
Amalie Adler Ascher is a frequent contributor to *Green Scene*. She writes for the Baltimore *Sun:* a gardening column for the Sunday *Sun,* the house of the week feature for the *Sun* Magazine, and occasionally pieces on food for the *Morning Sun*. Her articles have appeared in the *New York Times, Christian Science Monitor, Mechanics Illustrated* and *Flower & Garden.*



Rudolph the Red-nosed Reindeer has a rose for a nose. The topiary is near the front door of the house at the Ladew Topiary Gardens at Christmastime.

The Ladew Topiary Gardens are located at 3535 Jarrettsville Pike, Monkton, Maryland 21111. Phone (301) 557-9466. The Christmas display will be held December 3, 4, 5 from 11 a.m. to 4 p.m. Admission is $2 for adults; 50¢ for children 12 and under.

At other times, Ladew Topiary Gardens are open from April 19 through October 31. Hours for visiting the gardens are 10 a.m. to 4 p.m. Tuesday through Saturday; 12 noon to 5 p.m. Sunday. The house is open on Wednesdays and Sundays during the same hours as the gardens. Admission to the gardens only is $2 for adults; $1.50 for students and senior citizens; 50¢ for children 12 and under. Admission to the house and gardens is $3.50 for adults; $2.50 for students and senior citizens; $1 for children 12 and under. Special rates for group tours of 15 or more may be arranged, but not for the Christmas tour.

Directions for Making a Fruit Board Designed for the Ladew Christmas Display

(Created by Mrs. Roger Caron, executive director)

Materials

A board 8-10 in. wide and 26-30 in. long (fits a 90-in. dining table)
3 pineapples, 10 red and yellow apples, 4 pears, 12 lemons and limes, 12 crab apples, 12 lady apples, a small carton kumquats, and 2 long bunches of red or green grapes
About 48 leaves of *Magnolia grandiflora*
About 36 sprigs of boxwood, about 5 in. long
12 popsicle or coffee stirring sticks, broken in half
1 box headless or finishing nails
spool wire, 2 pieces 18 in. long
6 fern pins
green paint
staples

Spray board green as magnolia leaves tend to curl and expose board. Staple magnolia leaves in an overlapping pattern around the edge of board, first removing stems. Staple small sprigs of boxwood to board, starting at one end and covering to center of board, then composing opposite side to correspond. Impale 3 headless or finishing nails at center of board. Press pineapple on nails. Add more finishing nails around pineapple to secure other fruit. Place a large apple and pear on nails on either side of pineapple, front and back. Lay two remaining pineapples at an angle, supported on nails and bases touching center pineapple. Build up fruit by inserting popsicle sticks or coffee stirrers in fruit and attaching to fruit on board. Fill in voids with small fruits. Thread spool wire through each bunch of grapes to pull the grapes together. Drape one bunch on each side and attach to pineapples with fern pins. Tuck in more boxwood to fill in gaps. To adapt design to a smaller board, use one pineapple and reduce other fruits and foliage, accordingly.

Merry Christmas, Mr. Maxwell

by Charlotte C. Stokes

Ebenezer Maxwell built his home in 1859 when the Germantown neighborhood was emerging as one of Philadelphia's first suburbs. Many of those beautiful homes are still lived in today. The Ebenezer Maxwell Mansion, however, is the only Philadelphia Victorian home of the Civil War period open to the public. Threatened with becoming a "gas station" corner in 1965, a group of caring neighbors and friends saved it, knowing that architecturally the Mansion was worth preserving. They worked for 10 years to keep the house from being torn down, and in 1976 they were able to purchase it outright. A grant in 1977 from the Pennsylvania Horticultural Society provided funds for establishing the gardens around the house. By 1979 these were completed and are one of the few examples in the country where authentic Victorian landscape design and plants are shown surrounding a restored home.

No obvious historic garden features existed at the Mansion at the time of its purchase except for the conservatory, which Mr. Maxwell attached to the back of the house. (It is no longer standing.) This is evidence that he or his wife had some interest in horticulture or perhaps wanted to add a touch of elegance to their new home. The gardens at the Maxwell Mansion represent two styles of landscape design used in the 19th century. The principles of Andrew Jackson Downing in the front and at the western side of the house show the popular ideas for home gardens in the 1840s to '50s. The east and south sides are representative of the theories of Frank J. Scott who lived in the 1860s to '70s. Great care has been taken to see that all the plant specimens are appropriate and true to each period. It is from these gardens that we are now able to cut many of the greens for Christmas decorations.

For many years the Mansion's old-fashioned "Dickens Christmas Party," with readings from Charles Dickens' *A Christmas Carol,* has been popular. The need for a festive Christmas decor prompted me to research what was done in Victorian times. Recently many of the Germantown historic houses have combined to open their doors for a special weekend in December showing Christmas decorations appropriate to each house. The ideas for decorating the Maxwell Mansion came from old books, pictures and other sources. They have attracted much attention.

A welcome sign made from ivy leaves. The design was adapted from a Victorian children's book.

photos by Steve Goldblatt

As soon as people enter the front hall at Christmas time the feeling of hospitality is immediately apparent. A charming picture as a chapter heading in a Victorian child's book showed, against a wall, the word "Welcome" composed of ivy leaves in large letters. Nothing would do but to make a similar sign to hang in the front hall of the Maxwell Mansion. Long wires were bent to form an arc about 5 ft. long. Wire coat hangers were then shaped to make the letters (about 12 in. high) and they were fastened to the arcs with masking tape. These were painted a dark green so they would be inconspicuous. Uniform

ivy leaves were laid in one direction along the letters and bound to the wire with green florist's tape. The back of the leaves were Scotch-taped to hold them in position. The natural curves of the leaves added to the charm of the sign. In earlier times the leaves might have been pressed flat, dipped in paraffin to preserve them and then sewed on by hand. After completing the front and back of the wreaths, we sprayed them with clear plastic. It held up very well and with a bit of patching was even used a second year. A few small red bows of ribbon added the final touch.

Below the "Welcome" sign is a tall hat rack with umbrella stands at either side of the base. Books on window gardening and house plants written in the 1860s show pictures of ivy draped over paintings and mantels. From the garden, sprays of varying lengths were gathered, then wired together in the center. A big red ribbon was added, and the whole hung gracefully over the top of the hat rack. Set on a crocheted doily below is a potted poinsettia, a popular plant at that time. Potted palms on the floor finished off the area in true Victorian style. Old pictures show potted plants placed in groups on the floor and our use of palms, poinsettias, maidenhair ferns and other plants add greatly to the decorative effect and homelike feeling of the rooms.

A traditional "kissing ball" hangs from the hallway chandelier with a branch of sentimental mistletoe at the tip to inspire the love and the kisses of all who stand under it. The center is a large potato through which a strong wire was forced. The wire was bent with pliers into a loop at the bottom to keep the potato from slipping off. The mistletoe can later be fastened there. A hook was made at the top to hang it from the chandelier. Sprigs of boxwood from the garden (4 in. to 5 in.) were inserted into the potato. When the box completely covered the potato it was trimmed to a round shape with large scissors. Small bows of old-fashioned metallic ribbon were made at the ends of short lengths of wire and inserted into the potato just far enough to hold them at the outer edge of the clipped box. These bows are reusable if not crushed when stored. A light plastic spray helps to preserve the box although ours has lasted at least a week without it. A piece of mistletoe tied to the bottom wire loop with a bow of red ribbon adds a bright touch and completes this decoration.

From the newel post to the top of the steep stairs a garland of laurel or evergreens was tied every few feet with large red bows. Old pictures show garlands being strung from chandeliers to the corners of rooms in very festive ways but instead we put them on the bannisters and over doorways as our chandeliers are much too fragile for such treatment.

the basis for furnishing maxwell mansion

At Maxwell Mansion an inventory of all the major items of furniture and objects of art in each room was made in 1867 when Mr. Hunter, the second owner of the Mansion, died. This inventory has been the basis for furnishing the rooms at the Mansion. The most expensive item in any room was the French plate glass mirror, and the one in the parlor at Maxwell reflects the beauty of the whole room. In its reflection the handsome chandelier shows the branches of holly tucked among the glass globes. Holly was all important and branches of it were placed over pictures and in arrangements everywhere.

continued

Large sea shells are used as containers for evergreens.

A small tree on an antique stand in the Maxwell Mansion parlor.

As was the custom in Victorian times people collected items from far away places and showed them off on tables and "what-not" stands. The large shells on the mantel used as containers for the evergreens would have been such an item. The mechanics of using the shells necessitated propping them up with balls of plasticene to keep them steady enough to hold water. Inside the shells pieces of oasis allowed the positioning of the arrangement's branches to be graceful as well as keeping the stems wet and firm. The rococo design of the ormolu clock on the mantel with the curling form of the *Chamaecyparis obtusa* blended beautifully. Springs of holly and small yellow-green tips of new growth from an andromeda made two, balanced, attractive arrangements.

At Maxwell Mansion the main feature of the parlor is the small tree on its antique stand placed in the big bay window. By the time the Maxwell children had moved into their elegant house, Christmas trees were becoming a traditional item in many homes. In 1856 President Franklin Pierce had a Christmas tree in the White House. Throughout the 1850s the popular *Godey's Magazine* pictured them in the December issues, which undoubtedly helped to establish their use in America.

Excitement ran high for weeks before Christmas with the making and preparation of many of the articles that trimmed the tree. Often little bags were made out of scraps of material that had been saved, and these were filled with candies, cookies or nuts. Eggshells, cut in half and trimmed with ribbons and lace, were another handmade item. Strings of popcorn, peanuts and cranberries festooned the branches. Gilded nuts, small toys, paper objects, pen wipers, cookies, sachets, needle cases, flags and small gift packages were some of the trimmings made by the family., Gift packages, wrapped in white tissue paper and tied with red string, were placed under the tree. It was the custom to present little gifts you had made to visiting friends and family before they departed for home.

Usually a fir tree was placed in a large jar or bucket, packed with wet sand. Moss was mounded over the top of the sand.

Christmas Eve was the time reserved for setting up the tree in the parlor. Usually a fir tree was placed in a large jar or bucket, packed with wet sand. Moss was mounded over the top of the sand. Children were not admitted to parlors in those days except when birthdays, guests and special events occurred. So the thrill of Christmas was to have the doors of the parlor open and to be able to go in to see the tree and to help to trim it. Small candles lit the tree. Nearby a pail of water with a wet sponge tied to a pole was ready to douse the flames should anything catch on fire. To add to the excitement of tree trimming all edible decorations were expected to be eaten

Half an eggshell trimmed with lace and fabric becomes a tree ornament.

The dining room

when the tree was dismantled.

Across the hall in the dining room the table is spread with an antique red decorative cloth imported from India. In the center of the table a cone shaped arrangement is built up from the container with sprigs of variegated holly. On the cloth around the base are laid fronds of Christmas fern graduated in size and lengths to form four focal points toward the edges of the table. Drying these ferns between newspaper during the earlier months of the year would eliminate having to replace fresh ferns in the arrangement each day. Over the table hangs the chandelier filled with branches of holly.

Most Victorian Christmas pictures show wreaths in every window as well as large ones hanging in front of the great mirrors. At Maxwell basic wreaths made of cones have been saved from year to year and filled out with evergreens from the garden at Christmas time. The wreaths for the windows are about 12 in. in diameter and are supplemented with sprigs of boxwood and a red ribbon bow. The larger ones for the mirrors have a variety of evergreens tucked in among the cones.

Fruits were a feature of decoration in the 19th century and were used in many ways. Apples, lady apples, oranges, grapefruit and even grapes could be found for decorating. One of the loveliest features in the dining room is the 4-ft. high alabaster epergne filled with fresh fruits and gracefully set off at the base with pots of light green feathery maidenhair ferns. Small pieces of boxwood were used as a base for the fruit. The contrast in colors between the dark green box, the bright fruit and the light alabaster stone creates a beautiful arrangement. Bunches of grapes were draped over the edges of the tiers. Ivy leaves were tucked in here and there among the fruit, as were dark red leaves of strawberry plants still available from the garden beds. The whole made a lovely feature in the window.

The Christmas decorations at the Maxwell Mansion express the yuletide spirit, which pervades the house at this season of the year. Visitors seem to enjoy seeing the house even though it is still being restored. They relate closely to it either because they are renovating their own homes or because they remember houses like it from their own past. We hope to have Christmas at the Maxwell Mansion for a long time to come.

So, thank you, Mr. Maxwell, for your beautiful home and the chance to say "Merry Christmas" to the generations of the future.

The Maxwell Mansion is open from April through December, Wednesday and Saturday, 11 to 4, Sunday from 1 to 5 and by appointment. Mrs. Stokes is available for a slide lecture on the Maxwell gardens.

This year the annual Dickens Christmas Party will be December 4 and 5, and the Christmas House Tour of the Association of Historic Germantown Houses will be December 10 and 11. For further information call 438- 1861.

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Charlotte Calwell Stokes is an artist. Among her many accomplishments are a three-foot high bronze of five children playing, placed in front of the Stock Exchange Building at 19th and Market Streets, and 52 double-page color illustrations for *Handguide to the Coral Reef Fishes of the Caribbean* (William Collins, London, 1980). She is past president of the Ebenezer Maxwell Mansion and is currently on the board. She executed the gardens at the Mansion and gives lectures on them. She is also a Volunteer Guide at the Philadelphia Museum of Art, specializing in tapestries and sculptures.

Cedar Grove parlor

Photos courtesy of Philadelphia Museum of Art

HISTORIC HOUSE CHRISTMAS TOURS IN FAIRMOUNT PARK: *The 10th Annual Tour*

by Charlotte B. Shapiro

Thousands of visitors come to the Historic Houses in Philadelphia's Fairmount Park during the first weekend of December to enter a fantasy world and to recapture the joys of an 18th century Christmas. The magic touches of local garden clubs create enchanting exterior and interior arrangements to adorn the eight houses – on fanlights and doors, railings and columns, tables, windows and fireplace hearths. The wonderful smells of pine and potpourri, cider and cinnamon transport each visitor back 200 years to the days of candelight and carriages when Philadelphia was hosting the delegates to the Continental Congress and was the first capital of the United States.

This year the special Christmas Tours, sponsored by the Park House Guides of the Philadelphia Museum of Art, will celebrate a Pennsylvania Ger-

Mt. Pleasant doorway

man Christmas in conjunction with the Pennsylvania German exhibition at the Museum. Local garden clubs will use this overall theme, making their decorations harmonize with the architecture and furnishings of each house, using materials that would have been available to the owners of the houses in the 18th century.

This year the Wayne Woods Garden Club is decorating Solitude, built in 1785 by John Penn, grandson of William Penn. Two members of the Wayne Woods Garden Club, Anne Robinson and Kay Thomas, met at the home of Betty Persons, whose idea it was 10 years ago to have local garden clubs decorate the Park Houses for special Christmas Tours. Together they planned some of the decorations that

continued

Laying out elements for corncob wreath. The cobs have been soaked in chlorox and air dried. The cobs are speared on an 18th century corn drier (reproduction) with fresh greens.

Corncob decoration completed

CORNHUSK DOLLS

ARMS:
Use a 6-in. length of pipe cleaner (4½ in. to 5 in. for small dolls). Roll husk tightly around pipe cleaner and tie each end securely with wire ½ in. to ¾ in. from the end. (Fig. 1)

Fig. 1 

SLEEVES:
Cut a 3-in. by 4-in. piece of husk (3 in. x 3 in. for smaller dolls). Place this piece around piece of wire just tied for arms with husk extending over hand end and wire again. Pull extending husk back over wire to center of arm roll. Form sleeve as in Fig. 2

Fig. 2 

HEAD:
Cover wooden bead with 2 or 3 strips of husk about 3-in. wide. Attach the pieces with tie wire at center. Separate the husks at right angles. Place tied area on top of bead. Ends of wire go through hole of bead. Wrap husks around the head and tie under chin. (Fig. 3)

Fig. 3 

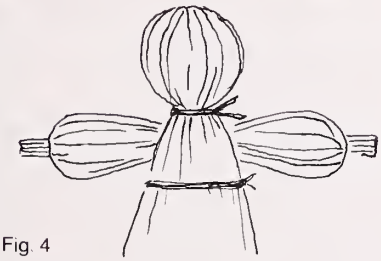

Fig. 4

BODICE:
Wire head to arms at center. Wire together beneath arms. (Fig. 4) Use two 2-in. widths of husk folded in half and fold over each shoulder crossing in front and back at waist. Use wire to fasten at waist. (Fig. 5)

Fig. 5 

SKIRT:
Use 2 to 4 large husks. Position doll's arms above head. Wrap husks around doll's waist with husks in an upward position. Fasten wire tightly. Pull husks down to form skirt. Trim bottom of husks so doll will stand well. (May need to trim when dry.) Tie skirt with string until thoroughly dry.

HAIR:
Shape wig and tie or wire in place. After doll is dry glue to head.

BALER TWINE WREATH

36 strands - 92 in. – divide into 12's and braid
36 strands - 82 in. – divide into 12's and braid
9 strands - 60-in. – divide into 3's and braid (Note: Put rubber bands at ends to hold braids.)
2 yds. jute – to sew braids to wire frame
1 15-in. wire wreath frame (14 in. will do)

Lay large braid on outside of 15-in. wire frame overlapping at bottom. Lay small braid around on inside of 15-in. frame. Wrap braid around both braids and wire at bottom tacking down ends in back. Turn wreath over and wrap completely with the 2-yd. piece of jute using a large-eyed needle. Sew both braids to frame. Remove the rubber bands. Unravel ends and trim at about 8 in.

DRIED FRUIT WREATH

Pineapple and pomegranate have been air-dried; lemons and limes have been dried in refrigerator; celosia and blue statice are dry and combined with fresh greens and *Magnolia grandiflora*. See Fig. 2 for method of assembling materials. Fig. 3 is finished wreath.

Fig. 1

Fig. 2

photos by Eric Mitchell, Philadelphia Museum of Art

photo courtesy of Philadelphia Museum of Art

Kitchen at Strawberry Mansion

Fig. 3

will be used at Solitude this year. (See illustrations.)

Other houses on the tour, in addition to Solitude, are Cedar Grove, decorated by the Martha Washington Garden Club, Laurel Hill by Women for Greater Philadelphia, Lemon Hill by the Norristown Garden Club, Mount Pleasant by the Green House Garden Club, Sweetbriar by the Berwyn Garden Club, Strawberry Mansion by the Olney Garden Club, the Pottstown Garden Club and the Junior League of Philadelphia, and Woodford by the Garden Workers. There will also be a special Christmas Shop at the Horticulture Center with decorations duplicating those in the Park Houses, as well as dried materials, fresh greens and handmade items sold by the participating committees.

A Pennsylvania German ornament-making workshop will be held at the Philadelphia Museum of Art on Sunday, December 5, from 1:00 to 4:00 in the Student Center. The session is free but advance reservations are requested. On Saturday, December 4, visitors to the Museum will be serenaded throughout the day by musical groups performing traditional holiday music on the Museum's east staircase, and the Womens' Committee will provide period decorations in the Museum's Period Rooms.

Park House Tours

The 10th Annual Tours will be held on December 3, 4, and 5. A Special Charter Bus Day for *groups only* will be held on Thursday, December 2. Tickets for admission and a map to all eight Park Houses and the Philadelphia Museum of Art are $6.00 per person and are good for the entire weekend. The houses will be open from 10:00 to 4:00 each day. The trolley bus will run from 16th and JFK Boulevard and limited parking is available at the Museum and each of the Park Houses. For further information call the Park House Office, Philadelphia Museum of Art, PO 3-8100.

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Charlotte B. Shapiro is a Park House Guide with the Philadelphia Museum of Art.

PHS CHRISTMAS EXHIBIT

PHS's Horticultural Holidays

PHS's 1981 "Holiday Vignettes" featured decorated trees and sections of several rooms. Pictured here are some highlights from last years's exhibits.

PHS HOLIDAY EXHIBIT 1982: How to Decorate with Natural Materials during the Holidays

PHS's holiday exhibit will feature seasonal decorations created from natural materials, including fresh and dried wreaths, working with cones, roping, cranberries and lots of other goodies. Each decoration will be displayed in stages of construction from beginning to end. Each visitor will receive detailed, printed instructions to take home. The exhibit will be open from December 1 through noon, December 30. Monday through Friday, 9 am to 5 pm, and Saturday and Sunday, December 18 and 19, 11 am to 4 pm. (PHS will be closed on Friday, December 24 and Monday, December 27; from noon on Thursday, December 30 and all day December 31.)

PHS members are invited to our Holiday Open House and Candlelight Stroll of Society Hill area on Thursday, December 16, from 3 pm to 6 pm.

photos by William F. Herbert

The Shipley School

The Shipley School has exhibited in the Horticultural Society's Annual Christmas Show for over 15 years. The Upper School art students (grades 8 through 12) design and construct their tree ornaments from scratch. In preparation they collect and dry natural materials throughout the fall. Favorite materials are milkweed pods, pine cones, seeds, berries, dried flowers, beans, nuts, grains, feathers, thistles and treebark.

PHS selects the theme; then the art teachers, Karen Sanders and I, develop and present a lesson using reference materials, examples and illustrations. Last year's theme was "Vignettes." The students made miniature scenes and border decorations while keeping in mind the various elements of art: design, composition, balance, line, color, shape and texture. They made preliminary sketches, then began constructing their ideas three-dimensionally by selecting the shapes that matched their drawings and gluing them together until they held (Elmer's Glue works best).

The mouse in the photograph was made by gluing two navy beans (for ears) onto a lima bean (for a body). Yarn was added for a tail and thread for a mouth.

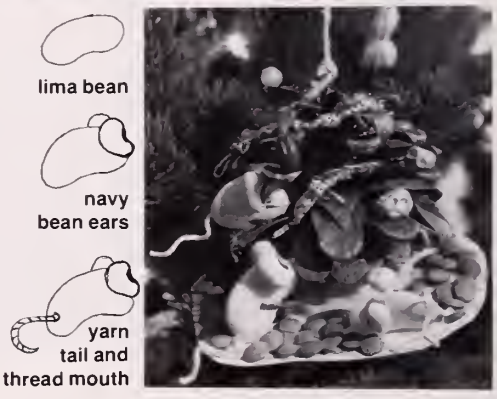
A pine cone decorated with corn kernels represents a Christmas tree. Often, barley is used to look like snow. All of these objects were glued onto a supporting base of oak tag paper covered with lentil beans. Occasionally a touch of glitter or colored yarns are added for highlights. However, the students try to keep the ornaments as natural as possible. They must also be cautious of the weight and the balance of their design. If an ornament is too heavy it will bend the tree branch or if it is not balanced properly it may tip forward or fall over. When the decorations are finished and ready for hanging they must survive the shake test and the drop test. Each one is shaken and dropped from a height of two feet. If it holds together then it's off to the exhibit. If an ornament is too fragile it will never survive the packing, traveling and unpacking.

Even though more than 1,500 Shipley students have participated in these exhibitions over the last 15 years, no two ornaments were ever the same. We stress originality, creativity, imagination and try to develop a genuine enthusiasm for the project.

Student volunteers decorate the Shipley tree. They enjoy seeing it completed together with the other Christmas displays. It's a wonderful way to begin the holiday season in a creative and giving fashion.

Chris Wagner

Chris Wagner is head of the art department at Shipley School and worked with the students for the 1981 exhibit.



Friends' Wreaths

These two wreaths were part of the Friends Hospital 1981 Christmas exhibit at PHS. Below are directions to complete similar wreaths for your own enjoyment.

Both wreaths have a grapevine wreath base. Vines can be cut throughout the year, but October through April is the best time to harvest them. You'll need sharp hand shears. Clip the leaves and branches from the vines as you collect them; leave the spiral tendrils attached to the vine for a delicate touch. Wind the runners into circles around your arm.

To make a vine wreath, soak the vines in hot water to make them pliable. Loop one large, thick vine into a circular shape, then continue to wrap others around the circular shape in spiral fashion. Tie the ends with string after tucking them into the rest of the wreath form. Strings can be removed after the wreath dries securely.

Materials used to complete the decorating of the two wreaths included:

WREATH 1	WREATH 2
Cedar	Dock
Yarrow	Pheasant feathers
Pine cones	Pine cones
Cinnamon sticks	Cedar
Lotus pods	Cinnamon sticks
Garlic flower heads	Eucalyptus
Honesty flowers with velvet-leaf centers	

The above materials were glued onto the grapevine wreath form to complete the wreaths. A hot glue gun (available from hardware stores) was used.

Mona Dwork Gold

Mona Dwork Gold is supervising director of Horticultural Therapy at Friends Hospital. She serves on the PHS Council and Flower Show Executive Committee. She made the wreaths shown here.

Other Ideas

By Phoebe Guckes

Clematis Wreath

This wreath can be made after the fall clematis blooms (September until early October). Pick and air dry. The seeds have a pale pink fuzzy tail; make bunches with tail and attach with greening pins to a straw wreath. Spray with a clear lacquer to keep humidity out and to keep bits from dropping. The bows are made from one-inch wine velvet ribbon spaced around the wreath.

By Phoebe Guckes and Sandra C. Ward

The St. Fiacre Arrangement

This arrangement surrounding the statue of St. Fiacre consists of a branch of *Cedrus atlantica* 'Glauca,' rose hips, dark red celosia and purple grapes.

By Phoebe Guckes

Fruit, Spice and Herb Wreath

The base is a straw wreath. The fruits can be dried in a slow oven or in a microwave. I included slices of apple, mock orange, lime, lemon and orange. The fruits were placed on the wreath with a hot glue gun. The fillers are beans and cloves, and the framing is made with cinnamon sticks and bay leaves.

Phoebe Guckes

Phoebe Lukens Guckes is a member of the Rosetree Gardeners. She gardens in West Chester and her main interest is creating arrangements.

continued

A Wreath from the Salt Marsh

Materials

Straw wreath
Dried marsh weeds
Artemesia (dusty miller)
Phragmites
Hydrangea

Prepare phragmites by clipping stems to 4-in. lengths and spraying plumes lightly with hair spray. Starting with straw wreath as a base, insert phragmited stems into wreath so that each plume overlaps the preceding one until entire wreath is covered. Dried brown marsh grasses and dusty miller are inserted on one side. Then dried hydrangea is added as a final touch.

Carolyn Waite

Carolyn Waite is a member of the Green Countrie Garden Club and the Huntingdon Valley Garden Club. She is a prospective judge for the Garden Club of America. She studies watercolor painting.

43rd & Sansom Street Neighbors

The 43rd & Sansom Street Neighbors is a loosely organized group of families and individuals who live within two blocks of this intersection on Sansom Street.

Their primary activity over the last several years has been the establishment and maintenance of three award winning vegetable gardens on what had formerly been vacant lots. Membership is drawn from the community surrounding the intersection and includes all ages, races and ethnic groups in the area.

The group was approached in late fall of 1981 by the Pennsylvania Horticultural Society to decorate a tree for the Society's Christmas exhibit. Feeling that it was important for the ornaments to be horticulturally interesting, the group turned to the old seminary grounds at 42rd and Spruce where they gathered pine cones, acorns, seed pods and leaves, which they used for ornaments.

Primary designers of the tree ornaments and overall tree decorating were Ruth Flounders and Frank Kieser, both garden coordinators for the group and members of the Philadelphia Green Advisory Board.

Bird In A Nest

A Swedish belief is that a bird's nest in your Christmas tree brings luck in the coming year. If your tree lacks one, the following should insure a good '83.

Materials

Nest: small amount of straw, hay or dried grass clippings. Sprigs of dried or fresh herbs for fragrance and color. Spring clothes pin, white glue, aluminum foil, muffin tin.

Bird: Baker's clay, felt tip marker.

To make nest, line cup of muffin tin with foil. Mix a handful of straw with slightly watered white glue. Place in tin and top with another foil square. Weight to make an indentation. (We used a spice bottle, but any roundish, slightly heavy weight will do.) Leave a few days to dry.

Peel off foil. Use herbs to fill out the nest, securing with a drop of glue if needed.

Apply a generous amount of glue to the clothes pin (clothes pin will clamp onto tree branch with nest sitting horizontally). Situate nest towards the middle of pin and hold in place with C-clamp until dry.

Mix one cup flour with a quarter cup each salt and water with fork to make a dough and knead until no longer sticky. (This makes enough for several birds.)

Shape a small wingless bird from an inch and a half ball of dough. Bake in preheated 350° oven until golden, about 25 minutes.

Mark eyes and wings with felt-tip marker, drawing hearts or flowers on wings if desired. Glue into position in nest.

Ruth Flounders

As a board member of Philadelphia Green, Ruth Flounders is active in the Harvest Show and serves on the Nomination Committee. She and Frank Kieser decorated a tree for PHS's lobby last December. She and Frank Keiser decorated the tree in the photo shown above.

Gremlin Santa Claus

The world of the gremlin is as rich in fantasy as is the fantasy world of the human. The following instructions for a Gremlin Santa Claus Tree Ornament is to be credited to them.

Materials Needed

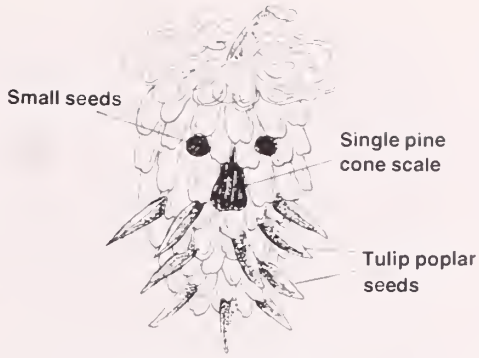
2 pine cones (2 in. from stem to tip and about halfway open – scotch pine is ideal)
1 swamp grass seed plume
1 tulip poplar seed pod with seeds
Sobo glue
Quick drying cement such as DuCo
Scissors
Floral wire
Black felt ink pen
Small water paint brush
Small seeds such as dried mustard or mimosa

Remove a single pine scale from one pine cone and glue it concave side down in the center of a complete cone, making sure you glue the wide end of the scale toward the stem end of the cone.

Now take individual tulip poplar seeds and glue them seed end under scales to give the effect of a spiked beard on one side of the cone (the side around the glued on scale known as the nose). When these seeds have dried in place, darken the pointed ends with a black felt-tipped marker.

Using quick drying cement, glue any seed 1 8 in. long on each side of the nose and also darken with black felt-tipped marker to form eyes.

Coat entire pine cone and added appendages with Sobo glue using the small watercolor brush. Quickly take furry material from swamp grass plume and fill in around spiked beard. Also cap the stem end with the same material to give the effect of a furry cap.



Use floral wire around stem to form a hanger for your holiday tree.

Frank N. Kieser

Frank Kieser, a member of the Pennsylvania Horticultural Society and Advisory Board Member for Philadelphia Green, is co-vice chair of Horticultural Classes for Community Gardeners for the 1982 Harvest Show. He has been an active award-winning participant in the City Garden Contest for the last three years.

SOME OTHER PLACES TO VISIT FOR A HORTICULTURALLY HAPPY HOLIDAY

Place	Exhibit Dates	Feature	Charge
Blithewold Gardens and Arboretum Ferry Road Bristol, RI 02809 (Located 2 mi. south of Bristol Center on State Route 114, ½ mi. north of the Mt. Hope Bridge) 401-253-8714	December 17-23 1-8 pm daily	Each of eight rooms are decorated along the lines of a Victorian Christmas by local florists. Also featured is a 15 ft. to 18 ft. Christmas tree in the main entrance decorated with garlands, handmade ornaments and over 1,000 miniature white lights	Adults - $2.50 Children - $1.00 (under 12)
Bowman's Hill State Wildflower Preserve Washington Crossing Historic Park Rt. 32 - 2½ mi. south of New Hope, PA 215-862-2924	December 1-31 9 am - 4 pm	Bowman's Hill Christmas Exhibit featuring Christmas decorations made from natural materials, all done by volunteers, including centerpieces, and arrangements. The exhibit will be in the auditorium of Wildflower Preserve Headquarters.	Suggested donation $.50 per person or $1.50 per family
Brandywine River Museum U.S. Rt. 1 Chadds Ford, PA 19317 215-388-7601	November 26-January 9 9:30 am - 4:30 pm Museum hrs. extended to 8 pm from Dec. 26-30 for this display	A Brandywine Christmas for Children of All Ages. This gallery of Christmas traditions includes model trains, and showcases five naturally decorated Christmas trees. Antique porcelain dolls by Ann Wyeth McCoy decorate their own tree in a special display. Other exhibits will display the work of Palmer Cox and E. T. Taylor. Local artisans will be on hand to offer handmade gifts to museum visitors, weekends throughout the season. Guided tours available by reservation for both adult and school groups.	Adults - $1.75 $1.00 - Children under 12, students with ID, and senior citizens
Delaware Valley College of Science and Agriculture On Rt. 202, one mi. west of Doylestown, PA 18901 215-345-1500, Ext. 306	December 11	Annual Christmas Open House hosted by the college's Dept. of Ornamental Horticulture. The event will feature Christmas arrangements, as well as holiday plants. Tours are available and visitors treated to caroling by the college chorale group.	No admission charge
The Association of Historic Germantown Houses 6401 Germantown Avenue Philadelphia, PA 19144 215-848-1777 or 951-2861 or 438-1861	December 11 and 12	Christmas House Tour Friday and Saturday - Open House Tours Thursday - prearranged bus tours	$8.00 Must be purchased in advance for the prearranged tours
Horticulture Center Horticultural Drive West Fairmount Park Philadelphia, PA 19131 MU 6-1776, Ext. 81287 or 8	After Thanksgiving through January 15, 10 am to 4 pm The Center is on the Historic House Tour on December 2, 3, 4 and 5. See page 26 for more details.	Poinsettias, Christmas cactus and other holiday plants	50 cents donation
Lachford Hall Tyler Arboretum 515 Painter Road Lima, PA 19037 566-5431	December 27-January 1 10 am to 2 pm Throughout December December 4 & 11 - 9:30	Decorations in the Victorian mode using natural and dried materials Self-guided holly tour Guided holly tour	No charge

DECORATING FROM BOOKS

by Mary Lou Wolfe

books from the PHS library to inspire holiday decorating and gift projects

Christmas Decorations from Williamsburg's Folk Art Collection. Staff of the Abby Rockefeller Folk Art Collection. Colonial Williamsburg Foundation, Holt, Rinehart & Winston, NY, 1976.

Christmas in Williamsburg. Taylor Biggs Lewis and Joanne B. Young. The Colonial Williamsburg Foundation, Holt, Rinehart & Winston, NY, 1976.

The Christmas Tree Book. Daniel J. Foley. Chilton Books, Philadelphia, 1960.

The Christmas Tree Book. Phillip V. Snyder. Penguin, NY, 1977.

The history of the Christmas tree and antique Christmas tree ornaments.

Colonial Williamsburg Decorates for Christmas. Libby Hodges Oliver. Colonial Williamsburg Foundation, Williamsburg, VA, 1981.

Step-by-step illustrated instructions for Christmas decorations that you can make for your home.

Decorating with Fragrance: the Potpourri Story. Grace M. Wakefield. Tom Thumb Workshops, Chincoteague, VA, 1981.

"The custom of using flowers and herbs to bring fragrance to a room is very old. Cleopatra had her apartment carpeted with rose petals in anticipation of Mark Antony's visits. Nefertiti chose to have her floor strewn with lavender every morning."

Winter Holidays

1 oz. cassia chips
1 oz. myrrh gum (small pieces)
1 oz. sandalwood chips
½ oz. cloves (whole)
2 oz. allspice (whole)
2 oz. cedar chips
1 oz. bay leaves
1 oz. star anise (whole)
2 oz. rose hips (whole)
20 drops spruce oil
20 drops frankincense oil
10 drops bay oil

Mix all the above ingredients in a non-metal bowl. Store in a glass jar with a tightly fitting lid. Allow to blend for two weeks before using. Stir occasionally. Makes approximately 12 ounces of potpourri.

Designing with Natural Materials. Bebe Miles. Van Nostrand Reinhold, NY, 1975.

To Dry an Artichoke: "Small sizes most useful ... cut in half, dry in a warm, sunny window, turning daily to prevent mold formation; after several weeks (depending on weather), will turn orange brown. Or stuff small pieces of tissue paper between all the leaves of a whole, ripe, green artichoke, and put in a warm, dry place to cure as quickly as possible. Both halves and whole artichoke roses make excellent focal points for a large wreath or arrangement."

Farm Journal Christmas Idea Book. Editors of Farm Journal. Countryside Press, Doubleday, NY, 1972.

A Gardener's Guide for Drying Flowers. Helen Knauff and Rita Precopio. 1974. (Also see slides below.)

The Gift of Christmas Past: A Return to Victorian Traditions. Sunny O'Neil. The American Association for State and Local History, Nashville, TN, 1981. (On sale at PHS front counter.)

Herbs and Medicinal Plants in Cross-Stitch. Gerda Bengtsson. Von Nostrand Reinhold, NY, 1979.

Lovely Pine Cone Designs. Vangie Cookson. Park Rapids, MN, 1978.

"During the winter, fresh evergreen leaves can be preserved for several months by coating both sides with liquid self-polishing floor wax. Be sure to dip the stem in the wax too. The leaves will gradually change color to bronze and sage green. The following leaves can be treated this way: ivy, cedar, laurel, creeping euonymus and holly."

A Merry Christmas Herbal. Adelma Grenier Simmons. Wm. Morrow & Co., NY, 1968. (On sale at PHS front counter.)

Nature Crafts: Seasonal Projects from Natural Materials. Mary Elizabeth Johnson and Katherine Pearson. Oxmoor House, Birmingham, AL, 1980.

Terrarium Tree Ornaments

Materials: silver Christmas tree balls, chlorine bleach, potting soil, princess pine or other lacy evergreen, partridge berry

Equipment: muffin tin, Q-tips, note paper, knitting needle

"Remove the caps from the silver ball ornaments. Carefully fill each ball with chlorine bleach and set aside for at least 30 minutes to loosen the silver coating. Set the balls upright in a muffin tin to prevent spills. Use a Q-tip to scrape silver from the inside of the ball; then rinse each ball well to remove all traces of silver. Let the now-clear balls dry for a day or two before filling them."

An Olde Concord Christmas. The Museum of the Concord Antiquarian Society. St. Martin's Press, NY, 1980.

"When we think of Christmas decorations, the first thing that comes to mind is a Christmas tree, but Christmas trees were unknown in New England until Victorian times ... To be sure, the earlier settlers came from England, where Christmas was celebrated with decorations, song, and revelry. Although they brought many of their old customs with them to the new country, they looked upon any celebration of Christmas (except going to church) as blasphemous."

Plant Prints and Collages. Ida Geary. Viking Press, NY, 1978.

"In practicing the art of plant printing you will be unconsciously learning the botany of the plants you are working with and also sharpening your powers of observation. You retain a kind of muscle-memory of the plants, and when next in the field you remember them through a kind of kinesthetic response."

Potpourri, Incense and Other Fragrant Concoctions. Ann Tucker Fettner. Workman, NY, 1977.

"A whole raft of spices we use in the kitchen are also important ingredients in perfume products. When adding them or their oils to your concoctions be frugal; it is easy to end up with a basketful of rose petals that smell like a fruit cake."

The Trees of Christmas. Edna Metcalf. Abingdon Press, Nashville, TN, 1969.

slide set available

Wreaths for Christmas and the Year Round. Helen Knauff and Rita Precopio. 1980.

A set of 52 slides with accompanying detailed instructions for making wreaths for all seasons. For information on rental, contact the PHS Library.

photo by Patricia A. Knauff

One of 52 wreaths from slide show: Golden Wreath. Goldenrod is available to anyone who can manage a drive on a country road during August and September. Goldenrod is picked when it is about open halfway. Stems are fastened together in bunches with rubber bands and hung to dry in a dark, dry place.

This wreath was made on a straw form by sticking the stems into the straw and under the cord binding. It is best to work when the goldenrod is almost dry so the stems are not brittle. The trim of Joe-Pye-weed, wired pink strawflowers and glycerinized *Ilex glabra* was poked into the straw.

Wreath made by Rita Precopio and Helen Knauff

Sources for Herbs, Oils and Fragrances for Holiday Decorating

Company	Items*
Caswell-Massey Co., Ltd. 1630 Sansom Street Philadelphia, PA	cassia chips, myrrh pieces (not gum), sandalwood chips, cloves (whole), allspice berries, cedar chips, bay leaves, rose hips (whole), frankincense oil, bay leaf oil
Haussman's Pharmacy 6th and Girard Philadelphia, PA 19127 MA 7-7707	cassia chips, myrrh gum, sandalwood chips, cedar chips, bay leaves, rose hips (whole), frankincense oil, bay oil
Penn Herb Company, Ltd. 603 N. 2nd Street Philadelphia, PA 19123 WA 5-3336	cassia chips, red sandalwood chips, star anise (whole and oil), rose hips (whole), frankincense gum, bay leaves
Scarborough Fair, Inc. 710 South Street Philadelphia, PA 19147 922-2051	cassia buds, myrrh gum, sandalwood chips, cedar chips, star anise, rose hips, frankincense oil, bay oil

*These sources suggest that other items may be found either in a health food store or grocery store.

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Membership is limited so if you are interested, please call Helen Schoen, McGettigan's Travel Bureau, for a printed brochure at (215) 241-7852.

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Advertising copy should be submitted 8 weeks before issue date: November, January, March, May, July, September. All copy should be accompanied by check made out to PENNSYLVANIA HORTICULTURAL SOCIETY and sent to Audrey Manley, GREEN SCENE, 325 Walnut Street, Philadelphia, PA 19106.

THE green scene

HORTICULTURE IN THE DELAWARE VALLEY
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Planning A Year Ahead for Primulas. See page 9.

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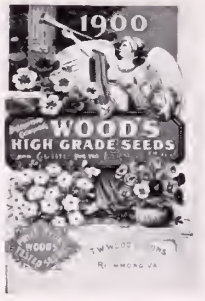

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photos by Howard Roberts

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photo by Professional Color

Volume 11, Number 3 January/February 1983

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FRESH HERBS
for Restaurants, in the Winter . . . and any other time

by Marcus Pollack

Aliza Green, the chef at DiLullo's was thrilled. It was the middle of January and she beamed, "Fresh pesto," she declared, "tonight we'll have fresh pesto!" There was no doubt about it; I was in business. I had called on less than a dozen restaurants, and by the end of January I was selling everything I could produce.

I had started the previous spring, in 1979, to experiment with hydroponics and maybe even make a little extra money. At least enough to cover my expenses. At the time,I probably never would have thought about growing herbs; I was captivated by the idea of growing vegetables and flowering plants. But my space limitations made the idea of growing herbs seem better and better. Growing herbs indoors, under lights, in hydroponic culture, would allow me to grow a larger number of plants in a very small space. I also realized I could market the herbs year-round.

By October of 1979, the first garden was constructed and operating in my bedroom.

The growing containers were plywood boxes (18 in. x 24 in. x 4in. deep) lined with plastic. Drainage holes were drilled. Racks, 4 ft. x 2 ft. x 8 ft. tall, were constructed out of two by fours to hold three systems: each system consisting of two growing containers and a fluorescent light fixture.

In this type of hydroponic culture, the soil is replaced by a sterile aggregate (growing medium) that supports the plants but has no nutritional value.

A solution of nutrients mixed with water and poured on the aggregate provides all the nutrients needed for optimum growth. Plants can be placed closer together because the roots do not have to search out sustenance. In my "garden," I was able to grow more than 150 plants in an area of only 8 sq. ft.

starting from seed

Basil, oregano, sage, and thyme were the first herbs that I planted. The seeds were sown directly in the plywood containers, which were filled with an aggregate composed of washed river gravel and vermiculite. Watering (or feeding) was done by hand.

The aggregate was kept moist as I anxiously awaited the first signs of growth. Three days after the seeds were planted, the oregano and thyme germinated. Was I excited! The basil started germinating after four days and the sage after six.

The first true leaves started to appear within ten days after germination, and at this point I started watering the sprouts with a half strength solution of premixed hydroponic plant food.

Three days after the seeds were planted, the oregano and thyme germinated.

Growth seemed a little slow in the 10- to 15-day interval, but after that they really grew. At the 30-day mark, I started to harvest. I think I waited too long to cut back the oregano and thyme because the plants were top heavy and started to fall over. Sage leaves were approachng 2 in. in length. And the basil; well, the basil was going nuts. By the beginning of the sixth week, the basil was growing into the lights and had to be harvested every two to four days. Some of the leaves were almost 4 in. in length.

Because I was inexperienced in growing herbs, I almost overwatered the sage and thyme, and some plants started to turn yellow. But by the eighth week, I had things pretty much under control, and the herbs were looking good. Now it was time to get some professional feedback.

marketing the herbs

I contacted some of the finer restaurants in Philadelphia by phone, and I soon found myself in front of chefs with samples of my fresh herbs.

Chefs stared in amazement at the beautiful, lush green herbs that I delivered at the beginning of January. Ron DeFelice, the chef at the Club Rittenhouse loved them; so did the chefs at Les Amis, In Season, the Knave of Hearts, and Morgan's.

I soon realized that I had to develop a bigger and more efficient growing system; one that could grow herbs faster but require less maintenance time. I began to experiment with different types of irrigation systems, aggregates, nutrients and seed stocks. I built and tested capillary wick, subirrigation, gravity, and continuous flow irrigation systems. Pumps, valves, and other hardware were tested for compatability and reliability. Herbs were grown in gravel, sand, perlite, vermiculite, lava, shale, pumice, haydite, plastic chips and several professional soilless growing mediums. These aggregates were all tested for pH, cation exchange capacity (how the aggregate holds nutrients), absorption and adsorption characteristics, moisture holding qualities, nutrient content, and their ability to grow a wide variety of herbs. Pre-mixed (ready made) plant foods were tested. Take my word for it, it's much easier to purchase pre-mixed plant foods than to run around trying to obtain all the necessary chemical salts needed to concoct your own. I tested to find out which herbs were compatible when grown in the same container, and how close the herbs could be planted to each other before overcrowding became a problem. Each configuration had its advantages and disadvantages; some worked much better than others. But as a result of my research, I had developed a good, efficient growing system.

marketing the system

I started thinking more and more about making my system available to restaurants, offering chefs the opportunity to grow their own herbs. They would benefit from having a supply of quality, fixed cost herbs without seasonal interruption. Having an abundance of fresh herbs for creating new dishes was found to be a most attractive feature.

The more I thought about its market potential, the more it made sense. I had inadvertently developed a system that not only worked well, but also reflected

continued

FRESH HERBS

continued

consideration of all factors necessary for restaurant use: compact, efficient, high yield system that required minimal (but regular) care. I was further inspired by another company's success in sellng its system to the foodservice industry, and my friends at the Culinary Institute of America were enthusiastic and encouraged me.

Once again, I started calling on chefs to get their feedback on the idea of growing herbs as the great chefs in the past had done.

The person who most enthusiastically considered growing his own herbs was Alphonse Pignataro of Morgan's restaurant, who in May of 1980 purchased my first system to use in the restaurant's basement.

After planting basil, chervil, oregano and thyme, Alphonse was amazed when he was able to begin harvesting after 30 days.

Because of Alphonse's success, he served as a reference to my next customer, La Terrasse. Within a year, both restaurants had doubled their growing capacity with additional systems.

Wondering if one of America's best known chefs would be interested in my herb growing system, I approached Chef Tell Erhardt. At that time, he was growing herbs in a small garden behind his Chestnut Hill restaurant. Within a year, he had completely abandoned growing herbs in soil in favor of my system, which was supplying his cooking school and now supplies his needs at home.

With persistent effort and help from satisfied chefs, more than 30 restaurants in the Philadelphia, New York, and New Jersey areas purchased installations. When Kamol Phutlek and Cindee Chiusa, formerly of La Terrasse, opened Alouette, they remembered my system and bought it. Ristorante II Gallo Nero, Deja Vu and others followed suit.

Although some problems were caused by a poor growing environment, occasional neglect, and mechanical breakdowns, the system has proved its reliability over the last 30 months. Anyone who regularly follows instructions gets more than satisfactory results.

Research and development continues. In July of 1981, I developed a new system which is a marriage of two entirely different techniques. The new system is simpler, promotes faster

The author inspects a crop of basil at a local restaurant.

David Howard is responsible for the excellent herbs grown at La Terrasse. Shown here are marjoram, thyme and sage.

photos by Paul Meschter

A privately owned system, designed for restaurant use, grew so many herbs the owner had to give most of them away. From left to right: parsley, oregano, thyme, chives, basil, and dill just after the first harvest, 33 days after the seeds were planted.

growth, and is easily adaptable to large-scale production.

Hydroponics will be with us in the future, of that you can be sure. It is as good as (or better than) other intensive farming methods. Environmental problems related to growing plants, and the increasing economic burdens of farming with petroleum-based fertilizers and pesticides will demand increased use of efficient growing methods such as hydroponics.

This winter, I'll be growing more herbs than ever. And I hope to be able to offer more people the opportunity to grow their own herbs and get involved with hydroponics.

TO BUY A UNIT

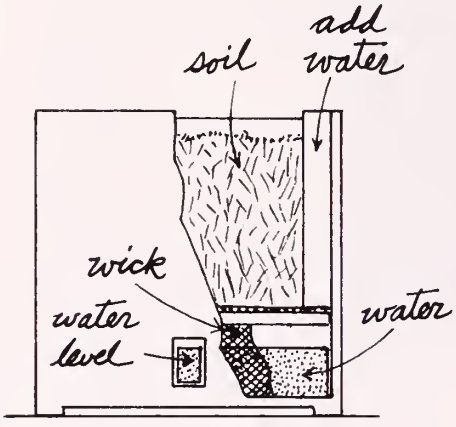
Units range from $200 to $500. For further information write to Growth Unlimited, P.O. Box 284, Bensalem, PA 19020.

●

Marcus Pollack owns and operates Growth Unlimited, which designs, manufactures and markets soilless growing systems for culinary herbs. He also grows fresh herbs for restaurants and grocers in the area. His interest in hydroponics started in 1973 after he graduated from Penn State with a B.S. in biology. Before starting his company, he taught science and worked in sales.

The Green Marble or the Climbing Sea Onion: *Bowiea volubilis*

by H. Peter Loewer



SELF-WATERING POTS

There are a number of self-watering pots on the market but they all use the same principle: water from a reservoir at the pot's base is fed by a wick to the soil above. An indicator lets you know when the water level is low. These pots usually allow two weeks between waterings.

The self-watering pot can be purchased at many garden centers or from Adam York, 340 Poplar Street, Hanover, PA 17331.

Some three years ago I received a gift from a houseplant aficionado; it was a green ball three-inches in diameter with a slight depression that marked the top and a frew dried roots that signified bottom. The accompanying letter called the giant green aggie a "climbing sea onion" or *Bowiea volubilis*. Originally from South Africa, the curiosity was named in honor of J. Bowie (1789-1869), a plant collector for Kew Gardens in Africa and Brazil.

"You've always liked the more exotic forms of plant life," my friend wrote, "and this bulb should fit the bill. Plant it in a 5-in. pot with a soil mix consisting of one-third clean potting soil, one-third composted manure, and one-third sharp sand for drainage, keeping the top half of the bulb above the soil line. Water it after growth begins (it was now September and the first shoots appeared in mid-October) and let the soil dry out between waterings. The growth will die back in late spring and the bulb should be rested during the hot months of summer. Keep the temperature above 50°."

I did as directed and was soon rewarded by twining stems, tiny green flowers, and miniscule leaves represented by tiny triangular flaps of green where branchlet grows from branch.

The one problem was containing the luxuriant growth: the traveling stem kept twisting and turning in a wild mass of green wire. So after the first year of growth and subsequent hibernation, I repotted the bulb in a 6-in. Rivera pot (see illustration), added a bent wire pot-holder (usually associatd with hanging orchid pots) and now as the stem lengthens, I re-aim its growth into a self-contained knot of green.

Although most directions call for holding back the water, with this particular container, the bulb takes what it needs and it's obviously to its liking as the bulb now measures 4½ in. in diameter.

Once a month I add a shot of Hyponex to the water that enters the pot reservoir. When foliage dies back in late spring, I set the plant in a shady spot until the following fall. Full winter sun is preferred, and the sea onion will grow well under lights.

Propagation can be from seed – make sure the ripe stamens are brushed against the pistil of the flower as you, the grower, must act as the jungle wind – or by offsets produced by mature specimens.

A bulb should eventually reach 8 or 9 in. in diameter with a corresponding increase of stem production.

Sources for the climbing onion, *Bowiea volubilis:*

Altman Specialty Plants
26963 Sea Vista Drive
Malibu, California 90265
Catalog: $1.00

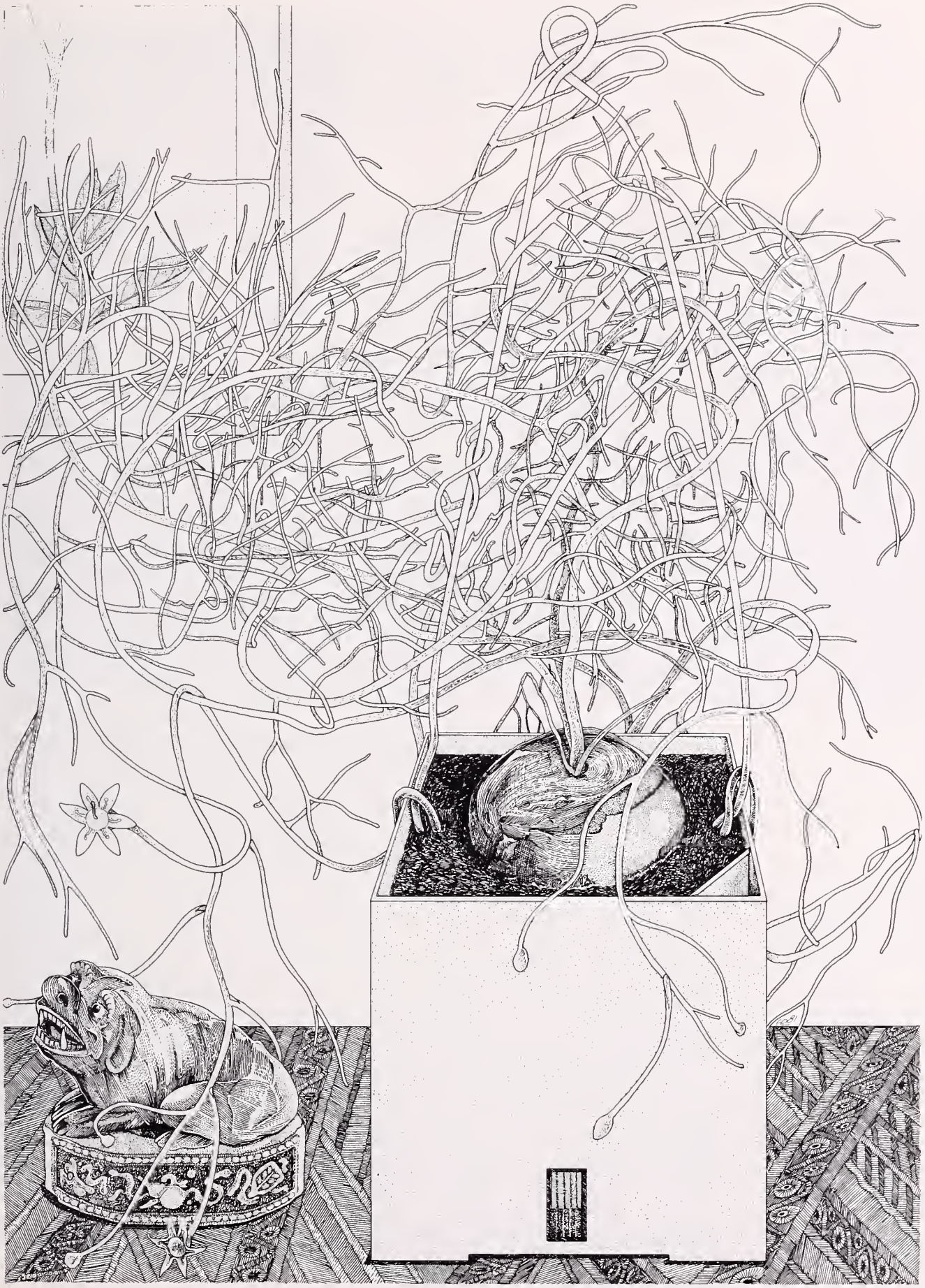
International Growers Exchange, Inc.
P.O. Box 397
Farmington, Michigan 48024

K & L Cactus Nursery
12712 Stockton Blvd.
Galt, California 95632
Catalog: $1.00

Logee's Greenhouses
55 North Street
Danielson, Connecticut 06239
Catalog: $2.50

●

'er Loewer is a botanical artist and scientific illustrator who writes and illustrates his own books. These include *Evergreens: A Guide for a Landscape, Lawn & Garden* (Walker, 1981), and *Growing and Decorating with Grasses* (Walker, 1977). Loewer won the 1981 Garden Writers Association of America Award for Best Feature Article in a Magazine for "Ornamental Grasses for the Garden" which appeared in the September 1980 *Green Scene*. He is currently under contract for a book with Putnam.



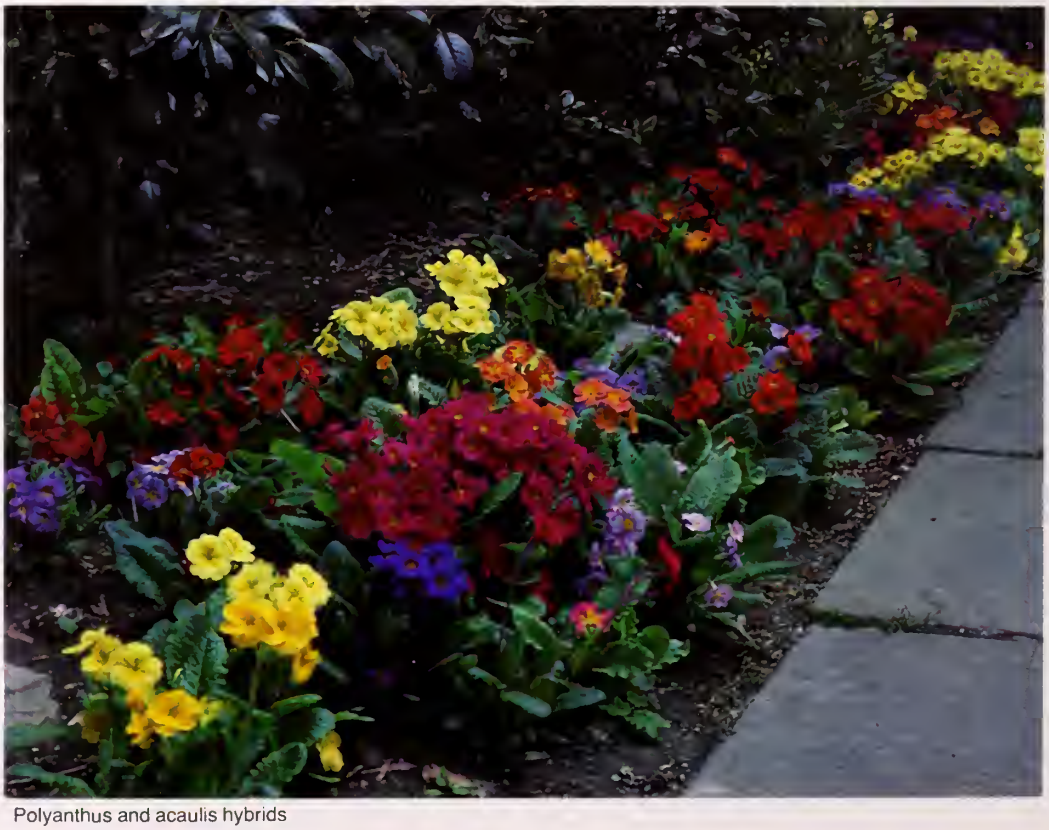
drawing by Peter Loewer

The traveling stem keeps twisting and turning in a wild mass of green wire.

Primula sieboldii

First primula buds in spring

photos by Howard Roberts



Polyanthus and acaulis hybrids

THREE WEEKS OF COLOR IN APRIL:

Planning a Year Ahead for Primulas

by Howard Roberts

Are three weeks of brilliant color worth the three months of drab, faded, ragged leaves that follow? We happen to think so, and for that reason we have continued to *mass plant* primroses in a partially shaded area in front of broad-leaved evergreens.

Although we have grown several varieties over the years, even some of the Asian candelabra species for their reliability and endurance, we have confined our recent efforts essentially to the polyanthus, acaulis and sieboldii types. They provide a kaleidoscope of colors in April; they are not difficult to propagate from seed, and the majority of plants that survive the winter increase into dividable sizes.

When we first tried to grow primroses from seed 15 years ago, we sealed the seed packets in glass jars with a few drops of water for moisture and alternately froze and thawed the seeds in the refrigerator for a few weeks before sowing. This, we were told, was necessary for germination, since the process duplicated the seeds' natural exposure to temperature changes. This process yielded a low percentage of germination. After several years of following the freeze-thaw process, we decided to try sowing the seeds directly in containers of vermiculite without any preconditioning temperature treatment. Germination improved phenomenally, and we have been using this "lazy man's" method ever since.

the lazy man's propagation method

In late February we partially fill a few clear plastic drinking cups with fine-grain vermiculite, dampened (but not saturated) with water. We pour the small seeds directly from their packet onto the vermiculite surface, and then seal the top of the container with plastic wrap held in place by a rubber band. Unprofessional, but seemingly effective. Once in a while we remove the lids to let in fresh air and to test the dampness of the medium. Within two to three weeks there are usually signs of germination, and when the first two leaves appear we transplant the minute seedlings into commercial potting soil, as many as a dozen in a 3-in. plastic pot. At this stage it is most important that the medium not dry out completely or the plants will quickly wither. When the seedlings have developed another set of leaves and are about an inch tall, we move them from the pots into flats containing a mixture of potting soil and compost from our leaf pile. The flats are then ready to go outdoors as soon as warm weather has settled in. We place them in an area that is lightly shaded most of the day, for again there is danger of the soil drying out. We also want to protect them from being pounded into the soil by heavy showers; we move the flats under a picnic table if a storm threatens. The seedlings will remain in flats until about the end of August.

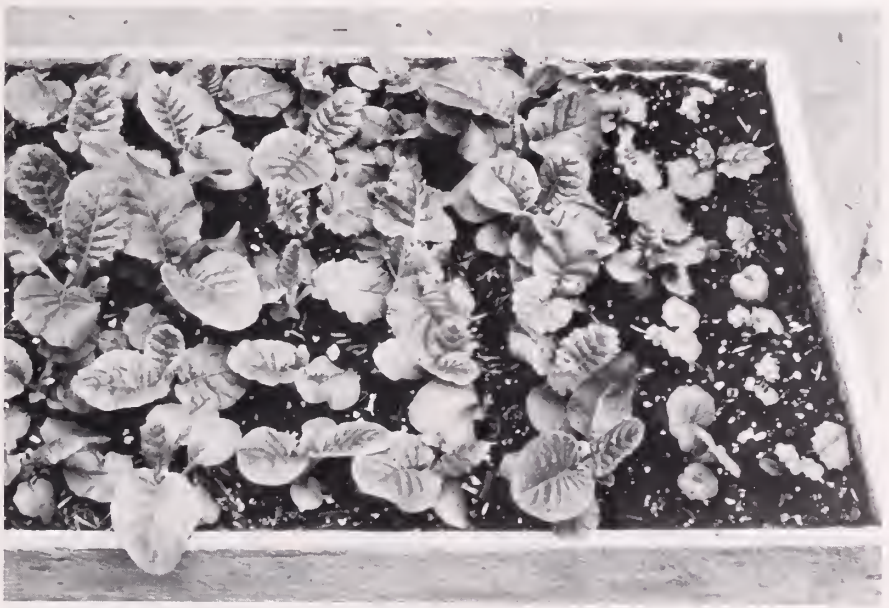
The most persistent enemy the young plants encounter in a frost-free environment is the slug; in our experience primrose leaves rate a "10" on the snail's menu. Periodically we sprinkle pellets among the seedlings and for good measure use a liquid killer to control this pest. Otherwise slugs can destroy overnight the efforts of several months. These pellets, however, are dangerous to children and pets and should be used with extreme care.

At the end of August when the days have lost some of their heat, we plant the seedlings into their permanent position, filling in spaces where old plants have died or where color improvement is indicated. By October the seedlings have become established and the older plants have put forth fresh green leaves in place of their withered, yellow summer foliage. And so in fall as in spring we temporarily have the pleasure of a shiny green groundcover.

Leaf regeneration does not apply to the sieboldii primroses whose leaves have gone by September and will not reappear until spring. Because of the gaps in mass planting that develop as the leaves disappear, and because of sieboldii's later blooming schedule in the spring, we relegate that variety to another section of the garden. In late April, its light puckered leaves and fringed flowers are a welcome sight, even though the color range is limited to white and shades of lilac and magenta.

During the winter most of the green

continued



Primrose seedlings in June, five months after planting

Massed *Primula sieboldii*

leaves produced in autumn on *Primula acaulis* and *polyanthus* succumb to the elements, and all that remains when the ground heaves free of frost in March are green crowns interspersed with a few rotted brown crowns. Occasionally the roots become exposed when the soil cracks and shifts in the thawing process, and replanting is necessary. Also in March the local squirrel population recalls a mythical treasure horde of nuts that lies beneath the primrose patch and manages to excavate a number of plants in an energetic search. Sometimes we are able to discover the diggings in time to save the uprooted plants but not always. In April the flower heads show above the small leaves that surround the crowns, and within two weeks it is difficult to distinguish the individual plants as their leaves intermingle and the flowers above them open wide in a sunburst of color. We feel that this display, which lasts only three weeks, makes the long, hot summer's eyesore of withering leaves easier to accept.

As mentioned earlier, we concentrate on varieties that have produced the most consistent and durable spring display for us; however, we are always willing to experiment with others. One year *Primula chungensis* and *Primula cockburnia* added color to the bed; why they behaved as biennials we are not certain, but they did not survive the next winter. We have been less successful in growing self-show auricula primroses – a variety that sports a golden throat surrounded by a white, pasty ring and petals, of solid color – and have only three meager specimens remaining from the seedlings of a year ago. The appearance of these plants is so unlike the other primula varieties we have grown that it may turn out we're unwittingly raising a few weeds; if so, it won't be the first time.

When it comes to ordering primrose seeds, there are a number of reliable sources, including well-known flower seed companies such as Park, Burpee and Olds, to mention a few. One smaller firm, however – Far North Gardens of Livonia, Michigan – specializes in primroses, and its catalog's large selection of hand-pollinated English Barnhaven varieties of *Primula polyanthus* and *P. acaulis* is classified in some 40 color groups. It's hard to pass by lyrical descriptions like these: **Marine Blues,** shimmering, scented blues of summer seas and skies, soft delft; **Prussian Blues,** deep brilliant cobalt, light sky shades and ultramarine; **Cowichan,** garnet, amethyst sapphire. Blooms are pools of solid color smouldering with the sheen of hot coals; or **Spice Shades,** sensational cocoa, coffee, allspice, true browns of heavy crepe or velvet substance. These and a host of other colors spell three weeks of April to us.

Sources

George W. Park Seed Co., Inc.
S. C. Highway 254 N.
Greenwood, SC 29647

W. Atlee Burpee Co.
Fordhook Farms
Doylestown, PA 18901

L. L. Olds Seed Co.
P.O. Box 7790
2901 Packers Ave.
Madison, Wisconsin 53707

Far North Gardens
15621 Auburndale Ave.
Livonia, Michigan 48154

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Howard and Joan Roberts take an active interest in raising perennials and evergreen shrubs at their home in Rosemont. They are members of the American Rhododendron Society and the Pennsylvania Camellia Society.

The Sweet Good-Bye of Winter: Maple Sugaring in the Delaware Valley

"A sap-run is the sweet good-bye of winter. It is the fruit of the equal marriage of the sun and frost."

—John Burrough's *Signs and Seasons*, 1886

by Elizabeth Urffer

photos supplied by author

Bonnie Hay of the Wissahickon Valley Watershed Association explains maple sugaring to an interested group.

Watching the maple sugar drip, drip.

According to an old legend, an Iroquois chief named Wokosis was the first person to taste maple syrup. One morning Wokosis removed his tomahawk from a tree where he had thrown it the previous night and went off hunting. A few hours later his wife found a bucket filled with liquid directly under the cut in the tree made by the tomahawk. She thought the clear, odorless liquid was water; thus, when it was time to prepare the evening meal she added the liquid from the pail to the meat she was cooking. When Wokosis returned home, he was greeted by a pleasantly sweet odor. He immediately went over and tasted the liquid in which the meat cooked. It was not like anything he had tasted before. Of course, the water had boiled off and maple syrup remained. Thus, along with many other uses, the Indians enjoyed having their meat – particularly, venison – cooked in the sap of the maple tree.

Even though many of the groves of maple that formerly grew in the Delaware Valley have been removed, the maple tree is still a principal tree in this area. And Pennsylvania is still the third largest producer of maple syrup in the United States. Thus, in the last few years many of the nature centers and arboretums in the Delaware Valley began offering tours on the subject to school groups, scouts, and the general public. At the Wissahickon Valley Watershed Association naturalist Bonnie Hay wanted to introduce the method of tapping trees and making syrup with a little winter tree identification and a brief explanation of the functions of different parts of the tree (i.e., roots). Volunteers helped her to guide and to cook the sap so that groups could be kept small and each person would have the opportunity to taste the sap straight from the tree as well as the finished product of maple syrup.

continued

The Girl Scouts take turns drilling a dead log with a brace and bit.

Girl Scouts Kathy Wildsmith and Jody Hyndman taste the sap as it drips from the tree.

The sap from a number of different kinds of maple can be used to make syrup. The sugar or rock maple *(Acer saccharum)* has the highest content of sugar and the syrup made from it is considered the highest quality because of its light color and delicate taste. At the WVWA both the sugar and silver maples were tapped.

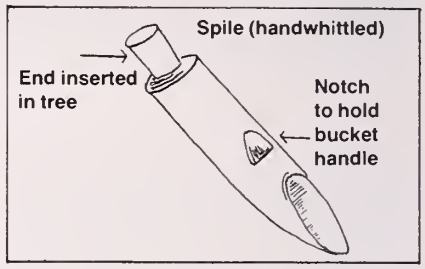
a good sugaring season

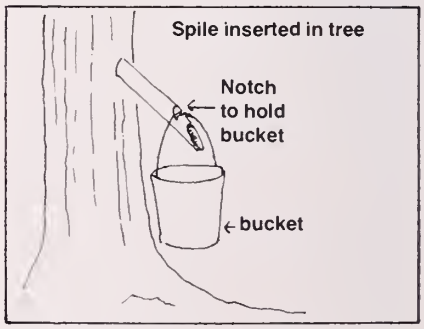
A good sugaring season is dependent upon many factors. Besides the size and health of an individual tree, the weather conditions are of primary importance. This includes the weather during the previous growing season, when it is necessary for the tree to receive an adequate amount of nutrients and moisture, as well as the weather conditions during the sugaring season itself. The best time for producing sap appears to be when a warm day (over 40°) follows a night freeze. The collecting season begins when these weather conditions prevail for a number of consecutive days and continues, sporadically, until the buds of the tree begin to open. (The sap then turns bitter.) Thus, the sugaring season will vary each year, but in this area it often runs from the end of January through March.

Most of the materials needed for reducing the sap to syrup are very inexpensive or easily improvised. They include:

1. brace and bit used to drill a hole in the tree. (The bit is usually ½ in., but must fit the spile.)
2. a collection container. (A plastic gallon container worked fine at WVWA, but there is also a plastic bag available commercially.)
3. a large, shallow container for boiling the sap
4. a candy thermometer
5. a filter, either cheesecloth or fine, rustproof screening will do
6. a storage container
7. a spile, which is a spout that is inserted into the tree for the sap to flow through (see drawing).

Galvanized steel spiles can be obtained in New England farm supply stores and by mail order (see box). Or handwhittled wood spiles – just like those the early colonists used – can be made. Just about any wood can be used to make a spile; sumac, which has a hard sapwood and a soft core, can be easily found in this area. The spile is cut with a sharp penknife from a 5 in. length of wood. A flattened clothes hanger is used to push out the core.





A tree must have a 30-in. circumference before the sap is drawn, or it will be damaged. For each 10 inches beyond

Members of Horsham Township's Girl Scout Troop 834 watch the maple sap beginning to boil.

this an additional tap may be inserted. The hole is drilled 2 to 3 in. deep and should slant upward. There are many theories about where the tap should be placed. Many people favor a place over a strong root and under a large limb about 3 ft. from the ground. Trees are usually tapped first on the side of best exposure to the sun because the sap obtained here comes first and is supposed to make the best syrup. Of course, the sap containers should be emptied often because the sap can spoil.

The Indians, who originally had no metal containers, had several different ways to separate the water from the syrup. One way was to allow the sap to freeze in their birchbark, wooden or gourd containers. Since the water froze faster than the sucrose, it could be chipped off. Another way was to put hot stones from the fire into the liquid. Today the water content is reduced by gently boiling the sap until most of the water evaporates. Approximately one pint of syrup is made after boiling 40 pints of sap. To make syrup on a small scale, an outdoor charcoal or wood stove will work equally well. The problems involved in making the syrup are similar to those in making fudge. The sap must be watched so that it will not burn. With experience you will know when the maple syrup has formed, or a candy thermometer can determine the exact time. The sap will boil at 212° while the syrup will not boil until the thermometer reaches 219°. After the syrup has stopped boiling, it can be poured through a filter to remove any impurities. Then, it can be tasted immediately or bottled for future use.

Today most people think of maple syrup in relation to pancakes and waffles, but the Indians seemed to have infinite uses for maple sap. They used it in various forms: as a tonic, as a summer drink dissolved in cold water, as a vinegar, and even as a stronger fermented brew. At one time some of the leaders of our country hoped that it would replace cane sugar. But methods to mechanize the production of maple syrup never fully developed and it is expensive to produce commercially because of labor costs.

Still, on a small scale it is a rewarding experience – and a tasty one too.

Learning, Equipping and Seeing

For further information:

The Maple Sugar Book. Scott and Helen Nearing. New York: Schocken Books, 1972.

The Manual of Practical Homesteading. John Vivien. Emmaus, Pennsylvania: Rodale Press Division, 1975. (Chapter 3)

For equipment used in sugaring:

Leader Evaporator Company
25 Stowell Street
St. Albans, Vermont 05478

Other nature centers offering tours (incomplete)

Andorra Nature Center
Offers a self-guided tour as well as group tours by the naturalist, Sue Baldwin
242-5610

Tyler Arboretum
Fred Arnold, Education Director
566-9133

Wissahickon Valley Watershed Assn.
Group tours by naturalist Mary Lou Narbie
646-8866

●

Elizabeth Urffer is a volunteer guide at the Wissahickon Valley Watershed Association. A former children's librarian, she is interested in plants, children and writing.

Fig 2

photo by Mary Lou Wolfe

Father and son paddle through rocks of *"ignorance, inexperience, carelessness and exaggeration"* on the Northrup King & Co. catalog.

Fig. 1

photo by Professional Color

Miss Lippincott was the "Pioneer Seedswoman of America."

Fig. 3

photo by Mary Lou Wolfe

Promises, promises. From little seeds grow great successes.

WATCHING AMERICA GO TO SEED:

Catalogs as Barometers of Social Values and Change

by Mary Lou Wolfe

Once when looking at a library exhibit in the west I was jolted to see that a display of seed catalogs consisted entirely of detached covers. No inside pages to document plant introductions, horticultural period styles, plant name changes, seedsmen's histories. I was disappointed and sympathized with the librarian who explained that this collection had been presented eviscerated. In recent months my perspective about covers has changed, for I have been exposed to 4,000 seed catalogs donated to the Pennsylvania Horticultural Society by the W. Atlee Burpee Company. The covers of the catalogs gave me a sense of how Americans saw themselves at the turn of the century, their goals and sense of country. These 4,000 catalogs are intact and PHS has kept those that relate to the Delaware Valley. The rest have gone back to the areas where they originated all over the United States and Canada to 25 libraries belonging to the Council of Botanical and Horticultural Libraries.

continued

The Burpee Company, founded in 1876, had accumulated these thousands of catalogs to keep check on its competitors' offerings and prices. Mr. Burpee, like many others, not only grew and imported seed to supply his own customers but sold seeds to other seedsmen across the country. W. Atlee Burpee, elected president of the American Seed Trade Association in 1893, headed a rapidly growing industry that had been boosted by the development of railroads and the U.S. Postal system. The decade of the 1890's was a boom time for the seed industry with the 1890 census showing 596 seed farms in the U.S., 200 of these having been established between 1880 and 1890. As each year's crop of catalogs arrived in Doylestown, it was checked for seed prices and Burpee offerings, marked with an "X" and filed in large cabinets lining the second floor of the handsome seed house barn at Fordhook Farms. In April of 1982 after the Burpee Company was sold to ITT Corp., the Fordhook Farm seed house had to be emptied, and PHS was invited under the supervision of Burpee's staff horticulturist and publicity manager, Jeanette Lowe, to remove the best of the accumulated competitors' catalogs. On a chilly April day we sorted and swept aside the dust of a century while a starling, trapped inside this beautiful barn, swooped over our heads. The starling eventually made it out and so did we with 41 huge boxes of catalogs.

One published in 1926 by the S. D. Woodruff Co. of Orange, Connecticut, is a shocker. It shows three women in long skirts and babushkas pulling a plow ... I do hope Eleanor Roosevelt motored down from Hyde Park to pay them a visit and that they had a terrible year in 1926.

Because we use every inch of space in our compact headquarters in Independence National Park, we knew that those 3,000 catalogs had to be sorted, listed and mailed to CBHL libraries before September when members' activities and Flower Show preparations require all available space. With the help of volunteers, library committee and PHS staff, we began a crash program. What could have been a tedious job of paper shuffling turned into an extraordinary look at how America saw herself from the 1880's through 1920's. We began flagging the most interesting covers, photographing them and xeroxing essential inside pages before sending them off.

pioneer seedswoman

Miss C. H. Lippincott of Minneapolis, Minnesota, begged to be investigated. Piling up her annual catalogs was like counting Victorian valentines. The daintiness of these tiny (5 in. x 7 in.) booklets (see figure 1 on p. 15) belied the strength of their publisher, for Miss Lippincott makes the most of being the "first woman in the flower seed industry" and proclaims herself "Pioneer Seedswoman of America." In her 1895 catalog she includes this quote from the *Minneapolis Tribune* of 1894: "Miss C. H. Lippincott . . . came to Minneapolis eight years ago from Philadelphia where she had grown up among flowers and plants, with relatives actively engaged in floriculture. When she came West she had money to invest, and, with friends to back and advise her, she opened a flower seed house. The fact that a woman has grown up so successful in business in a short time and in the Northwest, speaks another word for the energetic end-of-the-century feminine, who is ill-content to fold her hands and let others feed and clothe her, or, having a living to make does not hesitate to go about it."

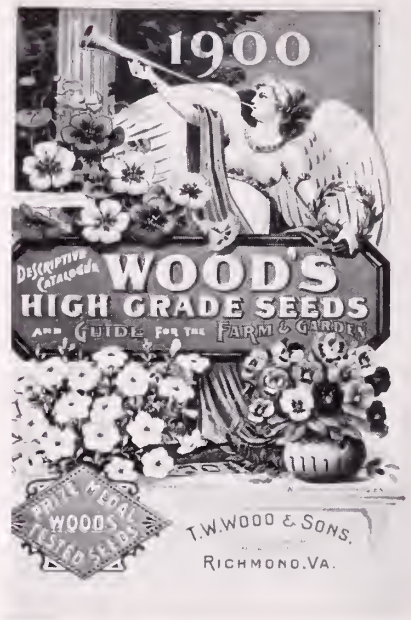


photo by Mary Lou Wolfe

Fig. 4

In 1896 Miss Lippincott shows "a few snap shot views of different departments from photographs." For these, I got out my magnifying glass and can tell you, there is not a man in sight. Business boomed, for in 1897 Miss L. proclaims that orders have soared from 6,000 in 1891 to 150,000 in 1896. By 1899, Carrie Lippincott says, "My friends have urged me to print my latest picture because a number of seedsmen (shall I call them men?) have assumed women's names in order to sell seeds." We know she competed with at least two other "women" in Minneapolis. One was Jessie R. Prior who claimed to have begun business in 1895 and a Miss Emma White, who followed in 1896. Just who the imposter was we leave to our colleagues at the Anderson Library in Chahaska, Minnesota, to determine, for that is where the three seedswomen's catalogs are now deposited. Personally, I have no doubt about Miss Carrie's identity, for in 1906 she says, "My own Mother opens every order received and her keen interest in your every word is reflected in every department." By 1910 we note that she has moved to Hudson, Wisconsin, and writes, "Here we are all moved and settled, with your last year's letters right before us . . . but last year's letters are lonely – they want the company of this year's letters and Mother is looking, every day, as she opens each letter, for *your* handwriting." Miss Lippincott moved back to Minneapolis and her name appears in city directories, listing occupation as "seedswoman" and finally, "florist," until 1934.

While Miss Lippincott's petite catalogs were designed to appeal to a female readership, Northrup King, also of Minneapolis, targeted the male breadwinners. In their 1909 cover (see figure 2 on p. 14) they emphasize the slogan "begun in 1885": "We believe that the purchase of a package of seeds, however small, involves a trust to which the seedsman should honorably respond." Father and son navigate their canoe filled with Northrup King's sterling seed through the rocks of *ignorance, inexperience, carelessness* and *exaggeration* and, when not busy canoeing, can look west where "the old sod shacks have given way to comfortable houses set in green lawns, barns filled with registered cattle and granaries that would cause the breast of any farmer to swell with honest satisfaction."

lawns, yachts and automobiles

Back east, in Louisville, Kentucky, in this 1911 catalog, Wood, Stubbs & Co. spelled out another version of the Amer-

Engraving from D. M. Ferry & Co.'s *Catalog of Garden, Flower and Agricultural Seeds*, Detroit, Mich.

Scene on D. M. Ferry & Co.'s Seed Farm. Dinner in the field.

Fig. 5

ican dream. Not only does a comfortable house appear, surrounded by green lawns, but a yacht is anchored offshore and an automobile waits in the driveway (see figure 3 on p. 15). All this could be yours if you entered the gateway to success by purchasing Blue Ribbon seeds. Not only that, you would have the angels on your side (see figure 4 on p. 16).

Perhaps it was because of covers like these that the staid J. M. Thorburn Co. of New York City, in business since 1802, wrote: "It has always appeared to us that it was little short of a crime and an insult to the good taste of true garden lovers to edit a catalog in a flamboyant, redundant, circus-poster style." The Thorburn catalogs are the epitome of conservative good taste, saving color for inside plates and packed with cultural information. "Our printing is clear, our type bold, our paper good, our book light in weight and heavy in good things."

Thorburn's catalogs were aimed at genteel easterners, homeowners and estate gardeners. From Des Moines, Iowa, comes a completely different pitch. The Iowa Seed Co. takes the label "Seedsmen to the American People" and shows a booted farmer, hat reverently removed, waving the American flag over a field of "Washington Wakefield cabbage." In their 1898 catalog they say "When we speak of American people we do not mean simply those born in the U.S., but everyone who considers this country his home. Many of our best customers are farmers and gardeners who came from foreign shores and have adopted this as their country and our flag as their flag." We see these immigrants pictured in catalog after catalog like this (see figure 5 on this page) D. M. Ferry issue of 1879 from Detroit, Michigan, and the Farmer Seed Co. of Faribault, Minn. Women clad in wooden shoes glean wheat in this 1907 cover (see figure 6 on p. 18). The Farmer Co. published its catalogs from Faribault in English and German to reach the immigrant farmers in Wisconsin and Minnesota. The Farmer Seed Company's cover seems appropriate for its time and place but one published in 1926 by the S. D. Woodruff Co. of Orange, Connecticut, is a shocker. It shows three women in long skirts and babushkas pulling a plow (see figure 7 on p. 18). There is no explanation in the catalog text of this cover choice of the women replacing farm animals. They state "Our seed farms at Orange, Conn., are open to the inspection of our customers and friends." I do hope Eleanor Roosevelt motored down from Hyde Park to pay them a visit and that they had a terrible year in 1926.

If the same quality of artwork were used on today's seed catalog covers we might expect to find on a 1983 cover a creation by Andrew Wyeth or Maurice Sendak. Instead, we are cursed with the accuracy of modern photography and "truth in advertising."

Our thanks go to W. Atlee Burpee Co. for giving us this opportunity to preserve and share a valuable piece of our past.

a soldier of the soil

Let's leave this trio that seems so out of place for its time and backtrack to the period of World War I. In 1918 the Los Angeles firm of Germain pictured the familiar figure of Uncle Sam looking us in the eye and pointing, "Uncle Sam says Plant a Garden and be a Soldier of the soil." The Bolgiano Co. of Baltimore, Maryland, says it all in its 1919 picture of a farmer attempting to hoist the "Glory" tomato with the Army, Navy and Nurse Corps in the background (see figure 8 on p. 18). Vaughns of Chicago says in the same year "Our returning field army salutes our Army of the fields and farms – honored comrades of the Great Crusade – The war-to-end-all-wars. Even our enemies must buy foodstuffs of us ... for they must live in order to pay their debts and repair the damage they have wrought."

J. Horace McFarland, horticulturist and publisher from Harrisburg, Pa., said, in 1907 in *The McFarland Message,* "The critical point of catalog consideration is often inside five seconds of time, and it may be safely assumed that, if the hand of the busy man is arrested as he is hastily going over his mail and the catalogue saved for future reference much expense has been justified. It is the appropriate outside of a catalogue, the tasty and truly attractive cover, that provides the best insurance against untimely destruction." The catalog "is a

continued

Fig. 6

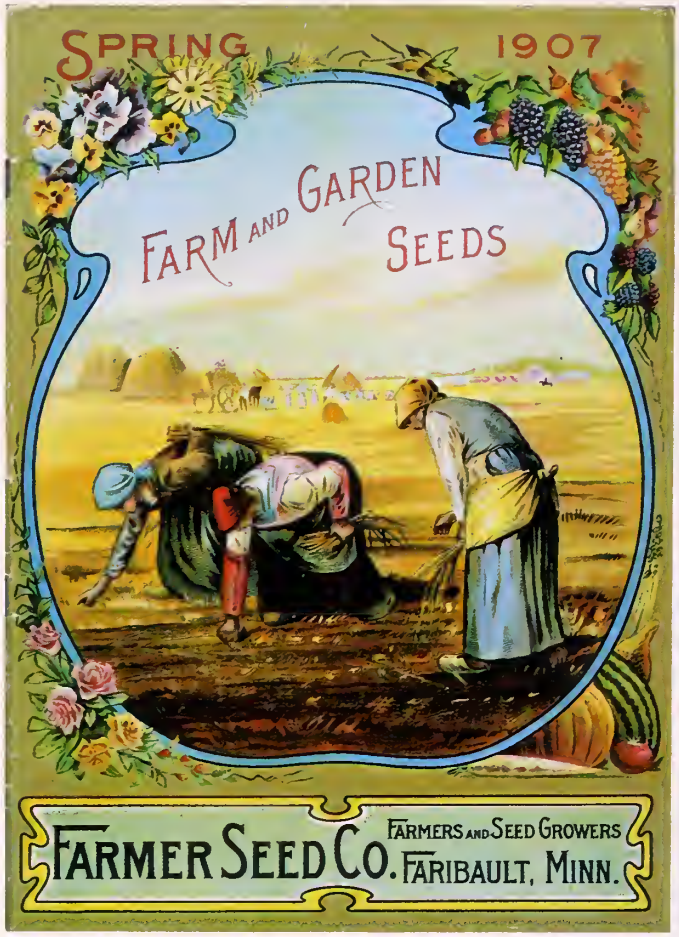


photo by Mary Lou Wolfe

In 1907 immigrant women played an important role in farming. The Farmer Seed Co. published its catalogs both in English and in German to reach immigrant farmers in Wisconsin and Minneapolis.

Fig. 7

photo by Professional Color

In 1926 the three-woman mule team hypes for S. D. Woodruff & Sons.

personal extension, telling by the use of printer's ink about our goods to those far beyond the reach of direct personal efforts." We know that the catalogs we've seen, if only briefly, have told about much more than "goods." These old seed catalogs sold dreams and ideals and took pride in the way they presented each year's offerings. No wonder that exhibit I saw consisted only of covers. Although the catalogs were ephemeral and destined to be replaced each year, the covers of many were remarkable. In 1905, French artist, Alphonse Mucha, produced covers in his unmistakable art nouveau style for Vaughns of Chicago and Michelle of Philadelphia. A stunning E. M. Ferry cover of 1919 depicting the Peter Peter Pumpkin Eater (of Mother Goose) is signed "M. P." and certainly looks like a Maxfield Parrish creation. If the same quality of artwork were used on today's seed catalog covers we might expect to find on a 1983 cover a creation by Andrew Wyeth or Maurice Sendak. Instead, we are cursed with the accuracy of modern photography and "truth in advertising." I also know that among the 400 new '83 catalogs that will arrive at the PHS Library, not one will say, as did Carrie Lippincott's "Mother is looking, every day, as she opens each letter, for *your* handwriting."

●

Mary Lou Wolfe is PHS's horticultural librarian. She is a member of the Council on Botanical and Horticultural Libraries, Inc., and has worked with them to locate and preserve old seed catalogs.

Fig. 8

photo by Mary Lou Wolfe

A hyperbolic tomato makes a patriotic point for one seed company

Monardella macrantha from Oregon cascades down a partially shaded mound between two selections of wild marjoram.

A mound at Delaware State College in Dover sports shasta daisies, fringed elecampane, lavender, sage, thyme, and marjoram.

photos by Arthur O. Tucker

GARDENING ON A MOUND:

Growing Mediterranean Plants in the Delaware Valley

by Arthur O. Tucker

Even a beginning gardener would hesitate to plant a Tibetan blue poppy in sand or a prickly pear cactus in an acid peat bog. These examples illustrate an important rule in gardening: if you want to grow any plant successfully you should know its growing conditions in its native land.

continued

GARDENING ON A MOUND

continued

Whenever I receive a new plant, I first seize the floras of its native land and *then* my horticultural manuals. If the cultural directions conflict, I usually choose the advice of the flora first. Afterall, the species has evolved after millennia in a specific environment and will grow and *reproduce* best (with some rare exceptions) in the closest approximation of that environment.

creatively adjusting environments for plants

Many of our herbs originated in the Mediterranean region. Many are also subshrubs or suffrutescents (a perennial plant that is slightly woody only at the base). Lavender is a good example. If you can provide the conditions under which lavender not only grows and flowers but also reseeds itself, then you can claim to have success in growing lavender. True, unless you live on the Pacific Coast, you cannot duplicate the Mediterranean climate. The specific pollinators may also not be present for some species for good seed set. But you can adjust and improve the soil. Lavender, like other suffrutescents of the Mediterranean region (e.g., lavender cotton *[Santolina chamaecyparissus],* thyme, sage), requires a well-drained soil of neutral to slightly alkaline pH.

Consider the steep, terraced hills of southern France sloping down to the Cote d'Azur or the mountainsides of the Pyrenees where lavender thrives as a native. The soil is not only well drained because of the slope but also because of the abundant sand and gravel. Sure, you could grow lavender in peat or humus and have it flourish for the summer, but I can guarantee that it would not survive the winter. Not only would the leaves and stems be too lush to brace the cold, but the poor drainage in late winter/early spring would be the death knell. Any moisture that accumulates around the woody base at this time of freeze-thaw-freeze-thaw, will strip the bark, and once the bark is stripped the plant is dead (although the leaves may remain green into early spring).

How can we adjust the conditions to suit these Mediterranean plants? The best method that I have found is "mound gardening."

I first stumbled upon mound gardening as a teenager when I tried to grow the hardy cacti of Claude Barr's Prairie Gem Ranch (now defunct). I feared that my flat Pennsylvania garden was not sufficiently well drained so I mixed in 75% builder's sand to raise the cactus bed into a mound. Not only did the cacti thrive, but unexpectedly the thymes that I had planted as a groundcover spread as never before. Normally the woolly thymes rotted out in the center during the wet, humid weather of early summer and the *Thymus vulgaris* cultivars always died back severely during the winter. On the sandy mound, however, these problems virtually disappeared. The leaves of the thymes (and *Origanum* species) were smaller and tougher but far more flavorful too.

Later I had the fortune to acquire seeds of *Ferula assa-foetida,* a large umbellifer (beyond 7 ft. high), which yields the stinking gum asafoetida. In standard garden loam of my herb garden the asafoetida plant grew until winter. It never reappeared the following spring. On the sandy mound, however, the asafoetida plant is truly perennial and lush.

Really, a mound is nothing new. It is merely an attempt to incorporate some principles of rock gardening without the rocks or steep slope.

Later I planted shasta daisies, elecampane, lilies, and others for color on the mounds; they too seem to enjoy the extra drainage. Whereas the shastas in my regular perennial border go flopping every which way after a heavy rain, the shastas on the mound are always upright and sturdy.

the method

Creating a mound is simple. First, pile good topsoil up 12-18 in. into a broad mound. Then, spread about 1½ in. of white builder's sand (white is preferred but any coarse sand will do) over the surface. Carefully place plants through the sand and diligently water until well rooted in the soil underneath. Cacti and plants from similar habitats will require additional sand or gravel in the topsoil, but the above method suits the Mediterranean plants well enough.

experimental evidence: growing lavender in this area

Under a grant from the United States Department of Agriculture we have investigated about a dozen herbs and essential oil plants. We wondered whether any could be grown on the DelMarVa Peninsula as high cash crops. The ultimate agricultural commodity would be essential oils or dried herbs for the fragrance and flavor industry.

One of our potential crops is lavandin *(Lavandula x intermedia),* a hybrid of true lavender *(L. angustifolia)* and spike *(L. latifolia).* Using 'Dutch' lavandin because of its availability, we pondered the folklore surrounding the finer grades of lavender and lavandin oils: the finer oils were obtained from plants of high altitudes. Well, we could not readily raise the altitude of the DelMarVa Peninsula or move it to southern France, but we could adjust the soil. What do these "superior" locations for lavender and lavandin have in common besides the altitude? One primary factor is the slope and the drainage discussed above.

On "potato furrows" in a field we con-

structed a statistical design to test the level of fertilizer. We also added another variable: a top dressing of sand or no sand. The results after only one year were dramatic. The rooted cuttings planted in spring with a topdressing of 1-2 in. of sand were about twice the size by fall as the plants on plain soil; the winter survival was also better. The following summer produced even more dramatic results: we had a few scattered flowers from the lavandin on plain soil but abundant flowers from the lavandin on the soil with the sand.

Is the effect of the sand purely drainage? We seriously doubt that claim. The sand also provides a good mulching effect, conserving some moisture but draining the excess. Furthermore, the weeds are fewer and easily removed and the soil does not have to be tilled regularly.

Perhaps the sand's main effect is the increased light and heat. Anyone knows that you would burn and/or tan faster on a beach at Rehoboth, Delaware, than in a soybean field in Milford. The plants, too, respond to the higher level of light and heat with more abundant (but tough, not lush) growth.

So whether you want to grow cacti, thymes, or lavenders, mound gardening may be your answer. Your Japanese iris will not care for it, but your Mediterranean herbs should respond by reseeding. At any rate, asafoetida plants *demand* this treatment in the northeastern U.S., and when an odor that potent makes demands, I listen.

Arthur O. Tucker is a Research Associate and Co-Curator of the Claude E. Phillips Herbarium, Delaware State College, Dover. His research interests include the systematics of the genus *Mentha*, the systematics and cultivation of essential oil/herb plants, and the flora of the DelMarVa Peninsula. Privately, he pursues an endless hunt of neglected antique plants (cultivars no longer commercially available).

These lavandin plants were started as 2-in. rooted cuttings the previous spring. The cuttings planted in soil topdressed with 1-2 in. of sand are over twice the size and bearing abundant flowers as compared with the plants on plain soil.

Tomatoes and cosmos

Celandine and strawberries

The author tends the friendship garden. Neighbors get to know one another as they add to the tiny plot or just stroll by.

photos by Elizabeth Wetherald

The author s arrangement of weeds and wildflowers includes Queen Anne's lace, loosestrife, red clover, goldenrod, lobelia and Joe Pye weed.

NO LONGER MOURNING THE ROSES

Creating a Garden from Weeds and Wildflowers

A maverick garden on the perimeter of a landscaped apartment complex grows up despite rules and regulations.

by Elizabeth Wetherald

I thought my soil daubing days were over when we sold the big house and took an apartment where no gardening was permitted on the landscaped grounds.

Reluctantly I left my flower beds and the roses my husband, Robert, had nurtured so diligently. But nature found a way to compensate.

It was through long walks for exercise that I found a new world of wild charmers. Flowers called "weeds," beautiful beyond describing, in such a variety of colors. Truly we never close one door without opening another – not even at my age of 75 years.

Have you ever looked closely at Queen Anne's lace? I mean, cup it in your hand, and really examine it? It's a myriad of tiny snowflakes, a filigree of exquisite lace, with a tiny dark purple amethyst at its center.

Or, did you ever see anything bluer than the blue of chicory? A bloom so delicate it is predestined to live only a day but accepts its short span, tossing responsibility lightly to the next bud ready to open.

These so-called weeds, and wild flowers too, were always there, and like a timely blessing filled my need.

Almost unconsciously I began to look for a spot of land (outside the official landscaping) where I might again have a garden. This garden was to have all wild things. Fortuitously, I spotted an unclaimed bit of ground directly opposite our own balcony, beyond the parking area and beside a creek. I claimed squatter's rights, and we're now restoring this land from the havoc wrought when the apartment complex was built. My husband's willing brawn helped to make this restoration possible. He dug up and I helped to carry off enough broken bricks, rocks and trash to start a new foundation.

In every new venture, be it starting a new garden or redecorating a house, unforeseen problems are always lurking to prick enthusiasm. Ours was one of poor soil. But I was desperate for a garden. So, gradually as things were planted, each spacious hole was fertilized and some peatmoss added so at present most of the garden has good potential.

Now wild flowers bloom along with the misnomered weeds. Who could really call goldenrod or bright, perky field daisies weeds? In all fairness, perhaps a farmer. I did have some biases, too. The skunk cabbage flourishing near the creek shocked me the first spring. Now early each spring I'm amazed at the dramatic and lush leaves of the skunk

continued

NO LONGER MOURNING

continued

Star of Bethlehem

cabbage and search for its shiny mahogany flower.

Besides the renewed joy of gardening, an extra bonus was unexpectedly reaped from this venture.

We all know that apartments are generally notorious for anonymity. They can be cold and unfriendly. Our garden has broken down this barrier. Neighbors we had never met stop by now to see what we are doing. In dry spells, they help to carry water. One gentleman thought it would be fun to plant a few vegetables, but it was a woman who finally planted the vegetable garden. It was a huge success. She included flowers – beautiful pink swaying cosmos and bright zinnias intersperse the vegetables.

Originally, I had wanted all wild things. When the first zinnia seeds were brought around, I had silently resisted them. After some soul searching though, I decided it was more important to have friends who wished to share. Gradually other residents brought things – some petunias, a dignified Easter lily, and someone contributed a most welcome bag of fertilizer. And everyone seems to approve new bright spots of pink and red impatiens. The garden is 80 ft. long with a serpentine border averaging 3 to 5 ft. in depth. So what was started primarily as a weed and wildflower restoration has become a friendship garden and truly has "room for all." We are now planning to extend the garden by sowing meadowflower seeds in a sunny area, thus extending our garden by 20 ft.

Yet with all this variety of flowers and weeds, my husband and I can still hunt in early spring for the wild things peeping through, and can't help but smile and welcome an intruding early daffodil.

To my delight, several neighbors have started a little rebellion against the strict apartment rules and are planting some flowers outside their patio railings – forbidden territory.

So, if you're a former gardener and have experienced a void similar to mine, stroll along most any roadside and look for weed-beauty. Take home a little handful; a small pitcher or bowl of colorful weeds can rival any florist's "arrangement" of cultivated flowers. If you are planning to use them for a particular day, they will keep for days in the refrigerator and stay fresh for some time even after being removed from the cold.

Many retired people today – and we are 25 million strong in the U.S. – have given up a large home for perhaps an apartment and can't afford to start another expensive garden. Truly there is great joy in establishing one like ours.

If you are interested in just wildflowers, they can be purchased at many garden centers, but ecology is better served if a sharp eye detects the beginning of some large apartment complex or suburban office structure and, with permission, preempt the bulldozer. We use Girl Scouts' honor in other areas. If we see dozens and dozens, we take *one*.

Digging in the earth, along with the joy of finding wild things peeping through in early spring, healed my mourning scars. And last night I dreamt, not of stately pink and yellow roses, but of heaven-blue chicory and wild, unruly Queen Anne's lace.

Weeds and Wildflowers in Our Garden

Black-eyed Susan ***(Rudbeckia hirta)***
Blue vetch ***(Vicia cracca)***
Bloodroot ***(Sanguinaria canadensis)***
Chicory ***(Chicorium intybus)***
Common dandelion ***(Taraxacum officinale)***
Common violet ***(Viola cucullata)***
Common white daisy ***(Chrysanthemum* spp.)**
Daylily ***(Hemerocallis fulva)***
Edelweiss ***(Leontopodium alpinum)***
Flowering dogwood ***(Cornus florida)***
Honeysuckle ***(Lonicera* spp.)**
Jacob's-ladder ***(Polemonium caeruleum)***
Lance-leaved goldenrod ***(Solidago graminifolia)***
Lesser celandine ***(Ranunculus ficaria)***
Lily-of-the-valley ***(Smilax rotundifolia)***
Loosestrife ***(Lythrum salicaria)***
May apple ***(Podophyllum peltatum)***
Moneywort; myrtle ***(Lysimachia nummularia)***
Partridgeberry ***(Mitchella repens)***
Pink azalea (wild) ***(Rhododendron nudiflorum)***
Red clover ***(Trifolium pratense)***
Skunk cabbage ***(Symplocarpus foetidus)***
Spiked lobelia ***(Lobelia spicata)***
Spring beauty ***(Claytonia virginica)***
Star of Bethlehem ***(Ornithogalum umbellatum)***
Wild carrot; Queen Anne's lace ***(Daucus carota)***
Wild columbine ***(Aquilegia canadensis)***
Wild geranium ***(Geranium maculatum)***

●

Elizabeth Wetherald is a free-lance writer who has always been interested in gardening. In the past decade she has worked with older people professionally and at present serves on the Board of Governors at Ralston House in University City where she realized the therapeutic value of gardening for these older residents. They started with windowsill gardening (PHS's Indoor Gardening slide show) and proceeded in early spring to planting seeds in egg cartons – later setting the seedlings out of doors.

WINTER WEEDS

by Paul G. Wiegman

I have a confession to make. But please don't tell others – it could jeopardize my job. And it isn't good public relations for the botanical profession. I'm a television addict.

I'm only telling you this because I want you to be aware of the potential hazards of being a botanist, professional or amateur. Now you may wonder what that has to do with matters botanical, and that's an honest question. A quick recap of my fall into the electronic gutter will help you avoid the same.

What did I find to fulfill my botanical cravings over the winter? What replaced the wildflowers of summer? The weeds of winter.

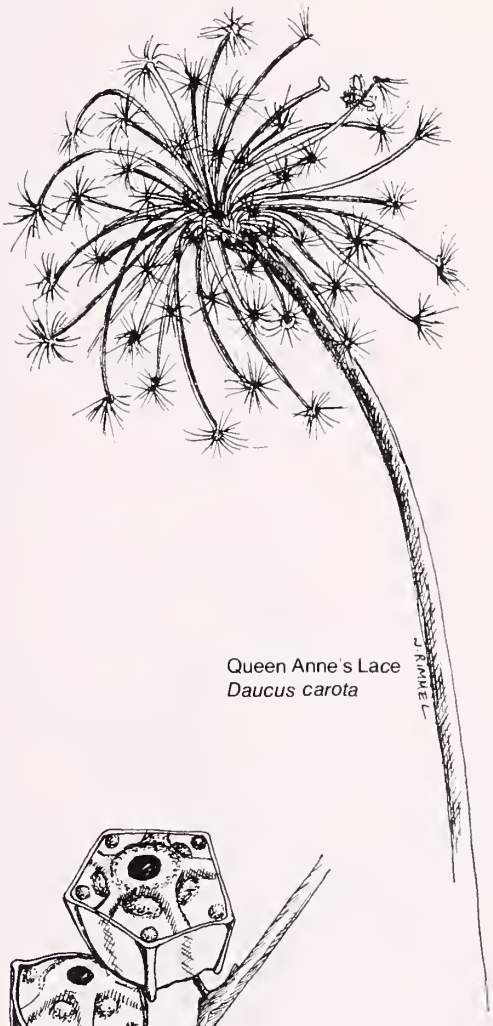
Plants are my profession and hobby. I'm constantly a botanist. This green state of mind is easily fulfilled through most of the year, but the winter posed a problem. My frustration level would begin to rise in proportion to the amount of snow on the ground. Then one cold February day I found green – glowing vibrant green. The television radiated green from every transitor and tuner, and much of the verdant hue was from plants.

I took to watching for hours, transfixed and waiting for a brief glance at an identifiable plant. Football games were once played on grass, and I hoped for an occasional uncut weed to identify. I learned tropical trees from "Hawaii Five-O." "Dukes of Hazard" provided a glimpse of the southern flora. I was hooked.

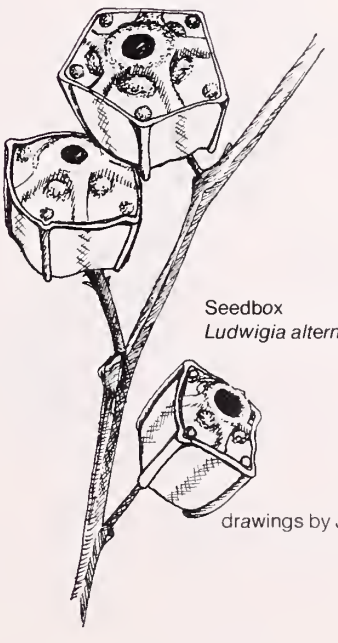
Finally, with eyes glazed and brain slowly turning to mush, my family saw the problem and arrested my decay. What was the turning point? What did I find to fulfill my botanical cravings over the winter? What replaced wildflowers of summer? The weeds of winter.

I found, to my salvation, that there is still an abundance of plants to be found and identified in the winter. Dried stems, cones, berries, and other parts survive the wind and snow and offer an interesting challenge to identify.

After my bout with the Sony syn-



Queen Anne's Lace
Daucus carota



Seedbox
Ludwigia alternifolia

drawings by Janet Rimmel

Winter Weeds

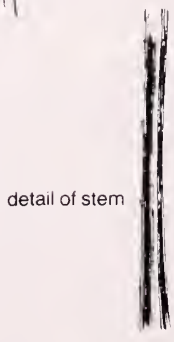
Common Name	Botanical Name	Common Name	Botanical Name
Bee balm	*Monarda* spp.	Motherwort	*Leonurus cardiaca*
Burdock	*Arctium minus*	Ostrich fern	*Matteuccia struthiopteris*
Cattails	*Typha latifolia* and *T. angustifolia*	Queen Anne's lace	*Daucus carota*
		Seedbox	*Ludwigia alternifolia*
Christmas fern	*Polystichum acrostichoides*	Selfheal	*Prunella vulgaris*
		Sensitive fern	*Onoclea sensibilis*
Common milkweed	*Asclepias syriaca*	Shepherd's purse	*Capsella bursapastoris*
Common mullein	*Verbascum thapsus*	Swamp milkweed	*Asclepias incarnata*
Cow parsnip	*Heracleum maximum*	Sweet cicely	*Osmorhiza claytonii*
Enchanters nightshade	*Circaea quadrisulcata*	Teasel	*Dipsacus sylvestris*
Evergreen wood fern	*Dryopteris spinulosa*	Tick trefoil	*Desmodium* spp.
Horse balm	*Collinsonia canadensis*	Velvet leaf	*Abutilon theophrasti*
Jimson weed	*Datura stramonium*	Wild basil	*Satureja vulgaris*
Meadow parsnip	*Pastinaca sativa*	Wild cucumber	*Echinocystis lobata*

WINTER WEEDS

continued

drawing by Janet Rimmel

drawing from *Winter Weeds* by Lauren Brown (author and illustrator). Courtesy W. W. Norton, $12.95



drome, I wasn't prepared for the season's temperature, so the first of the brown botanizing was from the warmth of a car. Conspicuous and easily identified in open areas is the dried flat-topped flower head of Queen Anne's lace, the similar meadow parsnip, and cow parsnip. The latter is the tallest of the parsley family, reaching nearly 9 feet.

Milkweed can be recognized by the bilaterally symmetrical pods. Common milkweed has large warty pods, and swamp milkweed has narrower more papery pods. Teasel, common mullein, and cattails are notable fall leftovers.

Winter weeds often follow you home.

Once I adjusted to the cold, I got out into the fields and really started to see what remained. Many plants maintain their family characteristics even after dried. The mint family is recognized by square stems, opposite leaves, and fused flower parts. All three of these features can be found in winter specimens. Selfheal can be found as a single leafless square stalk with a summit spike of dried calyces. Each calyx has two unequal, fan-like lips. Wild basil retains its hairiness, and has two clusters of calyx tubes along the stem. Other mints to look for include horse-balm, motherwort and the bee-balm.

Some plants are named for features best seen in the winter dried materials. Seed box has a square, box-like fruit that contains the seeds. As winter winds shake the dried stems and fruits, the seeds are vibrated out of the pore at the top of the box. Shepherd's purse has a fruit shaped like – what else but a shepherd's purse. The translated species name also means "purse-of-the-shepherd."

Ferns don't produce flowers, but two species have fruiting bodies that remain through the winter. Ostrich fern and sensitive fern are easily recognized by their dried fertile fronds. Both are plants

of wet places, with the ostrich fern most common along large streams and rivers. Other ferns like the evergreen wood fern and the Christmas fern retain green fronds through the winter. Both of these are woodland species.

Some winter materials are quite striking. Wild cucumber is a sprawling vine with long hanging fruits. These papery little pods look like headless porcupines. Jimson-weed carries an arsenal of spiny fruits on its dried stalk. Velvet-leaf has one of the most unusual seed pods. A member of the mallow family, this tall annual, naturalized from India, has large 1-2 in. diameter crown-shaped fruits, composed of 12-15 sections arranged around a central spool.

There is one characteristic of winter leftovers not found in the summer greens. Winter weeds often follow you home. Many plant seeds are dispersed by being attached to moving objects. Burdock is the crowning glory of this type of seed dispersion. Fortunately, it is easily recognized and avoided. Enchanters nightshade has miniature burrs on short stalks that are not easily seen. Sweet cicely fruits are long and narrow with hooks along the outer ribs. Tick trefoil is another bristled fruited plant of open fields. These last four are most likely to be taken home on your pants from the knees down.

I have recovered from my addiction to the tube. No more "I Love Lucy" reruns or watching three hours of "M*A*S*H" repeats (I didn't know ponderosa pine grew in Korea). If you, or someone you love, is having similar problems, may I suggest waiting for a good snow, then taking a long walk outside. It also helps to carry a copy of *Weeds in Winter,* by Lauren Brown, W. W. Norton, 1976. See you next month, same time, same channel.

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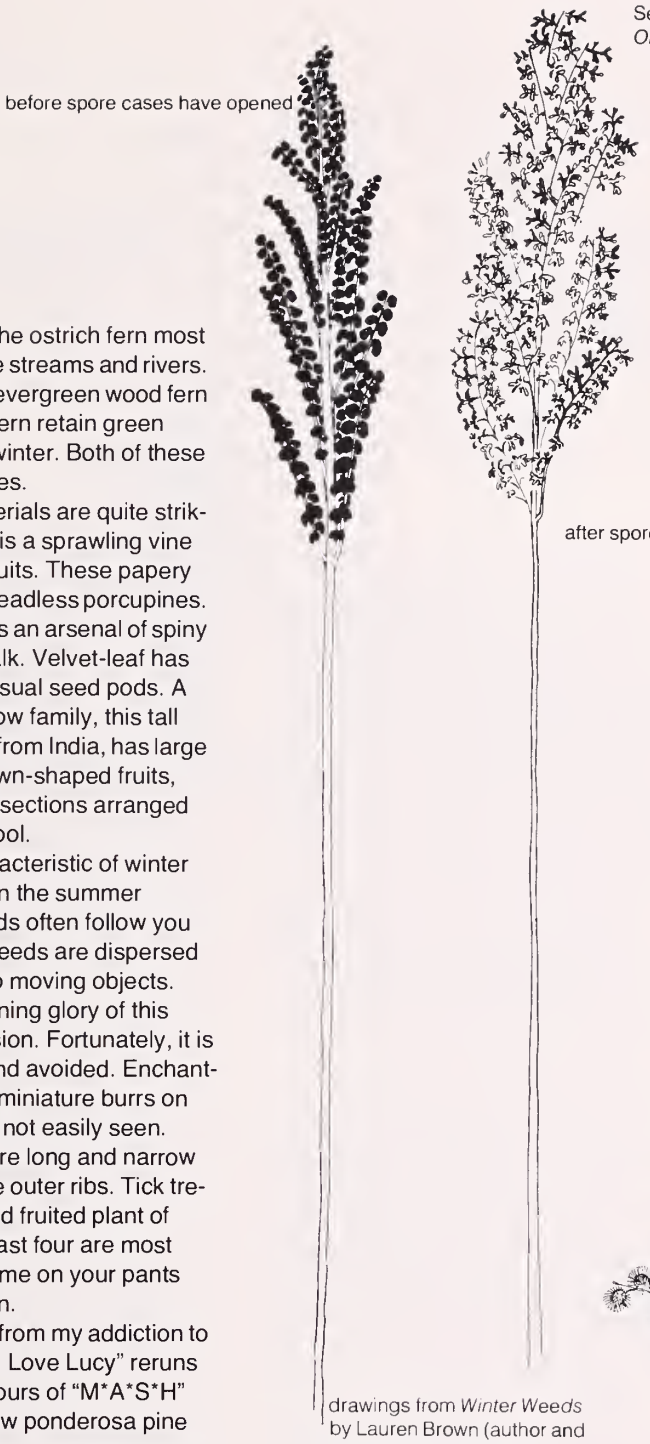
Paul Wiegman is a naturalist, a part-time gardener, a woods walker and a photographer. At present he is director of Natural Areas Program for Western Pennsylvania Conservancy.



drawings from *Winter Weeds* by Lauren Brown (author and illustrator). Courtesy W. W. Norton, $12.95.

Heating Up for the Flower Show: *with Kerosene*

by Anita Kistler

How could we keep our plants for the 1982 Philadelphia Flower Show in top condition from the time they were dug in autumn until set-up time in the Civic Center? My husband, John, was chairman of the American Rock Garden Society exhibit, so we were responsible for many of the plants to be used. About seven years ago, when we had used an electric heater to protect the plants our electric bill exceeded routine household costs. What would it be now?

My alpine house, a converted sheep and chicken shed, is not large enough to use a wood burning stove. The plants would be too close to a hot fire. Some kind of kerosene burner seemed to be the answer. Not one of the new deluxe models that give off heat laterally; they are great for extra warmth for TV watchers. What I wanted was one that would let the heat out of the top (to keep the air circulating), and one that was portable, so I could move it until I found where it worked most efficiently. We could not heat the entire 2,260 cubic feet, so I considered how the citrus growers keep their fruit from freezing by using warm air circulation.

I talked to fellow rock gardeners, Bill and Jan Hirsch, who had used this same model kerosene heater the winter before in their lean-to greenhouse. They sold me on its possibilities: we could save money by not using electricity, and their plants looked healthy.

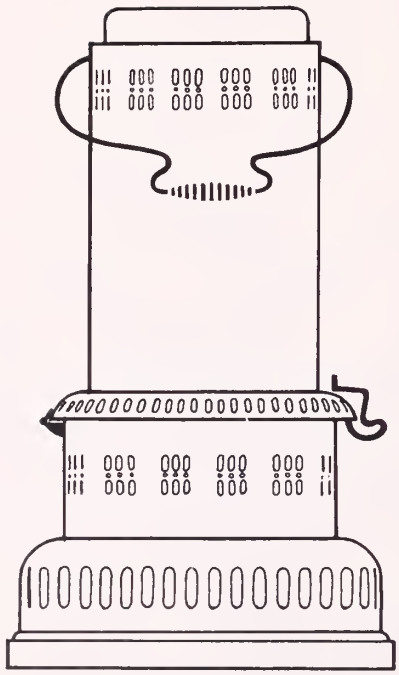
Our local farm equipment and hardware store carried the simple model I wanted. Their salesman reminisced about the house where he grew up. They had had this same model burning in the bathroom all winter. I was reassured. This kerosene stove would not be too hot for my wooden ceiling.

With the spare kerosene tank that our son supplied, I could quickly change the tank in the mornings and evenings. A tank held 3½ quarts and lasted about 10 hours. On sunny days, there was little need to use the heater unless the temperature outside was in the teens. The nights in January and February are long. The movement of air was of utmost importance.

As the date for the Show neared, the small rock garden plants, such as *Androsace sarmentosa, Anemone sylvestris, Arabis* x *sturii, Bellium minutum, Campanula carpatica* and *portenschlagiana, Draba sibirica, Dodecatheon, Hypericum olympicum, Iris pumila, Leontopodium* (eidelweiss), dwarf varieties of phlox and primulas were moved into our cellar under lights. The azaleas were moved into our south facing sunporch but two large rhododendrons – Pioneer, 5 ft. tall, and a hybrid, a Nearing cross, 4 ft. tall – had to be forced into bloom. They were much too big to be brought into the sunporch.

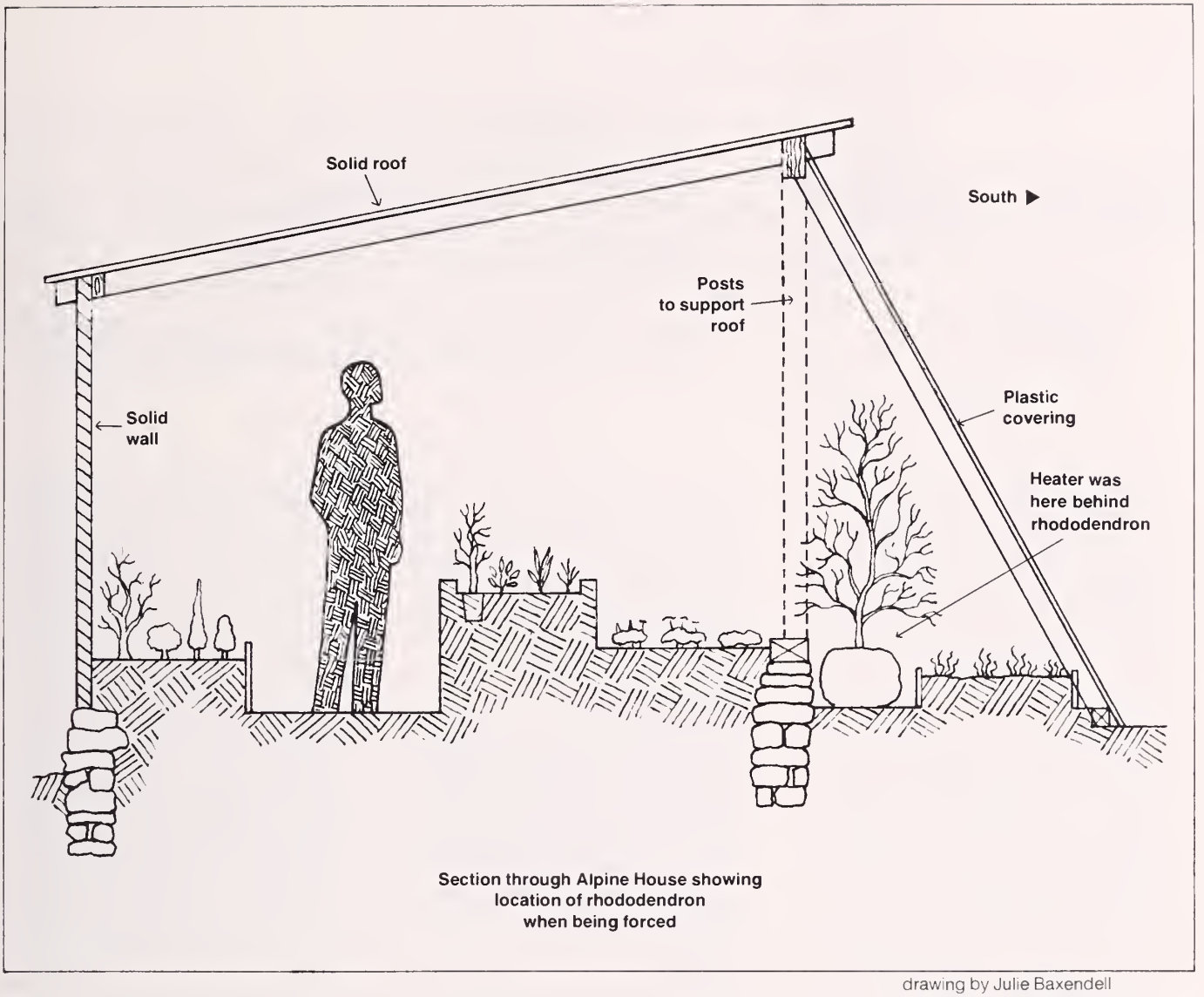
These two rhododendrons had been stored in a protected area outside and were now moved into the alpine house under the sloping plastic covering. The kerosene heater was placed between them as closely as possible without burning either root ball. Twice daily we fine-sprayed with warm water, until the bud color showed. With the warm air from the heater, plus the lengthening days, the rhododendrons were showing color three weeks later when we moved into the Civic Center for set-up. They were in full bloom by the middle of the next week, when some of the other plants at the Show were waning.

The kerosene heater did promote good air circulation. The temperature in



24 in. High Kerosene Heater

Tank inside holds 3½ quarts of fuel. Manufacturer Warning – use this heater only in a well ventilated area. Hazard of asphyxiation.



Section through Alpine House showing location of rhododendron when being forced

drawing by Julie Baxendell
concept by Anita Kistler

the alpine house did drop at night, and the far interior corners were frozen as usual, but the plants I was concentrating on remained healthy, with good color and no burnt spots.

The drawf conifers, *Erica herbacea* 'Springwood White' and 'Springwood Pink,' *Chamaedaphne calyculata* flourished and bloomed for the Show, having spent much of the winter with my kerosene heater.

I have the feeling now that the cost of kerosene at last year's price of $1.40 a gallon and present day electric prices would be almost the same. On clear sunny days the kerosene heater could be off from 10 AM until 3:30 PM, so could the electric heater. No difference there. I noticed no sooty or oily deposits on the inside of the plastic covering, even though the heater had been directly under it. The lack of thermostat did not hinder my use, because my aim had been air circulation most of the winter. The final three weeks, while the heat actually hit the rhododendron branches, the air was still circulating, hitting the cold plastic and dropping down to be replaced with other heated air. I intend to use my heater again this winter, since I already have one. I must say, however, that I would not argue forcefully for a kerosene heater over an electric one.

Cost of Heating with Kerosene

Kerosene (3½ quarts)
$1.20 x 2 = $2.40 per day

$2.40 (price per day) x 30 days (1 month) = $72.00 (cost per month)

Heaters are available at many hardware stores. Look in Yellow Pages under Stoves – Wood, Coal, etc.

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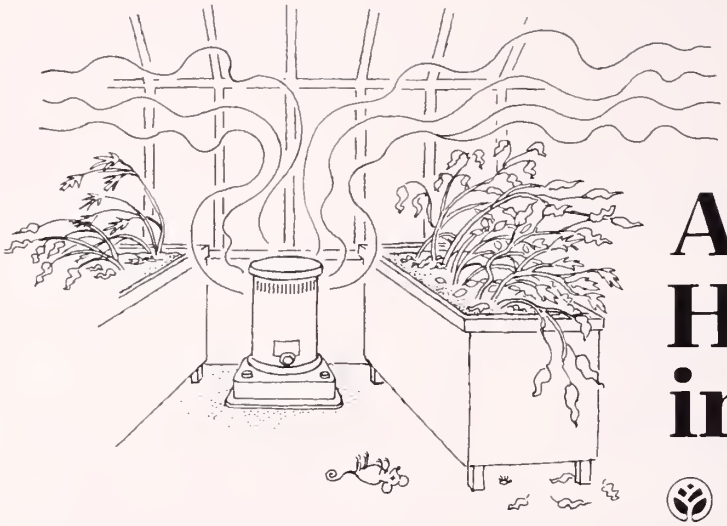
Anita Kistler is a dirt gardener and an avid rock gardener. She frequently exhibits in the rock garden classes at the Philadelphia Flower Show. She lectures on rock gardens and wild flowers and has a small rock garden nursery.



Are Kerosene Heaters Safe in Greenhouses?

by Paul N. Reber

When my mother headed for the attic to uncover the sheet-draped "emergency" kerosene heater I knew that either the coal bin was empty or that I'd soon have delicious dried corn or schnitz (apples, the other half of knepp) that she would prepare on top of the heater's steam dryer.

According to present safety standards that kerosene heater of the 40s would never pass inspection as a heat source for living room or greenhouse. Not only did it burn fuel inefficiently, but the kerosene used had a high sulfur content.

Enter now a new breed of highly efficient unvented kerosene burning heaters that became a phenomenal success in 1981. With certain precautions these units can be used to supplement and partially replace oil, electric and gas heat in a home.

But what about the hobby greenhouse? Can plants be grown in a confined environment with an unvented heater? Let's evaluate the parts – then put it all together.

kerosene grades

To insure plant safety in a greenhouse the kerosene used should be "clear white" or 1-K grade. This kerosene will be 99.5% clean burning and contain a maximum sulfur content of 0.04 weight percent.* More about sulfur later.

Unfortunately it is difficult to find 1-K kerosene for sale. The 1-K is costly, probably twice as much per gallon to buy as standard kerosene. Distribution to the retailer should be made in clean or purged tank trucks; otherwise, it will be contaminated with fuel oil or other impurities. Kerosene refiners would have to sell 1-K in one gallon containers, not pumped, to make sure it remained pure.

The second grade of kerosene is 2-K. This is what is offered for sale by the majority of dealers. It has a maximum sulfur content of 0.3 weight percent and, according to a major oil company, should not be used in flueless (unvented) heaters.

kerosene heaters

Industry claims that kerosene heaters that are 99.5% clean burning are based on the use of "clear white" or 1-K grade kerosene, which is as clear as water. Using 2-K fuel will in time clog the wicks of unvented heaters and cause a significant increase in carbon monoxide and sulfur dioxide.

combustion

In any combustion process carbon dioxide (CO_2), carbon monoxide (CO), water vapor, nitrogen dioxide (NO_2) and sulfur dioxide (SO_2) (when using 2-K kerosene) are produced.

Carbon monoxide is dangerous because it is colorless and odorless. It accumulates in the blood and combines with hemoglobin (an oxygen-carrying constituent of blood) over 200 times more readily than oxygen does. Consequently CO robs the blood of oxygen and simultaneously prevents the disposal of waste carbon dioxide from the blood. Exposure to 0.05 percent for three hours is life-threatening.

I would not recommend using an unvented kerosene heater in the greenhouse.

Sulfur dioxide, although not life-threatening, can be injurious to plants. This air pollutant causes a bleaching or a leaf burning effect on foliage. The tissue between the veins is injured and the damage is often more prominent towards the petiole. Fully expanded leaves are the most sensitive.

Oxygen (O_2) is another gas present in quantity. If all the oxygen is removed by the heater the flame will be extinguished, there would be no heat, and the greenhouse crops could be lost.

assembling the parts

Finding 1-K grade kerosene to burn in an unvented heater is next to impossible; therefore, **adequate ventilation must be available to reduce levels of gases when using the 2-K grade.**

It could be argued that greenhouses are not tight and air leakage is common. But with the energy crunch the smart hobbyist has plugged those escape routes with polyethylene, bubble plastic or other insulation methods.

Under these conditions a rule of thumb is to provide one square inch of ventilation area for each 1,000 BTU's per hour of heater capacity. However in the dead of winter a louver open just one half inch can lose up to 12,000 BTU's of heat per hour, approximately the same heat output of a typical kerosene heater. Thus, the net heat gain will be zero.

Summing it up – I would not recommend using an unvented kerosene heater in the greenhouse. Although some hobby growers feel secure with theirs, the possibilities of malfunctioning to produce damaging pollutant levels are there.

•

*Author's Note: *Consumer Reports* (October 1982) states that burning 1-K grade could create sulfur dioxide levels up to 12 times the standard set by EPA for human exposure.

Paul Reber is an ornamental horticultural graduate of Penn State University. As a county agent with the Montgomery Co. Cooperative Extension Service he conducts programs that benefit both commercial and private horticultural interests.

A Safer Pesticide in the House and Garden

Safer Insecticidal Soap offers us all a means of keeping our gardens and house plants relatively free of infestation at minimal risk. This new tool will enable us to add numerous superb plants to our horticultural repertory.

by George A. Elbert

One summer a few years ago I contracted a fever that held on and on, defying all my excellent physician's efforts at a diagnosis. After awhile I became obsessed with the idea that one or another of several pesticides that I had been using for a long time, without taking most of the precautions I have consistently recommended to others, was finally taking its toll. I related my suspicion to the doctor who arranged for tests which, to my intense relief, proved negative. Eventually the ailment was identified and the patient – obviously – cured.

As far as home and garden users are concerned the important fact is that it destroys most of the pests they encounter, namely aphids, mealybugs, whitefly, scale and spider mites of all kinds.

I wonder how many other plant hobbyists have been similarly frightened, conscious as they must be that some of the common chemicals they feel obliged to apply to their plants are dangerously toxic. We all know that sensitivity levels vary in human beings and what might be a small dose for one may cause serious health problems for another. Nobody who comes regularly in contact with pesticides can be entirely free from fear. Even if we did not know that there are risks in using them, we would be warned off by the unpleasant odors of these substances. Malathion may be one of the milder pesticides, but its reek alone is enough to make one ill.

More cautious and sensible horticulturists than I have chosen to abandon the use of pesticides entirely, preferring to risk losing some plants. Others have refused to grow plants that attract the most harmful insects. The nearer one comes to the home the greater the resistance to the use of highly toxic chemicals. Objectionable as they are for forest infestations because of the damage they cause to wildlife and the uncertain effects on humans when sprayed on crops, the danger becomes a matter of very intimate concern in the garden and, even more, indoors.

Manufacturers of pesticides are as eager as anyone to find pesticides that are less toxic to humans, particularly in the home gardening environment. Pyrethrin mixes and orris root have been partially effective. Many hobbyists like Ced-O-Flora. Good results have been achieved against mites by flushing plants with water. These and other insects have been controlled by dipping plants in a mild detergent, soap or Clorox solution. But I have yet to see any evidence that these methods achieve more than a certain degree of relief from the worst attacks. The news that there is now on the market a pesticide with very low toxicity to household pets and capable of temporarily (all eradication is temporary) eradicating some of the most common and destructive pests is certain to be welcomed enthusiastically.

the new product: who found it and how it works

That product is Safer Agro-Chem's Insecticidal Soap, made by the Safer Agro-Chem Inc., 13910 Lyons Valley Road, Jamul, California 92035. It is now being stocked by many stores carrying plant supplies. The material has been approved by EPA for fruit, vegetable and forest application.

"In the early 1970's Dr. George Purtich, a scientist with the Canadian Forestry Service, discovered that a fatty acid emulsifying compound killed 100% of the balsam wooly aphids in a pesticide test. From there, Dr. Purtich's research team turned its attention to other fatty acids for use as pesticides" *(Light Garden,* March-April 1982). Further intensive experiments yielded a combination of fatty acids that was effective against a considerable number of pests. The product was originally manufactured in Canada and Safer Agro-Chem Inc. now produces it in the U.S.

Fatty acids are present in almost all living matter. They are present in all vegetable and animal oils when they are first extracted and must be removed in order to make an edible product. Salad and cooking oils that are exposed to air for a long period and become rancid have been partly converted to fatty acid. Rancid oil is caustic and causes irritation to the membranes of the throat. A pure fatty acid is poisonous. Most packaged edible oils contain less than 1/10 of 1% fatty acids. An exception is olive oil where up to 1% is tolerated without ill effects. Soap consists largely of fatty acids, animal or vegetable. Those plant hobbyists who have used the dilutions of detergents or soap to kill insects have, therefore, been on the same track as Dr. Purtich. And Safer Soap is simply a mild solution of an emulsified fatty acid formula that has proved especially effective as a pesticide.

The way Safer Soap actually works is not fully understood. It is sticky and, no doubt, inhibits transpiration. It may prevent the pests' tiny offspring, or even full grown ones such as mites which are very small, from moving around and foraging. The material disrupts membrane metabolism in some pests. As far as home and garden users are concerned the important fact is that it destroys most of the pests they encounter, namely aphids, mealybugs, whitefly, scale and spider mites of all kinds. My experience is with these insects. The manufacturers, in addition, supply instructions for dealing with leafhoppers, grasshoppers, harlequin bug, squash bug, citrus thrips, gypsy moth eggs, etc. It does not appear to harm beneficial insects such as ladybugs. For specific use against other garden pests than those I have listed, it is advisable to consult the manufacturer.

how to use with houseplants

Working with houseplants I buy the 8 oz. plastic bottle of concentrate. Directions on the label are to mix 6 tablespoons (3 oz.) of the concentrate with a

continued

A Safer Pesticide

continued

gallon of water. I use a one-quart plastic sprayer and make up a half or full pint of the mixture at a time depending on my needs. The cap of the Safer bottle holds about a tablespoon. For mealybugs I usually almost double the concentration but have no proof of increased effectiveness.

With my sprayer I drench the plants thoroughly when I find an infestation. The immediate results vary. Sometimes a single application is sufficient; at others, two or three applications are necessary. That seems to depend as much on the structure of the plant as the resistance of the insect. The normal home sprayer does not penetrate every minute interstice into which juvenile insects can crawl. Even though the material has a spreader action, some air spaces may be left under bubbles in axils and between closely packed leaves or calyx segments. With a little patience, though, I have had 100% results in fighting the mentioned insects.

a mild caveat

Most people will notice only a slight unpleasant odor. I know a few who have been mildly allergic to it. It doesn't bother me at all, and I neither like it nor find it particularly unpleasant. In any event it is a relief compared with other chemical pesticides. If misused, because misunderstood, other side effects can be experienced. The word "soap" seems to confuse people, particularly when they interpret it literally. Incidentally, I find "Insecticidal Soap" a peculiarly clumsy choice for a trade name. People seem to think that the plants should be washed in the solution or that, after spraying, the plants should be washed off immediately in clear water. Washing off the solution is counter-productive as it inhibits its insecticidal action. It is a contact pesticide but it doesn't act with the speed of lightning.

In both the above ways of handling Safer the hands may come into contact with it more frequently than necessary. Some skins are sensitive to even quite mild detergents – for example in washing dishes. It is absurd to expect that a caustic fatty acid, even in considerable dilution, can be handled by some with complete impunity. If you have a sensitive skin, use rubber gloves. Again, the material does not bother me or Jinny, my wife, but it may bother you.

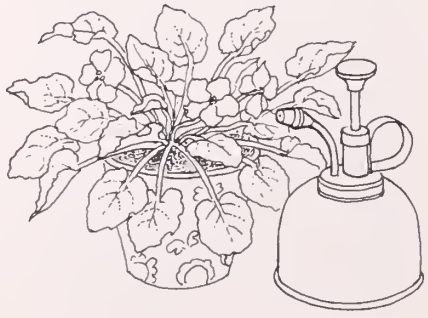
Most plants do not appear to be adversely affected by treatment with Safer Insecticidal Soap. It has been proved toxic to the horse chestnut and mountain ash. The Safer company issues a list of some 13 doubtfuls, including Japanese maples, bleeding heart, flowering and vegetable peas, nasturtiums and violets. On the other hand the firm issues a five-page list of plants that are unaffected. African violets are safe. I have found

I find "Insecticidal Soap" a peculiarly clumsy choice for a trade name. People seem to think that the plants should be washed in the solution or that, after spraying, the plants should be washed off immediately in clear water. Washing off the solution is counter-productive as it inhibits its insecticidal action.

that *Dioscorea discolor* and *Hibiscus fuscatus*, not frequently grown, are sensitive. I would characterize them as plants with very thin, rather flaccid leaves – if that is any help. Many other houseplants of all kinds have been treated several times off and on throughout the year as new infestations crept through my constantly changing collection. Except in the instances noted I had no trouble. But, undoubtedly, other plants that react unfavorably will turn up. Note that the fact that Safer is non-toxic for one species of genus does not necessarily mean that it will not be damaging to another. If in doubt, brush a single leaf with the solution. You will know the answer, pro or con, within a day or two at most.

you can now add some x-rated plants

For years I have hesitated to recommend certain plants for the house that attract insects. Many of the herbs are hosts to white fly but people do grow them, nevertheless, because they are useful and worth the extra trouble. But dwarf lantana, one of my favorites which is ever-blooming, is avoided by nearly everyone because it attracts insects. Miniature roses are very popular but the plants succumb almost overnight if attacked by mites. Now both of these can be maintained in good health if treated promptly.



Mites are responsible for a very high percentage of houseplant deaths. Most amateurs do not recognize the symptoms of infestation. Some of the larger decorator plants can be infected for years and show only minor evidence. For example, parlor palms become rather grey-leaved but live on. As long as it was necessary to apply highly toxic pesticides frequently it did not make good sense to suggest their use as a cure for the ailments of the most attractive hosts or to educate hobbyists in their use with plants that did manage to survive under attack. But now one can feel a considerable degree of relief. Safer Insecticidal Soap offers us all a means of keeping our gardens and houseplants relatively free of infestation at minimal risk and, as a result, we can add numerous superb plants to our horticultural repertory.

My comments have been those of an indoor gardener. Outdoor use will require larger amounts of the product for protection against a number of additional pests. Some insects that are fatal to plants indoors are no special problem in the garden. Whether or not its use will be too costly for many gardeners I cannot judge. What I can mantain is that the claims regarding the product's relative safety to plants and animals and its toxic effects on many damaging insects have proved reliable in daily use. I assume that the Insecticidal Soap will also prove valuable to outdoor gardeners. At least they, themselves, will run minimal risks in giving it a try.

●

George A. Elbert has written a number of books about indoor horticulture including *The Miracle House Plants: The Gesneriads; The Indoor Light Gardening Book; Plants that Really Bloom Indoors*. He was awarded the Massachusetts Horticultural medal for contributions to horticultural literature. Elbert is a founder and president of the Indoor Light Gardening Society of America, Inc. and a member of the Illuminating Engineering Society.

The Rhododendron Midge: *Another Major Pest?*

by Walter Kern

The next time you find a rhododendron leaf with part of its margin furled under, ragged and reddish, don't dismiss your observation lightly. It may be a sign of the midge. While at the beginning the damage may seem negligible, if it is not checked it can become one of the worst pests. But judge for yourself.

About 10 years ago I noticed that a few of the leaves of the current season's growth on one of my rhododendrons appeared distorted. I removed them, in accordance with my standard practice when finding unsightly leaves. From year to year the number of such leaves kept increasing. One day I took some samples to the local chapter of the American Rhododendron Society. I was told the deformity was due to cold injury, nothing to worry about. Then, in 1974, when Douglas Christie of the Pennsylvania Bureau of Plant Industry (PBPI) was inspecting my small nursery, I asked him to have a look at the distorted leaves. He immediately identified the lesions as characteristic of the damage caused by the rhododendron midge.

I was elated. Now that I knew what I was dealing with, I assumed that it would be easy to look up literature on the subject and to prescribe a remedy. I was wrong.

I did find several references to the rhododendron midge; they all stated or implied that they could be controlled by hand-picking the affected leaves. For example, in a catalog (*circa* 1969) Warren Baldsiefen wrote:

> "**Midge** – The midge maggot is harbored by the very leaves it destroys. The adult fly lays its eggs in the leaf bud sometime in early spring before growth commences. As growth begins to emerge the tiny white maggots hatch and confine themelves in the rolled edges of the leaves. They prevent the full and proper development of the shoot they infect by destroying the leaf as it develops. The infected growing tip has a twisted and contorted appearance decidedly reddish along the rolled margins. The maggots can be seen by rolling a suspected leaf out flat. Hand picking and burning infected tips offer complete control or a stomach poison sprayed on the foliage at 10-day intervals during the early growing period."

By 1975 it was clear to me, however, that hand-picking affected leaves was inadequate to control this insect. I wrote on January 30, 1976 to the United States Department of Agriculture in Beltsville, Maryland, for further information. I received a letter from Ralph E. Webb, Research Entomologist, referring me to A. G. Wheeler of the Bureau of Plant Industry in Harrisburg as an entomologist interested in the rhododendron midge. He also told me that my

photo supplied by author

letter had been sent to the *Ornamental Plants Entomologists Newsletter.* Cynthia Westcott, author of *The Gardener's Bug Book,* saw my letter and wrote:

> "I have not had much personal experience with the rhododendron midge but I have had a lot with rose midge, which we used to control by spraying bushes and soil with DDT. Recent U.S.D.A. research has indicated that Diazinon can replace DDT. I tried it on my roses last summer and got nearly 100% control by spraying bushes and drenching soil with Diazinon (Spectracide 25-E) three times. You might try this with rhododendron. I doubt if trying to remove infested material will ever give much control. Probably, like the rose midge, maggots have already dropped to the soil to pupate before you note the injury."

It was the realization that I was getting nowhere with hand-picking infected leaves and shoots that had prompted me back in 1975 to ask for assistance from PBPI and the United States Department of Agriculture (USDA). In fact, I really got a scare when, during a warm spell early in November of that year, I noticed innumerable tiny flies hovering over or flitting from leaf to leaf in a coldframe containing young rhododendrons after I had conscientiously picked off infested leaves and shoots all summer.

The small flies looked like fuzzy light smudges with a dark center. I suspect they were laying their eggs on the rhododendron leaves. If that suspicion should turn out to be correct, it would be bad news. It would mean that right up to late fall new leaves are infected. It would largely account for the insect's rapid spread once it is established in a planting. To find out, we shall probably have to wait till the PBPI publishes another of its interesting entomology circulars, this time on the subject of rhododendron midge. In 1980 Wheeler told me that Cornell University was investigating the control of the midge and that he hoped they would have some useful information in a few years.

In the meantime, we must continue our efforts to wipe out or control this insect. As I see it, this means: continued picking of infected leaves and shoots; periodically spraying leaves (with Spectracide or similar approved contact spray) until no more small flies flit from the rhododendron plants when they are disturbed during warm, windstill weather; drenching the soil underneath all infested rhododendrons with Diazinon or such systemic pesticide as the USDA may approve.

My experience confirms Westcott's opinion that spraying plus hand-picking alone are not sufficient, because some of the larvae have already fallen to the ground. Soil drenching alone is equally

continued

Rhododendron Midge:

continued

ineffective, because some of the adult flies continue to infect new leaves above ground while some larvae are still in the leaves and shoots.

Using the three-pronged attack – removing infested leaves and shoots, spraying plants and drenching soil – seems the best method at present for getting rid of the midge. Incidentally, a curious fact about these midges is that they are highly selective about the plants in which they choose to lay their eggs, just as rabbits are in the choice of azalea varieties they choose to eat. Some vigorous varieties such as Anah Kruschke, and a maximum hybrid seedling we call Rosie, are favorites, whereas small-leaved varieties are ignored and varieties with a heavy indumentum are seldom visited.

Oversimplified, there is a parallel between the rhododendron midge and the rose midge. The latter was recognized as early as 1886, became a serious pest, then was seemingly wiped out by DDT and almost forgotten for decades, only to make its reappearance about 10 years ago. Similarly, the rhododendron midge was known long before 1939, the year when the present midge *(Giardomyia rhododendri* Felt) was first described as a "new species" by E. F. Felt of the Bartlett Tree Research Laboratories, in Stamford, Connecticut. It too became a serious pest, was seemingly wiped out with the aid of DDT and so completely forgotten that it is virtually unknown today to the majority of rhododendron growers.

Although I have only approximately one third of an acre in rhododendrons, it took me a full week to drench the soil under all. If you add the cost of the labor and material spent in drenching to the cost of labor and material used in spraying, plus the depreciation in the value of affected plants from which all or part of the new growth had to be removed in consequence of the midge infestation, you will understand how this insect can conceivably again become a major pest.

●

Walter Kern has had a small azalea and rhododendron nursery since the early 50s; when he retired from his job 10 years ago, he began to devote full time to his Azalea Garden in Woodlyn, Pennsylvania. He is a charter member of the Philadelphia Chapter of the American Rhododendron Society.

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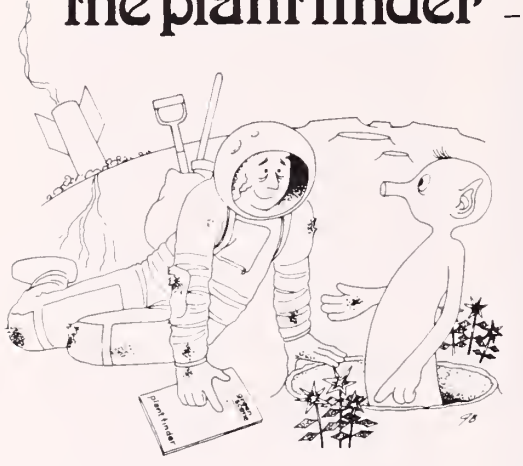

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The seed catalog is often a barometer of social values and change. See page 14.

THE green scene

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Gather Ye Chives While Ye May. See page 18.

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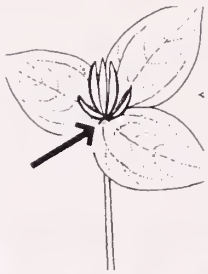

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35. Classified Advertising

Front cover: Nancy Youman harvests chives at Apple Pie Farm in Malvern.
photo by Edmund B. Gilchrist, Jr.

Back cover: Author Jeff Ball moves into a new age with his computer, which keeps track of planting dates, harvests, costs and inventory.
photo by Liz Ball

Correction:

You can never be too careful. In Walter Kern's article about the rhododendron midge in the January issue of *Green Scene* (page 33), I changed the word "in" to the word "on." I should have known that if Mr. Kern said "in" he meant "in." He asked that I point out to readers that "The control of the midge is so difficult mainly because the eggs are laid *in* (or into) its leaves, not *on* the leaves." So now you know. Jean Byrne / *Editor*

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THE HOME COMPUTER
The Gardening Tool of the Future

by Jeff Ball

On a fine June day in 1985, Mr. McGregor had just finished pulling the last of his snap pea plants. On his computer printout of his garden schedule he noted the date and a reminder that next year he should plant a few more peas in the second planting. Waiting to go into the garden in place of the snap peas were five-inch tall broccoli plants that had been started eight weeks before in the greenhouse, as planned on the computerized schedule. Interplanted amongst the broccoli Mr. McGregor would put the two inch lettuce sets that he had started four weeks before, also indicated on the computer plan. The lettuce would be shaded from the July sun by the broccoli. He remembered that the computer had planned for him to replace the broccoli in late September with garlic sets, giving him four crops in one year on that one little section of his garden bed. This was a lot better than the days when Peter Rabbit was harassing him. He was now getting almost 10 times the production over what he used to grow in Peter's day, thanks to his home computer and some new growing techniques.

This scenario may seem a bit farfetched, but it can be happening around the country in just a few years. The home computer is going to revolutionize home gardening in the next 10 years. A year ago, I joined this computer revolution by purchasing a home computer. My primary reason for such a leap into the future was to take advantage of the word processing capability that such a marvelous device offered. At the same time, I knew that I would be trying to figure out ways to use my new electronic toy to help me in the garden. After a year of experience, I have become both respectful of the difficulties involved in learning how to use a microcomputer and excited about its value in the coming years as a primary gardening tool.

The home computer is still a new phenomenon in this country. While it seems as though everyone is talking about owning one, most of those peple having home computers use them for playing electronic games. There are still relatively few people who have begun using their computers as household tools, functioning to make daily living less burdensome. At the same time, there is no doubt in my mind that in five years most of what I will be describing here will be available to gardeners across America at fairly reasonable costs.

I have about 1,000 sq. ft. of vegetable garden, a few fruit trees, a small herb garden, and an 8 ft. x 16 ft. greenhouse. My objective is to grow as much of my family's food as is feasible on less than a quarter of an acre. Such an effort lends itself nicely to the advertised value of a computer. It is supposed to help you accomplish more in less time.

A Planning Tool

Computers are already being used to help people plan their vegetable gardens. There are currently at least two computer services that, for a fee, will give you a custom designed garden layout plan. Usually you can specify the size of the garden, its orientation to the south, and list those vegetables you wish to grow. You specify how many people will be eating each vegetable, so they can compute the volume of produce you will need for a year's supply. You receive a computer-designed layout of the vegetables you plan to grow. One service also selects varieties of each vegetable known to grow well in your region.

In my opinion, the computer service, although it's a step in the right direction, is generally of little value to the serious gardener. It does not take into consideration the need to plan succession plantings throughout the season. It assumes you want a year's supply, when for many vegetables that is not desirable or feasible. At the same time, these services may be helpful to a first-

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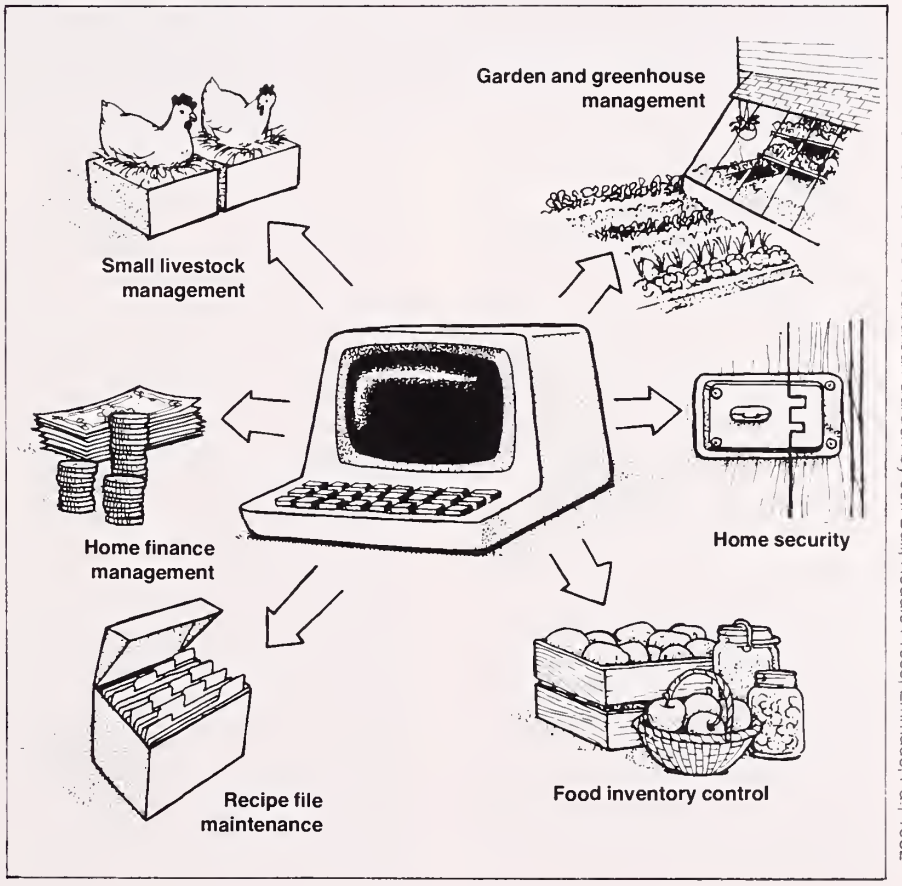


From *Self-Sufficient Suburban Garden* by Jeff Ball, Rodale Press, Emmaus, Pa., 1982

THE HOME COMPUTER

continued

time gardener who has no idea at all how to lay out his/her first garden. One problem with a national computer service is that it cannot consider all the many variables each of us deals with when we plan our individual gardens each year.

The addresses for the computer services are:

(For any region in the country)
Northrup King & Company
1500 Jackson St. NE
Minneapolis, MN 55413

(For gardens in Mid-Atlantic states)
Brookside Gardens
1500 Glenallen Ave.
Wheaton, MD 20902

Your home computer can offer the kind of flexibility that one needs to consider all one's own particular planning variables to lay out a garden each year. There are on the market now a number of home computer programs that can be used to plan a garden. While you still have to figure out how much of each vegetable you want to grow, at least in the first year, these programs allow you to set up a whole year's plan, including succession crops as space becomes available. Actually, these plans are not simply schedules of events, but rather they become a dynamic management tool for the garden and the greenhouse.

A Management Tool

The garden plan becomes a management tool when it shifts from simply helping you lay out your spring garden to becoming an aid to managing your garden and greenhouse week in and week out all year long. How does it do this? Does it take an enormous amount of time? Will it cost a great deal of money? My answer to these reasonable questions is "it depends." Let me describe how the home computer will help in the garden and then I'll get back to time, costs, and difficulty in using it.

making the initial schedule

First, your home computer can record the plan for your planting and succession schedule for a whole year. Home computer software for scheduling business appointments is now available and can be used to prepare a schedule of planting each week for every vegetable and flower you hope to put in your garden and greenhouse. At the same time you can do some rough figuring and include a schedule to remind you when to fertilize, especially for those heavy feeders such as cabbage, cucumbers, broccoli, swiss chard or tomatoes. On this same schedule you can include the predicted times for the emergence of the most common insect pests that attack your particular garden. Using your seed catalog you can also estimate when you might expect each vegetable to be ready to harvest throughout the growing season. If you make your own compost using the active method, you can also plug in a reminder each month or so to turn the compost pile. In other words, you can put into this home computer program all manner of planting, fertilizing, and maintenance schedules for the entire year.

using the schedule to manage

The developed schedule now becomes a calendar of weekly tasks for managing the garden. The computer will store all this information on a small disc the size of a 45 rpm record. You can easily revise the schedule as you go along and change your mind about certain vegetables, for example. And most important, the schedule turns into a valuable record for next year, cutting planning time to just an hour or two.

The way that you use this plan is to ask the computer to print out the next week's schedule. It will then show you for the next week which vegetables you wanted to plant, or which seeds you wanted to start in flats for succession planting later. It will remind you that this is the week to turn the compost and it will also note any existing vegetables that should be fertilized this week. It will note that this may be the week to start looking for Mexican bean beetles, and it will remind you that it is probably time to cover the raspberries with netting to protect them from birds. You may not get time to do all the things you hoped to accomplish, but at least you don't have to keep all this stuff in your head. Your computer will help you remember.

The real value of this system is obvious when you add actual experience to each week's plan. The program becomes a diary. It is relatively simple to add information to this schedule. Therefore, you can indicate the exact date that the peas were ripe, so that next year you can compare what the seed packet said and what really happened. You can include each week how much of each vegetable you harvested, so that next year you can plan more accurately to plant just enough for your needs. You can record your readings from your rain gauge and keep track of when to water to get your minimum one inch of water a week. You can note when the insects in fact did show up so that next year you might more accurately predict their arrival.

The author and his computer commune.

Such a computer assisted garden management system will become more effective and more helpful each year that you use it. Your ability to predict and plan will improve each year. You will improve over time laying out your activities each week in a way that suits your particular needs. You will be able to track which varieties of vegetables seem to produce best in *your* backyard. Your skill at succession planting will improve each year increasing your production levels without increasing the growing area.

photo by Liz Ball

In the first year or two, learning to use a home computer for garden management will take a fair amount of time. It might take you five to ten hours to lay out your first year's plan on the computer. Early in your season, you might find using the system will take you from 30 to 60 minutes to keep it updated each week. Later, as you become more adept it will take much less time. After a few years' experience, you will be able to put together the annual plan in a couple of hours on a cold Sunday in January. It will probably take less than 30 minutes a week to manage. Some weeks you will skip it entirely.

More Tools in Five Years

There are even more exciting prospects for the gardener with a home computer in the not too distant future. Orchards in California already have monitoring devices that are stuck into the ground and signal through a microcomputer when irrigation is necessary and indicate where it is needed. A computer can be programmed to turn off grow lights in the greenhouse. It can be connected to other heat sensing devices that automatically will turn on the ventilation in the greenhouse, or even turn on the heater in the root cellar if it gets too cold.

The Ortho Chemical Company has recently published an exhaustive horticultural reference book: *The Ortho Problem Solver.* It costs $150 and will be sold primarily to garden centers and nurseries for use by their customers. Almost 2,000 horticultural problems are discussed with thousands of excellent pictures to help clarify a problem. The point is that Ortho intends to have this massive amount of horticultural data available to people with home computers sometime in 1984. You would simply dial a special telephone number and hook up your computer with a communications device and the information you need will be printed on your computer screen and printed out by your computer's printer. Rodale Press, publishers of *Organic Gardening,* also plans to have a national problem-solving computer network available in the next few years.

Recipe Files and Meal Planning on the Home Computer

Applications of computer technology in areas related to gardening are limited only by the user's imagination. It should not be difficult to imagine that the home computer will be an ideal repository for a recipe file. Not only that, it will be used in conjunction with meal planning. It will be possible within a year or two to have a program that will tell you the food value of various recipes in terms of calories, vitamins, and fiber. You might have

continued

some leftover lamb and some fresh chinese cabbage and you will be able to go into your file and produce any recipe that you might have stored that uses both of those ingredients. You will be able to tell your computer what you had for breakfast and for lunch, and it will tell you which nutritional needs have not been met and should be considered in planning your dinner.

The home computer will not replace recipe books. It will just make keeping track of your favorite recipes easier. It will also allow you to keep track of your food inventory, especially if you raise and process much of your own food. It will monitor what you have in the freezer(s), in the basement, in the root cellar and what is fresh in the garden or greenhouse. It will even be able to help you make out your shoppng list by keeping track of things as you run out.

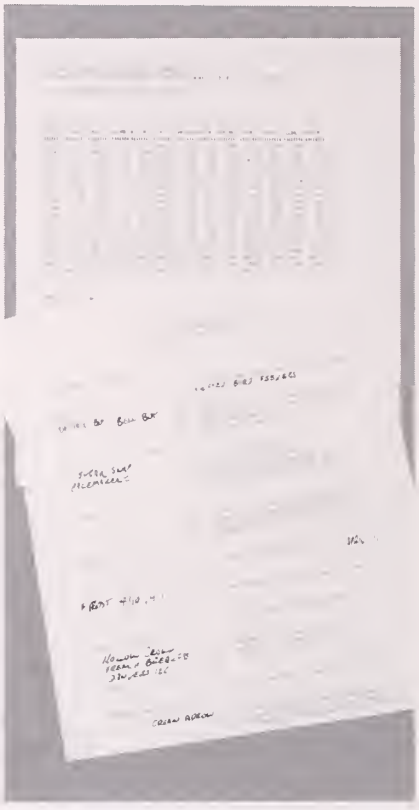
The home computer is especially helpful in managing a large freezer. It is difficult sometimes to remember what is in it, much less how long any one item has been frozen. The home computer will know the best standard for storing something in the freezer, and then will tell you when to eat those things while they are tasty and nutritious.

Keeping Track of Your Files and Library

For those of us who are such avid gardeners that we save interesting magazine articles from the six gardening magazines we subscribe to and buy almost every book ever published about our favorite gardening subjects, keeping track of all that information can be a problem. In the past, recalling where we read a good explanation of how to prevent a bug infestation depended on our memories. The home computer can manage an extensive annotated bibliography with no trouble at all. You can keep track of all the magazine articles and books using multiple topics as references. Essentially what you do is build your own personal gardening index, which will lead you to any desired information in minutes.

Is It All Worth It?

Like most worthwhile things in the world, the home computer takes an investment of time and money to learn how to use it effectively. You must carefully weigh the value between the help



that it offers you and its cost in money and time. Let me share some of my own prejudices and biases about home computers.

It is easy to make a mistake in purchasing your first home computer if you are a neophyte as I was. The ads say under $500, but to get a computer to do even the modest work I have described in this article, you can't get anything under $1,000. Otherwise, you will get your $500 computer and find that it takes $800 more for programs (software) and additional equipment (peripherals) to get it to do more than add a column of numbers and repeat your child's name in the form of a design.

First you should decide why you want a computer. I am a writer and wanted a word processing program. Others want to manage their small business finances, while others just want to have fun (a perfectly sound reason). These three objectives can sometimes suggest three different brands of computer at three different prices. My system cost me $4,000 (IBM Personal Computer plus the software). I have spent $1,000 for additional software. The person interested in finances only might find that another brand of computer has a better capability, and the person looking for fun will likely find a third brand to meet his needs more realistically and inexpensively.

Operating a home computer of even modest sophistication takes some development time. Even if you don't ever intend to actually program your own computer (most people do not), you will find that you can't just sit down and make it do its tricks in 10 minutes. It took me six hours to learn how to operate my word processing program. After a year, I am still learning about some of its more complex capabilities. I am trying to teach myself how to program my computer. I believe it will take me two or three years to become proficient, even if I do get a chance to take an evening course someplace. Operating your own computer is an attainable goal for most people. You do not need to know much about math, and you don't need to have a science background. You do have to spend some money and spend some time.

Finally on the time question, a home computer can take up as little or as much time as you wish to give it. It is very easy for it to become an obsession because it is fun and fascinating. It can replace professional football, or golf, as the source of family problems because every waking hour is spent in front of the new toy. Most people buy a home computer to make their lives more enjoyable. It will do that, and it will do it taking relatively little time in return for its benefits.

. I estimate that my garden management activities, **once I get them organized and learn how to do them,** will take about an hour a week to keep up. I believe that will be more than most people would need. My guess is that once a garden management program is set up, it will take less than 30 minutes a week to manage. I believe that for most people, such a computer assisted garden management program will contribute measurably to increasing production in a vegetable garden, in some cases by as much as 100%. While all of us will use our home computers for more than managing our gardens, it will definitely become a garden tool almost as handy as our rake and hoe.

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Jeff Ball is a writer living in Springfield, Penna. His new book *Self-Sufficient Suburban Garden* is published by Rodale Press.

photo by Lee M. Raden

Cirque, April 1980. Moraine in foreground, phlox spp. and hybrids beginning to show. See development on next page, bottom photo.

Are they berms? hillocks? mounds? No, they are hummocks. Whatever the name, they are my horticultural indulgence. Five years ago I had the opportunity to purchase a piece of property in Charlestown Township and to give vent to 25 years of gardening fantasies: growing plants on hummocks.

I wanted to create a series of six hummocks, facing different directions. I wanted a series of micro-climates so I would be able to once and for all test many of the theories about the hardiness of alpines, sub-alpines, and woodland plants. It seemed only natural that in building the hummocks we would have a soil composition with proper pH values (in this case, neutral), and we would have better control of soil composition and drainage. Initially, we wanted to propagate as many plants as possible so that they could be placed in the hummocks at different elevations and different exposures.

The first three years we propagated approximately 3,000 plants. Some were placed at the base of the hummocks, some at the very top, many plants were planted facing different directions.

The basic site is 110 ft. above sea level at 40° 07' North Latitude, 75° 30' West Longitude, no trees, and therefore full exposure. I was fortunate that one of my gardening friends, Claire Muller, was available for a full week to sit on a front-end loader and instruct the operator in exactly what was wanted. Each of the six hummocks has 10,000 pounds of 2-in. to 4-in. crushed granite as its base. Over this, a general mixture of top soil, sand and sub-soil approximately on a 1:1:1 ratio was mixed. To get the proper sand ratio, 120,000 pounds of coarse sand was incorporated into the hummocks.

The main and largest hummock faces north and south with the northern exposure on a very gentle grade and the southern exposure very steep in the form of a miniature glacial cirque (a steep, hollow excavation high on a mountainside, made by glacial erosion; natural amphitheater). This hummock is 5 ft. high, 110 ft. long, and 110 ft. wide. Other hummocks face west and east, north and south, east and west, and northeast by southwest. The hummocks vary in height from 3 ft. to 8 ft., and an additional 120,000 pounds of river-washed gravel was used as top mulch on all the hummocks.

After three years I realized I had overindulged myself with the tremendous area that had to be covered with plants. Many of the 3,000 plants died through poor placement, drought, or they were eaten by rabbits and deer. I was forced to put three of the hummocks in ground cover. One hummock in *Juni-*

continued

The Hummocks

continued

Lewisia cotyledon in cirque, early May. Southern exposure.

An early dawn over a cirque.

Cirque, spring 1982. Phlox spp. and hybrids. (See page 7 for planting two years earlier.)

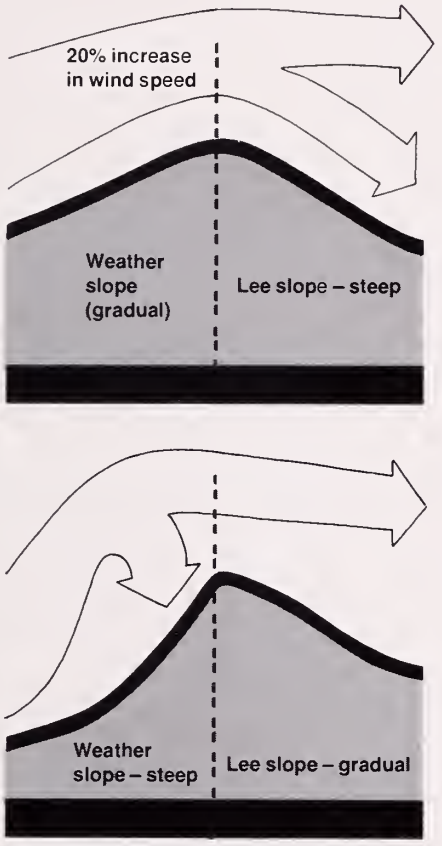
perus wiltonii, another in *Juniperus conferta*, and the third was planted in *Cedrus deodora pendula*. The cedrus are now all but dead. The rigors of our climate plus a southeastern exposure killed them. In the spring of 1983 the cedrus will be replaced by *Juniperus procumbens nana*. A fourth hummock is devoted exclusively to succulent plants and the largest two exclusively to subalpine and alpine plants.

successes beyond our wildest dreams

The hummocks are never artificially watered, for the true test of growing these plants in our area has to be hardiness with whatever nature provides in the way of rainfall, wind and sun. We provided the medium for the plant roots. The five years have brought nothing less than horticultural surprise after surprise. Our failures are legion. On the other hand, our successes have been beyond our wildest dreams.

Self-sown seedlings of many difficult plants are making themselves all known and in many cases hybrid vigor is coming to the fore. Wonderful stands of dianthus, helianthemum, globularia, veronica, phlox, achillea, silene, iberis, erigeron, vitaliana, antennaria, androsace, draba, and penstemon are each year growing and giving us the species and our own alpineflora hybrids. The plants are advancing on each other with their accompanying roots, showing how much these plants like growing in each other's company. There is constant bloom from early March through Thanksgiving. At times the bloom is stupefying and overpowering; at other times, subtle, beautiful and rewarding. Small bulbs grown on the hummocks are getting the drying-curing period they need in the summertime, and they are rewarding us with two forms of propagation; self-sown seedlings and bulb splitting have given us special muscari and narcissus displays in very early spring. Species tulip bloom more profusely and earlier each year. Fritillaria are showing signs of acclimatizing.

One of the problems with the tulips and crocus, however, is that the rabbits and deer like them as much as we do. I win this battle by placing chicken wire flat over the bulbs as soon as they show in late January or early February. Neither rabbit nor deer will walk over the chicken wire and the plants grow up through the openings with no problem. The same technique is used with the dwarf penstemon and some of the early gentians. With these two plants we slightly mound the chicken wire over the plants to protect the foliage, and the flower stems come up through the openings in the wire.



SLOPES AND WIND TURBULANCE

In a discussion of hummock gardening it is important to know your prevailing wind direction. In our case we are at the eastern end of the Chester Valley and the venturi effect is very much in evidence. (The wind is compressed as it comes up our valley and because it is compressed, it is speeded up.) This effect occurs in any large metropolitan area with tall buildings. For example, there is usually a breeze in downtown Manhattan because of the compression of air passing between two or more tall buildings. In our case, the venturi effect is very important because there are very few days in the year that we do not have air movement over the hummocks.

Finally, we must go one step further and talk about wind spill. As you will note on the sketch, as the wind hits the hummock it is speeded up considerably, then on the lee slope it spills quite a few feet downhill. For example, our main hummock is 5 ft. high. It faces the prevailing wind. As the wind hits the 5-ft. high hummock, it spills downward on the lee side approximately 25 to 30 ft. This is important during January, February and March because we get very little desiccation on plants facing south, thereby insuring winter hardiness in many plants that would normally not survive the rigors of our winters.

Happy Hummocking! There are a number of books and papers that discuss wind and its effect on the garden, and I can recommend those listed in the box with this article.

Books about Wind Effects in the Garden

"Das windschutz Problem um schandienst Grundlagen der Landtechiche," H. Blenk. V. 8, no. 1-2, 1953

"The Importance of Green Areas in Urban Planning." Wilfrid Bach and Edward Mathews. Paper prepared for the workshop "Bioclimatology and Environmental Health," Public Health Service, U.S. Department of Health, Education, and Welfare, Cincinnati, Ohio, July 14-16, 1969.

Plants, People and Environmental Quality. U.S. Department of Interior, 1972.

"The Relationship between Wind Structure and Turbulence Near the Ground," M. H. Halstead. *Publications in Climatology,* v. 4, no. 3, 1951.

Shelterbelts and Microclimate. J. M. Caborn. Forestry Commission Bulletin 29. Edinburgh, 1957.

"Topography and Wind Direction," *Meteorologische Rundschau,* v. 12, January 1959.

Weather Wise Gardening. Ortho Book Series, 1974.

The Windbreak as a Farm Asset. Carlos G. Bates. Farmers Bulletin 1405 Revised. Washington, D.C.: U.S. Department of Agriculture, 1944.

Windbreaks: Their Influence and Value. U.S. Forest Service Bulletin 86. Washington, D.C.: Government Printing Office, 1911.

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Lee Morris Raden continues to experiment with growing alpines in the Delaware Valley. Look for some of these fine alpine plants in the horticultural section of the Philadelphia Flower Show.

"Step Into My Terrarium," Said the Pitcher Plant to the Fly

by Patricia A. Knauff

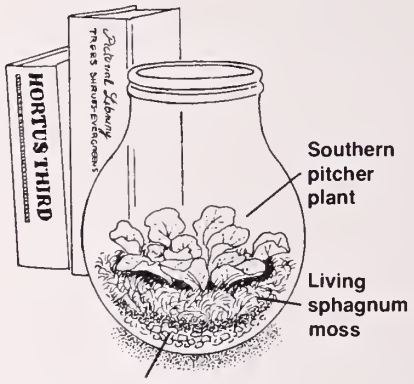
My fascination with plants that survive by eating animals stems from early childhood. Movies, showing a mad scientist raising radioactive man-eating carnivorous plants, fostered my interest. The mystique surrounding these carnivorous plants still exists for me, but on a different plane. Now I marvel at the sophisticated way these plants have evolved in environments that are poor in nutrients. They have survived by preying on insects; some occasionally trap small birds and amphibians.

I like raising a group of plants that few people know about or take seriously. For example, for the 10 years I have attended the Philadelphia Flower Show I have never seen a carnivorous plant entered in the competitive section. People are always seeking unusual, one-of-a-kind plants to enter; a thriving carnivorous plant would set them apart from other entrants. I wonder if people are too timid to try their hand at caring for a plant that seems so alien. The literature, sources and cultural advice from horticultural friends is certainly limited when compared to a group of plants such as roses. Between the knowledge I have gained through several good books plus my own experiments, I have learned much.

When I was 12 years old, I bought my first carnivorous plant, a Venus flytrap. I planted it in a brandy snifter with a peat moss soil mixture. The Venus flytrap succumbed to fungal invasion within three days. A year later, I tried raising a second Venus flytrap. This time the plant lived an entire week.

As a high school student and still obsessed with growing a Venus flytrap, I bought a plant that lived outdoors through the entire summer. Leaving my plant in its sphagnum moss medium and two-inch pot, I placed the plant on the front porch to lure its own meals. This plant was going to earn its keep, no more ground chuck.

In early fall, with the onset of cool nights, I noticed that my leaf blades were becoming smaller and smaller. I assumed the plant was declining and threw it out. What I did not know at the time was that Venus flytraps require a complete dormant period and the cool temperatures were triggering this action.



By then I had wearied of Venus flytraps and wished to change my carnivorous plant luck. Fiercely determined to succeed, two years ago I bought a *Sarracenia purpurea venosa*, southern pitcher plant. The plant thrives to this day and is a source of pride.

The key to success with this carnivorous plant was consulting *Carnivorous Plants of the United States and Canada* by Donald Schnell, and learning from my previous failures. I attributed many of my past failures to fungus. The antifungal properties of sphagnum moss and its ability to retain water while providing good aeration for roots make sphagnum moss an ideal potting medium for my terrarium. An inch and a half bottom layer of gravel in the terrarium doubles as a place to collect water after the sphagnum moss reaches its saturation point. It is also a reservoir, keeping the moss moist as water evaporates from the sphagnum moss. If the water level should rise above the top layer of gravel, stagnation might occur.

Eventually my sphagnum moss carpet started growing under the fluorescent lights. When the moss grows rampantly, I remove the terrarium cover to lower the humidity level, thus controlling growth. When the tips of the sphagnum moss begin to turn brown, this is a signal that the moss is becoming too dry.

Living sphagnum moss, which is the best type of sphagnum to use, is not always available (see source list). Never use sheet moss or milled sphagnum as a substitute. Long fiber sphagnum, however, can be used and may in time come to life, especially under artificial lights.

I consider growing carnivorous plants under fluorescent lights more a necessity than a luxury. If one does not own a greenhouse, the high humidity requirements of carnivorous plants are usually obtained by placing the plants in a terrarium. Direct sunlight, however, cannot fulfill the high light requirements of carnivorous plants in a terrarium. Because sunlight creates high temperatures under glass, which can damage or kill the plants, direct sunlight is not recommended for carnivorous plants.

My artificial light garden consists of several two foot long fluorescent light fixtures containing one warm and one cool 20-watt tubes. My plants are placed anywhere from 9 in. to 18 in. from the light source. A timer automatically turns the lights on and off giving the plant light 18 hours a day. The carnivorous plant itself is the best indicator as to whether the distance from the light source is opti-

photo by Patricia A. Knauff

continued

Top view of *Sarracenia purpurea venosa* in terrarium. Visible on the hood of each pitcher are stiff, downward pointing hairs. When insects, lured by nectar secretions, alight on the hood, they are forced to walk in only one direction, downward, until they fall into the pitcher fluid and drown. The insect is digested later by the plant fluid enzymes and bacterial action.

mal. Burning, wilting or bleaching of leaves indicate too much light. Signs of too little light are etiolation, stringy growth, or loss of red coloration in the foliage.

It's a common myth that if flies are in short supply, hamburger can be substituted as food for carnivorous plants. To my dismay, I learned that hamburger is detrimental to these plants because its level of nutrients is too high for the plants to assimilate. While earnestly caring for my Venus flytrap, I would fill the open traps with hamburger, not realizing I was hastening the plant's demise. Now it's evident why the traps soon turned black and became covered with fungus shortly after feeding the plant hamburger. Schnell's book mentions that carnivorous plants can survive in captivity without a diet of insects and fertilizers. A balanced fertilizer diluted about 10 times that is recommended for houseplants is suggested by Schnell if the plant is: in poor health, to be brought into bloom, or to become more robust. My pitcher plant, which has never been fertilized, collects a fair number of fungus gnats and other small insects that reside in the living sphagnum moss. This was the first time I ever felt benevolent about fungus gnats. Occasionally it will capture something large; last summer I was startled to discover one of my plant's prey was a large wasp.

This pitcher plant not only differed from my other plants in its nutritional requirements but also in its water needs. Hard tap water was acceptable for all other plants, but the pitcher plant required spring water because it is sensitive to minerals. Since the pitchers of this particular species would collect rainwater outdoors, I decided to occasionally partially fill the pitchers with water using a meat baster. A spring water bonus was no "ring-around the pitcher" from hard mineral deposits. The meat baster also allowed precision watering in the terrarium itself. Also, the quick salt build-up from hard tap water would probably be detrimental to the health of living sphagnum moss – not to mention my plant.

sources

For anyone interested in growing carnivorous plants, I recommend buying them from a grower rather than a distributor. Plants should not be harvested from the wild for they will surely die. Also, natural populations in the wild are dwindling as a result of thoughtless people removing these plants. A few mail-order nurseries that specialize in growing carnivorous plants are listed at the end of this article.

Some carnivorous plants are much more difficult to grow than others. It is wise to start with one of the less difficult varieties to avoid failure and discouragement. For example, World Insectivorous Plants nursery has a system that gauges the difficulty in growing different species that is most helpful for a beginner. It was surprising to learn that pitcher plants are considerably easier to grow than Venus flytraps, which must go through a complete dormant period. Other considerations before making the purchase are: the size of the plant at maturity (especially if it is to be planted in a terrarium), and the degree of dormancy required by the carnivorous plant. Tropicals are preferred for indoor cultivation because their dormancy usually involves only a slowdown in the plant's rate of growth. Temperate plants require a distinctive dormant period brought about by light, moisture, and temperature, which entail the formation of a winter bud, cessation of growth, and a dying down of foliage.

I certainly recommend reading more background information concerning this fascinating group of plants whose needs are simple but exacting. *Rodale's Encyclopedia of Indoor Gardening* expresses my feelings: "Many species of carnivorous plants can be grown successfully indoors if we remember that the plants are newcomers to the houseplant world and have not been specifically selected or bred for life away from their native habitats. As indoor gardeners, then, we must try to re-create the plants' natural environment in the home."

Carnivorous Plant Sources

Carolina Exotic Plants
P.O. Box 1492
Greenville, NC 27834
Also sell live sphagnum
(Catalog 75¢)

Chatham Botanical
P.O. Box 691
Carrboro, NC 27510
Plants are tissue cultured
(Catlog 50¢)

Country Hills Greenhouse
Rt. 2
Corning, OH 43730
(Catalog $2.00, refundable with order)

Lee's Botanical Garden
P.O. Box 7026
Ocala, FL 32672

Orgel's Orchids
Rt. 2, Box 90
Miami, FL 33187

Peter Pauls Nurseries
Canadaigua, NY 14424
Also sell live sphagnum
(Catalog 50¢)

Plant Shop's Botanical Garden
18007 Topham St.
Reseda, CA 91335
(Catalog $1.00, refundable with order)

West Australia Carnivores
P.O. Box 62
Vinton, VA 24179
(Catalog 50¢)

World Insectivorous Plants
P.O. Box 303
Grant, FL 32949
(Catalog 50¢)

Carnivorous Plant Books Available in the PHS Library

Carnivorous Plants, Cynthia Overbeck. Lerner Publications Co., Minneapolis, 1982. (For children)

Carnivorous Plants, Randall Schwartz. Praeger Publishers, New York, 1974.

Carnivorous Plants, Adrian Slack. The MIT Press, Cambridge, 1980.

Carnivorous Plants, John F. Waters. Franklin Watts, Inc., New York, 1974. (For children)

Carnivorous Plants of the United States and Canada, Donald E. Schnell. John F. Blair, Winston-Salem, 1976.

Cultivating Carnivorous Plants, Allan A. Swenson. Doubleday & Company, Inc., Garden City, 1977.

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

The World of Carnivorous Plants, James & Patricia Ann Pietropaolo. R. J. Stoneridge, Shortsville, 1974.

Carnivorous Plant Society & Publication

Carnivorous Plant Newsletter is the official journal of the International Carnivorous Plant Society. The dues for this quarterly journal is $10 annually. All membership correspondence should be addressed to:

Mrs. Pat Hansen
c/o The Fullerton Arboretum
Dept. of Biology
California State University
Fullerton, CA 92634

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Patricia Knauff was Library Assistant/Assistant Horticulturist at PHS through December, 1982. She graduated with an associate degree in horticulture from Temple University, Ambler Campus.

CHARM IN VARIETY: Plants to Grow with Daylilies

by Barbara Bruno

The experienced flower grower recognizes the approach of June solstice as a beginning of a color feast. While the sun angles higher toward its zenith, gaudy blossoms, centerpieces of hot weather gardens, unfold flaming petals and open brassy chalices in an exhibition of the year's most dazzling tints. These salvos of eye-riveting orange, neon gold, and school-bus yellow satisfy our sun hunger, but as temperatures climb, the appeal of gardens clothed in an unrelieved glare wanes. Then we may find ourselves questioning our earlier enthusiasm for the swaths of pinwheel color that now overrun the border.

Daylilies are a staple for many gardeners at this season. Showy blossoms and high energy colors, coupled with ease of cultivation, place *Hemerocallis* topmost on many flower lover's list of dependables. They are perennials of numerous uses, as amenable to the precise configurations of commercial landscaping as to the unstudied exuberances of backyard gardening. Their massed blooms handsomely delineate a walkway, cushion the harsh line of a foundation, or enliven somber verges of an evergreen shrubbery in many a suburban plot. But while few would deny the beauty of each pristine chalice, the predictable ways in which these flowers are frequently handled often elicits from expert gardenrs a ho-hum reaction to even the most sumptuous display of color. How much more effective these fine plants would be if we provided them with leafy companions of contrasting tint and growth.

photos by Barbara Bruno

Variety in Shape

vertical spikes

One way to assuage the clockwork repetitiveness of the daylily scene is to interplant the clumps with flowers of vertical growth. The poker-straight spikes of any of the *Liatris* species commonly available would be good candidates for this role. A mature plant effectively splays out a panoply of stiff, yet graceful, stems endowed with an endearingly idiosyncratic habit of commencing blooms at the highest floret. These buoyant wands undoubtedly inspired the plant's common name, gay feathers. Its vinous pink tone will compliment the vast number of peach daylilies, and in snow-white garb, this native of our grassy midlands bestows a fine, cooling influence on potent tints that appear at midsummer.

Another uncompromisingly upright garden citizen in a similarly agreeable pink, but less statuesque than regal liatris, is the betony of old herbals. Although I've seen examples shockingly bloated and lax of growth, if treated to lean, sandy soil and not over-fertilized, it makes a pleasing forest of two foot stems capped by tussy-mussies of fluttering, flaring blooms. These stalks make quite a show when combined with the old-gold froth of aging lady's mantle and a misty pink, gold throated daylily such as 'Joe House.' An herby compatriot of betony that would prove a boon companion to feverishly hued flowers is that ancient notable, lavender. I've arranged lavender around the base of a flaming orange daylily where its cloud of hazy purple wands sets off these ebullient blooms. It would be as useful planted with the pastel lemon goblets of other varieties, while later in the year the low mounds of silvery foliage could be counted on to enhance tardy flowering kinds, as well.

continued

CHARM IN VARIETY:

continued

The chalk-white fireworks of *Achillea* 'The Pearl' add zest to any daylily flowers, including 'Joe House.'

Poker straight spikes of any *Liatris* species provide flowery punctuation for precise regularity of daylily bloom.

globes and discs

Plantings of daylilies are much enhanced by the globular contrast of flowering onions. Red-violet *Allium pulchellum* is a good choice for border verges edging complimentary toned lilies-of-a-day. Here a favorite garden duo is the bouffant, pearly pink spheres of lavender globe lily cordially mingled with scintillating melon flowers. Daisies, with their centrifugal blossoms, also give a satisfying contrast of form. Paler selections of the golden marguerite help to integrate a cacophony of bright bicolors or tone down brassy golds. Similarly, a pleasingly pallid version of the filmy leaved and sunny countenanced *Coreopsis verticillata* will serve in this peacemaking capacity. I also allow gratuitous sprays of the common field daisy to spread a white and yellow cheerfulness among some particularly stodgy red blooms and encourage dusty-pink coneflowers to mix in a quite astonishing harmony with lipstick red daylilies.

Several yarrows provide flat plates of color that combine appetizingly with daylily blossoms. Choose the golden *Achillea filipendulina* or its pellucid hybrid 'Coronation Gold' when bold, background companions are called for. *A. taygetea* and its English offspring 'Moonshine' are better placed at border verges where their moonlit yellow flowers cresting fringed and silvered foliage can show to best advantage. Or pick *A. millifolium* 'Rosea' to flatter peachy blooms with a floral equivalent of pink paisley.

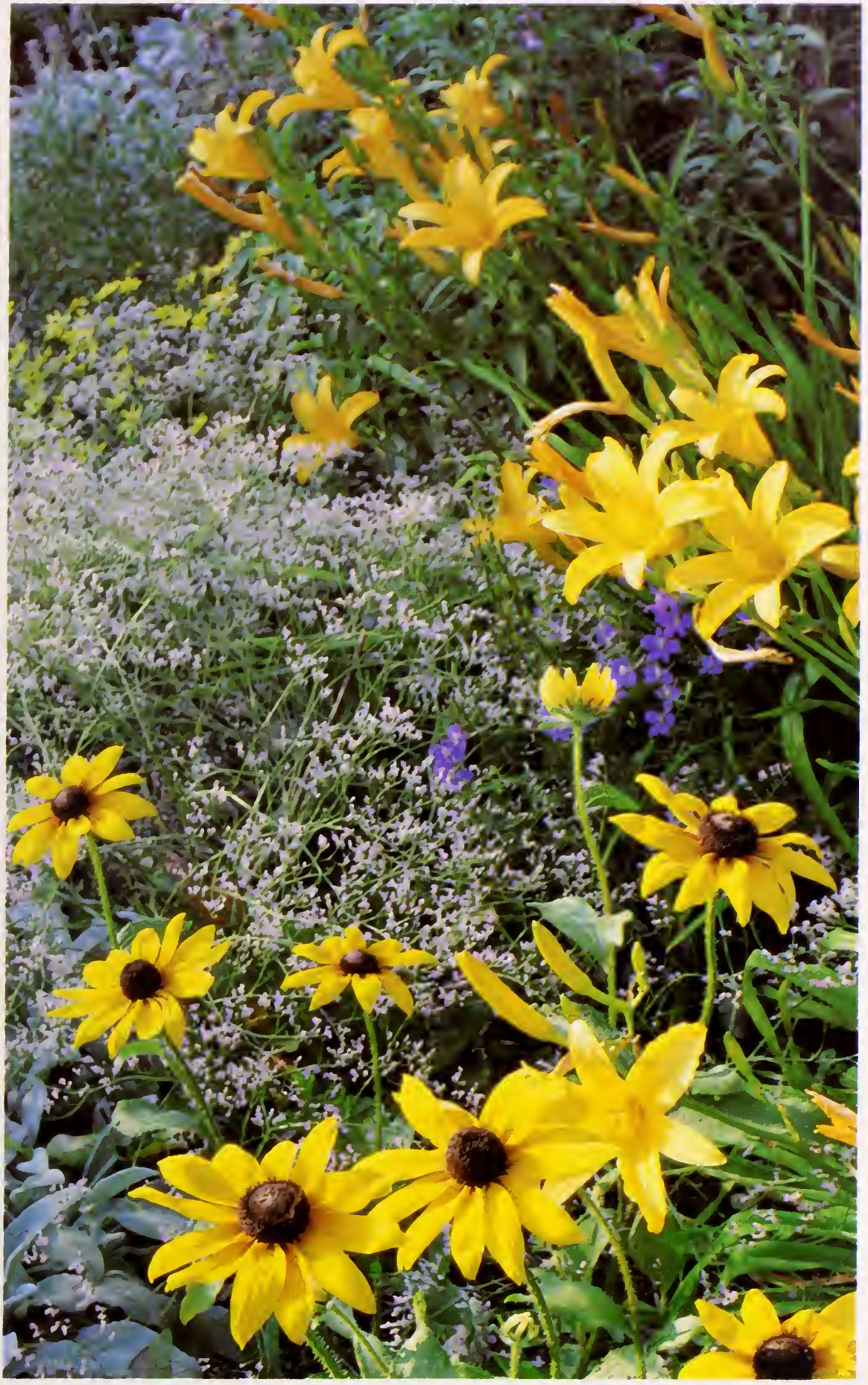
flower clouds

Plants with filmy clouds of bloom also make appropriate foils to a preponderance of gaudy blossoms. One of the best plants for this purpose is perennial statice. Its mist of dainty, lavender flowers mantling a cat's-cradle of brittle stems is a perfect contrast to the sunny tones of black-eyed susans and the pure marmalade coloring of a daylily, such as the dwarf and fragrant 'Goldenii.' Usually a few truant larkspur add the spice of blue to this outstanding trio blooming just to the rear of a silvery blanket of lamb's ears.

By themselves a sprinkling of the

continued

Fragrant blooms of citrusy 'Goldenii' and black-eyed susans are foiled by misty lavender lace of *Limonium latifolium.*



CHARM IN VARIETY:

continued

confetti-sized flowers of *Achillea ptarmica* 'The Pearl' would not rate a second look from many gardeners, but these chalk-white fireworks add a decided zest to any clump of clotted color. I include them in a planting of brocade-rose coneflowers and velvety red daylilies, where they provide a Valentine freshness to a somewhat heavy pairing.

Although the foamy flowers of lady's mantle open earlier under nodding garlands of old roses, they maintain their good looks when temperatures spiral and the garden's colors reiterate the sun's glow. As its pale flowers age to old gold, the plant looks well carpeting leafy bases of delicate lemon or orange sherbet blooms.

Just where to include Russian sage presents a problem. It occupies a niche somewhere between perennial and shrub, in some years retaining much of its twiggy growth. The plant has an herbal appeal, partly due to the ghostly silver cast to its stems and branches. These loose, raggedy wands are enveloped in a long display of hazy violet flowers that harmonize so beautifully with all garden occupants that I must stifle an urge to dot the beds with its soothing presence. Russian sage is such an accommodating and useful plant that I can't imagine why it isn't more applauded by garden writers.

I value *Dianthus superbus,* a summer blooming member of the fragrant pink family, and use it freely to, as garden author Louise Beebe Wilder puts it, "redeem the garden from stiffness." This tall, rather gangly specimen is easily grown from seed and dependably self-sows for me. Its lax-stemmed seedlings require little room. They may be tucked into any available cranny close to a daylily's bulk, which can support the dianthus on its languid climb. Many years ago I ordered a white selection of this most fragrant, fringed flower. Now I am occasionally gifted with a flurry of pink blooms. This unpredictable sporting does not greatly disturb any carefully laid schemes, since the flower's tint is among the most gentle of colors and the nearly solitary blossoms, leaning in starry constellations among flaring trumpets, is such an agreeable sight.

flowery muddles

Other plants that look well growing close to daylilies are those I always think of affectionately as flowery muddles, plants whose informal shapes contrast so charmingly with blossoms of uncompromising geometry. I count bouncing bet among these. It takes a bit of doing to keep this perennial of lackadaisical stems but obstinately nomadic roots in its allotted space. As with many subterranean wanderers, a brisk undercut with a sharp spade in early spring much improves its manners; the setback effectively curtails its colonizing urge for some months. Unwanted severed roots are easily dislodged if the job is undertaken soon after a spring shower. Above ground a twiggy stake or two is all that is required when the languorous limbs are chaperoned on either side by solid citizens of the border. The double form of this antiquity is the one to grow. Pale pink blooms bursting their calyx corsets remind me of befrazzled powder-puffs. A lack of fragrance is its most grievous fault, but combine this quaint relic with a cherry, raspberry, or peach tinted daylily, and that shortcoming can be overlooked.

Flowery muddles, plants whose informal shapes contrast charmingly with blossoms of uncompromising geometry, look well growing close to daylilies.

Because of its fly-away topknot of bloom, I categorize bergamot with these informal flowers. The cosmetic pink form of *Monarda didyma* looks especially enchanting with these lilies-of-a-day that offer bicolor blossoms awash with subtle tints. Little-grown *M. fistulosa's* mauvy-crimson inflorescences appear quite fetching as they shoulder pale peach or chaste yellow flowers. Showy marjoram, another gently ruffled delight, reminds me of faded pink calico. Its cosmos of tiny flowers billowing rather untidily around a regal, cool yellow daylily 'Shooting Star' rescues it from a tendency toward grandeur, a quality not esteemed for this informal setting.

An overlooked herb that can be advantageously combined with any daylily is borage, a venerable annual that was thought to provide our forebears with courage as well as starry, blue blossoms to float in their wine punch. Most people seem not to know what to do with this plant. Consequently, it is often relegated to the vegetable plot. Many gardeners also take offense at its impudent way of disappearing after a brief spurt of bloom. However, I suspect the main reason it is so little grown is the parsimonious way it goes about doling out flowers – the bonnie-blue blossoms wink on rather far afield of one another. Despite these failings, the fuzzy masses of mauve-tinted buds that flounce the stem-ends are fine companions to most tints of the daylily spectrum. The trick is to pick a variety whose bloom period coincides with the transient annual. Another herby plant, this one a biennial that forms a flattering association with the more modestly colored of trumpety blossoms, is clary, *Salvia sclarea.* Tucked in among the grassy-leaved lilies in late summer, it will provide heavy textured, loosely pyramidal racemes of pale bloom as days reach their longest span during the following season.

carpeting plants

You might consider arranging footfalls of colors leading to the formality of strap-like leaves. I use caraway thyme to provide a rich mauve carpet for dwarf clumps of sharp yellow daylilies. In another setting, orange daylilies paired with pinwheel-patterned blooms of gaillardia are bordered in the chartreuse of golden oregano.

Variety in Color

blue for contrast

I would be hard pressed in the more earnest parts of summer to do without the soothing accent of blue in whatever tints and tones I can get it. All combine flatteringly with daylilies, and all are welcomed, from the barely gray-veiled melding of spode, on through the azure spectrum, to dubious tints of "might be" violet and "could be" purple that serve as blue in mid-season borders. Sadly, no imperious, cool weather delphinium sends up celestial turrets by my garden gate, but I do depend on a humble and, I think, underrated cousin of the aristocrat to add a serene touch of color to the circusy inclinations of my summer garden. Larkspur provides the tall, spiky clumps so suitable a counterpoint to summer's most exuberant flower forms and hues. Proclaimed an annual, I find here that the best of plants are biennial, jollied along over winter by the sandy comforts of my indigent soil. Start-

ing years ago with a mixture of wishy-washy pinks and blues – the only way that seed of this unprepossessing plant seems to be available – I obtained a stand of the indigo-violet that passes for blue in days of raw golden light, by roguing out all but the desired progenitors of that tint. I'm more than repaid for the vigilance required to maintain this pure color by its pleasing effect, and just for the fun of it, I've set my eye to selecting a pretty, candied-violet strain that appeared several years ago as a chance seedling.

Among the speedwells are found other borderline purples that serve as midsummer blues. Appearing a bit wan in the parched environs of my sometimes arid garden, these worthy plants still summon up enough of a show of catalog writer's "blue" steeples to temper the harsh brilliance of July's floral bounty. Of the twelve varieties I grow, only a few put off their bloom until summer's zenith. The wide offerings among species and cultivars and the oft misleading nomenclature makes for confusion, but a safe choice for early summer bloom is *Veronica latifolia* 'Crater Lake Blue' or selections of *V. spicata*. *V. s.* 'Icicle' is a graceful variety clothed in wands of white, which sulked, then shriveled on two successive tries here, but it would be a fine daylily companion in a less demanding setting.

colored foliage

Don't overlook the possibilities of colored foliage when planning your daylily panoramas. Silver-leaved plants contrast attractively with glossy green foliage and bright chalices. Platinum clouds of *Artemisia ludoviciana* 'Silver King' will bestow an unexpected lightness to opaque tints, while a silver carpet of lamb's ears can be depended on to ease the gaudiness of some summer color.

Use variegated plants to add interest to monotoned masses of flowers. The creamy yellow and green form of *Sedum spectabile,* arranged here to compliment an expanse of lemon daylilies, always prompts admiring comments from visitors. Variegated plants can also be used to curb the tendency of intensely colored flowers to disrupt garden harmony. I provide a sunny backdrop of the two-toned grass, *Miscanthus sinensis* 'Variegatus,' to blend in the tangerine glow of one such gorgeous but florid daylily.

Another colored leaved plant that I consider with affection throughout the year is fringed loosestrife, one of our fine and dependable, though relatively unknown, wildflowers. By the height of daylily season it has lost much of its earlier foliage hue of burgundy, retaining only faint washes of this rich color on juvenile growth. Small floral sundrops spring from leaf axils and dot the plant like hovering flocks of butterflies. At this time the leaves have taken on an unusual tint of olive green, providing a most becoming background for a variety of daylily blossoms. I especially like it in a mellow pink and yellow setting, but it would equally enhance a group of more potent coloring.

Bright masses of daylilies are an important feature in many gardens. We can increase their effectiveness by adding a few plants of contrasting form and tint. The plants I've mentioned represent but a ripple in summer's bounty. They are only a few of the countless possibilities for adding the charm of variety to our gardens.

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Barbara Bruno is writing and illustrating a book, *Victorian Christmas Crafts,* to be published in the fall of 1984 by Van Nostrand Reinhold. Along with directions for handmade gifts, Christmas treats, and tree decorations, it will feature a chapter describing the copious use of natural decorations that characterized a Victorian Christmas.

COMPANION PLANTINGS FOR DAYLILIES

Botanical Name	Common Name
†§*Achillea filipendulina*	yarrow
§*A. filipendulina* 'Coronation Gold'	yarrow
†*A. millifolium* 'Rosea'	pink yarrow
†§*A. ptarmica* 'The Pearl'	yarrow
A. taygetea	yarrow
§*A. taygetea* 'Moonshine'	yarrow
§*Alchemilla vulgaris*	lady's mantle
†*Allium pulchellum*	flowering onion
A. tanguticum	globe lily
†§*Anthemis tinctoria*	golden marguerite
§*Artemesia ludovinciana* 'Silver King'	artemesia
†*Borago officinalis*	borage
Chrysanthemum leucanthemum	field daisy
Coreopsis verticillata	coreopsis
†*Delphinium ajacis*	larkspur
†*Dianthus superbus*	summer pink
†*Echinacea purpurea*	coneflower
†§*Lavandula* sp.	lavender
†*Liatris* spp.	gay feathers
†§*Limonium latifolium*	statice
§*Lysimachia punctata*	fringed loosestrife
Miscanthus sinensis 'Variegatus'	striped grass
†§*Monarda didyma*	bergamot (pink)
§*M. fistulosa*	bergamot (mauve-crimson)
§*Origanum vulgare* 'Aureum'	golden oregano
§*O. pulchellum*	showy marjoram (to distinguish it from culinary m.)
§*Perovskia atriplicifolia*	Russian sage
Salvia sclarea	clary
§*Saponaria officinalis*	bouncing bet
Sedum spectabile	variegated sedum
†§*Stachys byzantina*	lambs ears
§*S. officinalis*	betony
§*Thymus herba-barona*	carpeting thyme (to distinguish it from culinary t.)
Veronica latifolia 'Crater Lake Blue'	speedwell

§Well-Sweep Herb Farm, 317 Mt. Bethel Road, Port Murray, NJ 07865
†Available from one or more of major seed companies (Parks, Thompson & Morgan)
Note: Most of these can be bought at the herb sale of the Herb Society.

Daylily sources: Area nurseries now carry a wide selection of daylilies. If you can't find what you want locally, I suggest writing to:

Gilbert H. Wild and Son, Inc., Sarcoxie, Missouri 64862
George W. Park Seed Co., S.C. Highway 254 N., Greenwood, SC 29647
Thompson & Morgan, Inc., Box 100, Farmington, NJ 07727

CHIVES: Common and Garlic

Chives, those sprightly little green shoots that add so much flavor to our food, are also heralds of spring. They push their way up through the cold earth, and sometimes through the snow to provide us with a delicious herb that is good in all seasons. As spring approaches, I can measure its advance by looking from my kitchen window at the neat green rows of erect, bright green shoots that become taller each day. As they grow taller, they outdistance the sorrel in the patch beyond them. And soon I can estimate when harvesting time will begin.

There are a number of varieties of chives but we grow only two kinds here at Apple Pie Farm for commercial use: the common chives *(Allium schoenoprasum)* and the garlic chives *(Allium tuberosum)*. The former is the better known variety and more generally used, but the garlic chives have an important culinary use, too, and are becoming more and more popular with home cooks and professional chefs because they add zest to many dishes, especially those with a bland flavor. Both belong to the onion family and are perennials. Both are also easy to grow, but unlike the other members of the onion family (such as garlic and shallots), it is the chive's foliage and not the bulb that is eaten.

Chives originated in Europe and in Asia and have been known for more than 5,000 years. They were honored by the ancient Egyptians and were introduced to China at least 2,000 years ago, where they were used as an antidote for poison and a remedy for bleeding. They were introduced to America around 1700 and the early colonists used them to help digest fatty foods. The Dutch settlers were supposed to have planted them in their pastures so the cows would give chive flavored milk. One wonders if they were the forerunners of our present day "wild garlic." Now chives are grown almost everywhere in the temperate zone and are widely used to give a mild onion flavor to soups, salads, sandwiches, vegetables, fish, egg and cheese dishes, marinades and vinegar. They are also used in making herb arrangements, both fresh and dried.

The Dutch settlers were supposed to have planted them in their pastures so the cows would give chive flavored milk.

They can be grown from seed but as they mature slowly, it is easier and quicker to produce them by setting out rooted clumps in the spring. Pots containing small growing clumps of common chives are usually available in local supermarkets, nurseries or from herb growers in the spring. They should be planted in clusters of five or six bulbs, set

Nancy Youman and Gwen Tracy harvest chives.

by Julianne R. Street

Chive blossoms

photos by Edmund B. Gilchrist, Jr.

two inches deep and six inches apart in rich, wet soil with a pH of 6.0 to 7.0. Some herb growers recommend the higher figure. And they do best in full sun. If the foliage is harvested often the plants may become weak from lack of the nourishment they normally would obtain from the leaves. We harvest ours continuously from April to November, so we fertilize them with 5-10-5 at least twice each season – spring and mid-summer – and again if they are not producing vigorously. We also give them lime in the spring and lots of water at all times. The plants spread rapidly so must be divided every three or four years, otherwise they will become coarse and strong. Also, they need a dormant period of approximately one month to six weeks, so should be left in the ground to freeze before they are brought into the house for winter use. A forced rest period can also be attained by placing pots of the bulbs in a refrigerator or freezer for four to six weeks. After this time, remove, give them water and sunshine, and they will start to grow again. They are tidy in their habits and make attractive accent and edging plants, so consider them in your garden plans.

The foliage of the common chives grows in grasslike clumps to a height of 12 or more inches, is quite erect, round in shape and hollow. When cutting for use, cut at ground level; do not tip. For drying or freezing, wash and dry thoroughly, chop finely and, if possible, dry in a dehydrator or microwave oven to re-

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tain the most color and flavor. To freeze, put the chopped chives in an airtight container and freeze as quickly as possible. The common chives bloom in late spring and the fluffy, round, lilac colored, silvery tinged blossoms are beautiful. A large quantity of them make a showy display. The blooms are good chopped in salads and make a delicious pink vinegar. They also dry well and are lovely in dried arrangements and in Christmas wreaths. Some growers recommend that the plants not be allowed to bloom as they cause the leaves to toughen and become coarse, but they are so beautiful, and we have so many uses for them that we do allow them to bloom. We harvest them, however, as rapidly as possible for vinegar and for drying.

garlic chives

The garlic chives, also called chinese chives, have the same cultural requirements as the common chives: a rich soil, lots of water and sunshine. They spread more rapidly than the common chives so it is best to plant the bulbs individually and a foot apart. They, too, must be divided every three to four years. The leaves of garlic chives are flat, have a strong garlic flavor and are not as upright in their habit of growth as the common chives. They, too, are used to flavor soups, salads, egg and cheese dishes, pasta, vegetables and fish. They bloom in August and September on 18-in. or taller stalks, which bear white star-like blossoms. They are spectacular in the garden and make excellent landscape plants because they are so beautiful and their thick roots can hold soil on banks. The fresh flowers are lovely in bouquets and sometimes are forced by florists for this purpose. I heard of one bride who chose her wedding day so that she could have the blossoms in her bouquet. After flowering, the tight green heads can be used to make garlic vinegar. The best time to cut them for drying is after they start to open and the black seeds are visible. Hang upside down in bunches arranged in uneven lengths so the flowers won't tangle, or stand them in baskets with lots of room and they will dry a muted golden color to add bright touches to dried arrangements and winter bouquets.

I heard of one bride who chose her wedding day so that she could have the garlic chive blossoms in her bouquet.

All in all chives, both common are garlic, are one of the most rewarding herbs to grow, as they give little trouble. They are not bothered by insects or pests, give large yields and provide beauty throughout the year. In addition to the pleasure they give our taste buds and our eyes, they are the first herb in the garden to remind us every year that the long, cold winter is over and that spring will soon be here again to renew our energy and our spirits. A big job for a small herb.

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Herbs. James Underwood Crockett and Ogden Tanner. Time-Life Books, 1977.
The Herbs. National Colonial Farm, The Accokeek Foundation, Inc. 1979.
Park's Success with Herbs. Gertrude B. Foster and Rosemary F. Louden. George W. Park Seed Company, Inc. 1980.

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Judy Street owns and operates Apple Pie Farm, which is located between Malvern and Phoenixville in Chester County. She has approximately six acres under cultivation in culinary herbs and sells herbs and related products to restaurants and gourmet shops throughout the United States. She has written about her products for *Green Scene* on several occasions.

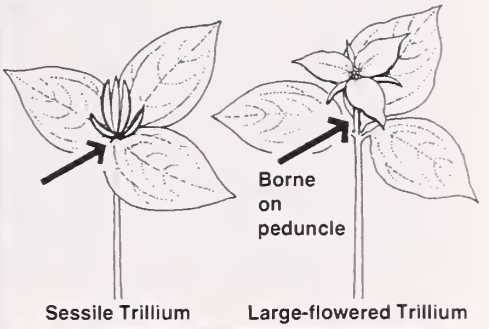
TRILLIUMS:

Some hardy but not frequently grown in this area

by Dot Plyler

photos by Jim Plyler

Trillium grandiflorum



Trillium erectum

Many people in the Delaware Valley enjoy the large flowered trillium *(Trillium grandiflorum)* in their gardens. Other species, less well known but just as hardy, are equally successful here. With one exception, all of the species mentioned in this article have made themselves very much at home in my suburban woodland garden.

Trillium grandiflorum is the best known and most showy of the trilliums. A trio of plain green leaves shows off three broad conspicuously-veined white petals, a white ovary, and six yellow stamens on a 2-3 in. peduncle. The white petals frequently turn pink with age, and finally a six-angled greenish-white berry full of brown seeds is produced. In a favorable location, enough seed may be produced to cover the ground with trilliums. (See table for bloom schedule.)

Trillium erectum in the white form is similar in appearance to the large flowered trillium. The most obvious difference is a smaller flower, with narrower petals and a black center. Three broad rhombic green leaves spread out under three creamy white petals, six yellow stamens and a brown ovary, supported on a stiff peduncle. This plants is known as stinkin' Willie or wet dog trillium, because it emits an unpleasant odor when the bloom is fresh. *Trillium erectum* shows considerable variation in color: a red-petaled form, an uncommon yellow-petaled form, and occasionally a plant is found that has both red and white on each petal.

Trilliums lacking a peduncle and bearing blossoms directly on the leaves are referred to as "sessile." (See illustration for comparison.) Of the sessile group, the yellow or toad trillium is most commonly seen. This plant carries three yellow petals, three yellow sepals, and six yellow stamens atop three beautifully mottled leaves. In contrast to stinkin' Willie, most of the yellow trilliums exude a pleasing lemon fragrance. Among the hardier of the genus, they are sometimes found growing along roadsides and in poor soil.

Within the trilliums, the taxonomy is confusing, and *Trillium luteum* more than some others. In *Manual of the Vascular Flora of the Carolinas,* authors Radford, Ahles and Bell call it *Trillium cuneatum luteum;* in *Illustrated Flora of the Northeastern United States and Adjacent Canada,* Henry A. Gleason refers to it as *Trillium viride luteum;* and in Vol. 27 of *Brittonia,* John Freeman, who is praised as having written "the most definitive and helpful paper on sessile trilliums yet to appear," designated it *Trillium luteum.* No matter what you call it, it's a great little plant.

Huger's trillium, *Trillium cuneatum* *cuneatum* is another sessile trillium with a strong resemblance to the yellow trillium. The differences between the plants are Huger's purple to brown flower color and slight odor of banana. Sometimes when it grows close to *Trillium luteum,* hybridizing takes place, resulting in a mixture that produces muddy yellow-brown blossoms.

nodding trilliums

Several members of the genus are designated as "nodding" because of their habit of bearing their blossoms under the leaves. *Trillium catesbaei* has a small white or pink flower with narrow petals and large, recurved yellow stamens. The flower dangles on a long peduncle, nodding under the leaves of the plant. Catesby's trillium's leaves are narrow, tending to curve upward to varying degrees. This upward curvature of the leaves may be an adaptation to conserve moisture during arid periods by exposing less leaf surface to direct light. In the garden Catesby's trillium does

continued

TRILLIUMS:

continued

Yellow trillium *(Trillium cuneatum luteum)*

Huger's trillium *(Trillium cuneatum cuneatum)*

well in a dry, acid soil.

Another nodding trillium, *Trillium vaseyi,* is a giant in the genus, sometimes growing to over 2 ft. tall, with the three leaves spreading over 14 in. across. The latest blooming of all the trilliums, Vasey's trillium may have a leaf spread of over 14 in. The 3- to 4-in. flower appears under the canopy-like leaves in late May. Vasey's wide maroon petals easily attain a diameter of 4 in., although the tips often recurve to a great extent, making the bloom appear smaller. Stamens are exceptionally long and of rich yellow color, contrasting nicely with the maroon background. The proper nomenclature of Vasey's trillium is disputed. Some authorities (including Bell, formerly mentioned) list it as *Trillium erectum vaseyi,* although it is very different from *Trillium erectum.* Others call it *Trillium vaseyi.* Its habitat preference is humus-rich damp soils.

The nodding trillium, *Trillium cernuum,* is the only member of the genus to occur naturally in the Delaware Valley. Because the small white flower is well hidden beneath the three leaves, this inconspicuous trillium is not often noticed in its natural environment. Although *Trillium cernuum* is not rare here, accidentally discovering one in the woods is an exciting event. The nodding trillium is usually found in cool, moist soil in hardwood forests or in thickets. Perhaps its best feature is the red seed pod that develops toward autumn.

The snow trillium, *Trillium nivale,* bloomed in our garden for two years and then began to languish. This trillium looks like a miniature *Trillium grandiflorum,* but blooming time is much earlier. Natural range of these smallest of the genus is on neutral soils; our soil is acid. The snow trillium does prosper in at least one Delaware Valley garden. Near West Chester in John and Anita Kistler's garden, *Trillium nivale* makes a splendid show in late March. Anita says that although their soil is neutral, the tiny trilliums are growing under an evergreen tree and are mulched with pine needles, creating an acidic condition. The capricious and contradictory ways of many of our plants give the grower much to ponder.

sources

The most difficult part of establishing a trillium garden is obtaining the plants. Because of the great current interest in wildflowers, nurserymen may begin soon to propagate trilliums. The plants in my garden were gifts from friends, purchased from nurseries years ago, and rescued from the wild. If you travel to the Poconos or any mountainous area, you may have a good chance to collect seed or to rescue plants from a bulldozer.

To my knowledge, the only present source of nursery-propagated trilliums (as opposed to sources that collect or buy from collectors) is the New England Wildflower Society. Native plants are offered for sale only at their headquarters at Garden in the Woods in Framingham, Mass. You can obtain stock for your garden either through division from a friend's plant or by growing your own from seed, which provides the greatest number of plants. Seeds are available from Far North Gardens, 15621 Auburndale Ave., Livonia, Michigan 48154.

Garden club sales are sometimes a source for trilliums; members occasionally donate their excess to a sale.

propagation from seed

In a favorable woodland garden situation, an established trillium may produce a number of seedlings on its own; however, if you want to obtain a quantity of plants, your chances are greatly increased by propagating. With time and effort, trilliums *can* be grown from seed. Gather the seeds when ripe, usually in late June, depending on the species. The ripe berry, which contains the seed, is full and soft and comes off the plant easily. The seeds could be planted immediately, but keeping them moist over the summer is a nuisance. We chose not to plant in the summer; instead we placed the seeds in a plastic bag containing moist sphagnum and refrigerated them until fall. Seeds were then planted in a flat filled with purchased soil medium, put in the woods, and covered with leaves. No top growth was visible from the trillium seeds the next spring, but theoretically the freezing winter temperatures had initiated root growth. The flat spent the first summer in the woods with the leaf mulch still covering it. Occasional checks were made to be sure the soil was still moist. When the mulch was removed the second spring, the flat was full of tiny trillium sprouts. Only a single leaf appeared on each seedling during this first year of visible growth.

Catesby's trillium *(Trillium catesbaei)*

Snow trillium *(Trillium nivale)*

Apparently trillium seeds need a cold period with freezing temperatures and then a warm period, followed by another cold freezing period, before top growth commences. Seeds with this requirement for germination are commonly referred to as having "double dormancy."

Most information on the subject indicates that growth is slow, and mature blooming plants should not be expected for at least five years, although there are reports of plants blooming in the third year. The rate of growth depends on conditions and species of trillium being propagated. My personal experience is limited to appearance of the single leaf, but I eagerly await the third season to check the seedlings' rate of growth.

Growing trilliums from seed does take time and patience; a plant this good is worth waiting for.

cultivation

Trilliums do best in a woodland, humus-rich situation, but many are quite happy in a border garden with good soil, morning sun or high shade, and adequate moisture. (An exception is *Trillium undulatum,* which does not tolerate Delaware Valley's hot summers.) They will not grow in bright afternoon sun or subsoil. One consideration in placing them should be that after blooming, the leaves do yellow, are unattractive for a short period, and die down. If they are set in a short distance from the edge of the bed, this minor defect will be less obvious.

The best time to transplant trilliums is just after the leaves wither in midsummer. Root growth begins in the fall, and a stronger plant can develop if the root system is not disturbed during active growth. I have successfully transplanted them at all seasons without loss; however, the plants would have been more robust had transplanting been done at the proper time.

With all wildflowers, the question arises: to fertilize or not to fertilize? Opinions vary from an "absolutely never" to a "lightly with compost" to a "sure, hit 'em with 5-10-5" approach. Since I have not used any type of fertilizer on my trilliums, I cannot speak from experience.

The trillium genus is bothered by few pests or diseases. An occasional slug, deer, rabbit or groundhog may munch on a plant, but my experience has been that trilliums number among the less tasty items of most herbivores' diets. *Trillium grandiflorum,* however, has been troubled by a virus disease. Symptoms include variegation of green and white on the petals. When first discovered, the afflicted plants were thought to be a mutation and were much sought after. Soon the virus was detected, and now the variegated plants are known to be diseased.

Trillium grandiflorum and others of the genus do appear, but very rarely, in a spectacular double form. These plants are perfectly healthy and very striking. The double flower is sterile and so has a longer blooming period than the single form.

This article has dealt with only the trilliums most commonly encountered east of the Mississippi; many more species occur in the West. The annual spring Wildflower Pilgramage to the Great Smoky Mountain National Park, Gatlinburg, Tennessee (37738), provides the best opportunity to enjoy trilliums in their natural setting. Held on the last weekend in April from Thursday through Saturday, the pilgrimage gives participants the opportunity to visit the mountain sites of the native plants. Excellent tour guides for this event are drawn from colleges, parks and arboretums.

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Trillium Bloom Sequence in the Plyler Garden (Chadds Ford area)

Snow trillium	*T. nivale*	late March
Yellow or toad trillium	*T. luteum*	late April
Huger's	*T. cuneatum cuneatum*	late April
Wet dog or stinkin' Willie	*T. erectum*	late April to early May
Catesby	*T. catesbeai*	late April to early May
Nodding	*T. cernuum*	late April to early May
Vasey's	*T. vaseyi*	late May

Dot Plyler and her son, Jim, grow native plants from seed; she has written about it for *Green Scene.* Plyler has taken courses at the Arboretum of the Barnes Foundation and Tyler Arboretum, Longwood Gardens and the Henry Foundation. At present she is studying historical geology and entomology at West Chester State College.

photo by Andrew C. Durham

Sarcococca humilis

AS SWEET AS BOX:
Sarcococca: The Sweet Box

by Andrew C. Durham

For the past several years, a small winter-flowering plant from Western China has been gaining a larger and larger group of admirers in the Delaware Valley. Botanically known as *Sarcococca,* the sweet box, like its relatives, is a broad-leaved evergreeen with inconspicuous flowers; it differs in having late winter blossoms that give off a strong fragrance, always unexpected and welcome. The flowers appear during warm spells in late January and February usually finishing by mid-March. During warm weather, the female and male flowers, found in clusters in the leaf axils, protrude out to perfume the air. There are no petals, only anther and stamen.

Typically, woody plants that bloom during this transitional season rely on fragrance to attract pollinating insects. Sudden freezes would destroy the showy petals of late spring and summer, thus rendering them ineffective to solicit insects, the third party in the sex life of plants. The witchhazels, for example, have reduced petals that curl up during incompatible weather. The close relative, *Parrotia persica,* gives a very showy display in March completely made up of maroon-colored stamens, while other early bloomers, such as *Shepherdia* and *Chimonanthus,* have small toughened petals in dull colors. All are fragrant. A scent is simply the most efficient way for plants to attract insects at this time of year. The exudation is "turned off" with natural hormones during inclement periods when insects don't fly. During the warm, wintery spells, a scent that carries well, such as the sweet box, acts as a homing beacon to the sparse insect population.

If all *Sarcococca* had to add to our gardens was its fragrance, it would still be an important plant. If it was thinly leaved, scraggly in growth, and deciduous we would still grow it. Perhaps it would be tucked away into unseen corners or planted behind more attractive shrubs, but assuming the same fragrance it would be sought out and admired in late winter.

Sarcococca, however, comes from an aristocratic plant family especially noted for their excellent foliage and ease of maintenance. The sweet box commonly for sale in this area, *Sarcococca hookeriana humilis,* is the most attractive and hardiest of the genus. The leaves are dark green and glossy like those of boxwood, but closer in size to pachysandra (1½ in. - 4 in.) with smooth edges and a pointed tip. Underground, the woody rhizomes spread slowly

photo by William H. Frederick

Sarcococca hookerana humilis at Brookside Gardens in Wheaton, Maryland.

sending up new shoots. While overground the shoots grow to a maximum height of 2½ ft. and form dense miniature thickets that often choke out weed competition.

Like the common pachysandra, sweet box is most often used as a ground cover, a static but beautiful, low mat throughout the year with a coy surprise for late winter. Again, like its relatives, it thrives on a loose soil laden with organic matter and prefers some shade. Sweet box tolerates even dense shade, like that found under many deciduous trees, but obviously in the darkest corners flowering will be reduced and our expectations must be lowered.

Cuttings root easily. So why is it not as popular as its relatives? Part of the reason lies in the slow growth. Once a colony has grown together into a ground cover, the leisurely growth rate and low height mean less maintenance to the gardener: no pruning, no deadheading, and only rare checks to the rhizomes, so invasive in other plants. Yet a rooted cutting also tends to grow slowly, a container-grown plant grows slowly and the rhizomes take several years to get going once the plant has been purchased and planted. To the nurseryman, this means both space occupied in the nursery for a longer time and a higher priced item harder to sell.

Two reasons that might diminish enthusiasm for it is its tendency on some sites to become thin in the center of clumps or to lose isolated branches after a cold winter. Though sweet box is hardy in this area, both of these seem to be winter related problems. It's possible that old plants of sweet box may open in the center like some crown forming perennials, but this seems to be usually caused by heavy snows that weigh down the stems and spread the plants open. The loss of occasional branches is more mysterious: cold alone? mice?

The loss of branches usually does little damage to the plant, and by pruning out the dead parts, the plant is restored to its former attractiveness. When clumps split open, however, more drastic action is needed. One horticulturist reports that she kept her *Sarcococca* healthy and at an even height by shearing it to a height of 5 to 6 in. every few years. Though I've never contemplated doing this to mine, it makes good sense. Old beds of pachysandra are rejuvenated in this way, and the new growth that results when we treat sweet box this way would be more even in height and would more strongly resist the weight of snow. A word of caution: do this only in the spring.

The name, *Sarcococca hookeriana humilis* is in dispute. The new edition of *W. J. Bean,* an authoritative British text on woody plants, as well as a new British monograph on the genus *Sarcococca,* list this plant as a distinct species, *Sarcococca humilis.* It has long been classified as a geographical variety of *S. hookeriana* which grows farther to the west in Afghanistan and the Himalayas, and according to *Bean,* is closely allied to *S. hookeriana digyna,* an ornamental shrub with narrower leaves often cultivated in Great Britain but a rarity here. Most older texts refer to it as *S. hookeriana humilis. Hortus III,* for some curious reason, even drops the "i" listing *S. hookerana.*

Sweet box is available at better nurseries throughout the Delaware Valley area, usually under its old name. Its low height and neat appearance make it ideal for foundation plantings where the tendency is to put in tall-growing plants and prune them into their allotted space. Sweet box, of course, is excellent for the woodland garden, the north side of buildings, or as a ground cover around old, leggy deciduous plants.

We gardeners are fortunate that *Buxaceae,* a plant family mostly found in the tropics, has made several intrepid forays into the temperate region. The result has been three of our most useful ornamental genera.

The rising popularity of sweet box, hardy to Zone 5, may have been sparked by the series of cold winters we had recently when many of our evergreens suffered. Moreover, the growing importance of shade tolerant plants and low maintenance ground covers has also increased demand. Actually, I didn't realize immediately that the plant itself was so good. I was first attracted to its pleasing botanical name, *Sarcococca,* filled with consonance and one of the small handful of plant names that I find exciting to pronounce!

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Andrew C. Durham cultivates sweet box in Wilmington, Delaware. Durham recently returned from a year abroad, where he worked at the Royal Horticutural Society's garden at Wisley, England. He designs gardens in the Wilmington area and hopes to attend graduate school to study landscape architecture.

The Wilmington Garden Club RARE PLANT AUCTION

by Bonnie J. S. Day

photos by Bradford L. Glazier

An enthusiastic bidder waves her card high during the rare plant auction.

Late in 1980, an unusual yellow-flowered *Clivia* hybrid was donated to the Wilmington Garden Center. Though the Garden Center is a nonprofit educational organization, it does sell a few donated plants at its headquarters in downtown Wilmington. The clivia was clearly too valuable to put up for sale there, where small, low-priced houseplants are best sellers. Eventually, the board decided to auction it off – but who would come to an auction of one plant, however rare and coveted it may be? Slowly the idea grew, until it emerged as a full-fledged Rare Plant Auction, the Garden Center's newly created annual fundraiser held for the first time on April 7, 1981.

The Wilmington Garden Center itself was five years old on October 13, 1982. From the beginning, its purpose has been to promote the knowledge and practice of horticulture throughout northern Delaware. Housed in a renovated nineteenth century building on the Market Street Mall, the Garden Center is open to the public every weekday. Its professional staff and volunteers are available to answer plant questions and to help members and visitors use the library of over 1,350 practical plant and gardening books. The Garden Center services the community in several ways: providing advice and assistance for people interested in community gardens and beautification projects and presenting educational programs to groups of all ages.

All of these activities are valuable services, but they cost money. The Rare Plant Auction helps to raise a substantial part of the funds necessary to operate the Garden Center, as well as giving gardeners in the Delaware Valley an opportunity to acquire very beautiful and unusual plants.

An evening event, the auction is held at the Delaware Natural History Museum in Wilmington. All of the plants offered in the silent and rare parts of the auction are on display throughout the museum for the guests to preview while they enjoy a cocktail buffet. The silent auction is held during the cocktail hour, featuring plants that are smaller or less rare than those set aside for the regular auction. They are most likely to be perennials or greenhouse plants, like last year's dwarf orchid cactus, *Epiphyllum* 'Bridal Shower.' Each plant is accompanied by a sheet of paper, on which the bids are written. Prices are lower, and bid increments are smaller, so more people have the chance to take a plant home. The regular auction of rare plants takes place in the auditorium after the silent auction is over. It is run just as a traditional auction would be. Plants offered here are usually trees and shrubs. The 1982 auction featured a group collected in Japan, Korea, and China, some of which were entirely new to the United States.

It takes a good deal of organization

and advance planning to stage a Rare Plant Auction. There have to be committees for plant selection, invitations, staging, properties, money, and food, all fueled almost exclusively by volunteer power (more than 75 volunteers last year), and numerous donations of plants, food, and props.

Selection of the plants begins months in advance. A preliminary list is drawn up at the first meeting, and suggestions are solicited from other experts. The list is gradually narrowed down to the final group of about 50 rare and 40 silent auction lots. While the plant committee is "scouting about and talking in Latin to each other," as one of our board members says, the other committees gear up for the big day. Auction chair Helen Detch coordinated all of the committees in 1981 and '82. Chairs for the 1983 auction are Kathryn Anderson and Minda duPont.

Still, very little of the real work can be done until the day of the auction. The activity begins early in the morning. Most of the plants have already been collected from the various businesses, public gardens and private donors and are waiting on the loading dock or in the basement of the museum. All of them must be sorted, identified, and tagged, a process complicated by last minute additions and deletions. Though the plant committee tries to have all of the donations set up in advance, there is no predicting the whims of nature or the generosity of our private donors. Just when it seems as though everything is in order, something very special arrives, and all priorities must be rearranged. We were almost overwhelmed by a sudden influx of many of these special plants last year, just a few hours before the auction began. Happily, one of these eleventh-hour donations proved to be the hit of the regular auction – a matched pair of miniature cymbidium orchids *(Cymbidium* 'Mrs. S. H. duPont').

Once the museum closes, we can begin to set up the auction. It is no small task to transform a natural history museum into a plant auction showroom. Food, tables, lights and other supplies are unloaded and carried upstairs with the plants. With only two hours to spare before the auction begins, this has to be done *quickly*. The lighting in the museum is too dim for the purposes of the auction, so extra spots borrowed from all over Wilmington are brought in and set up in strategic locations. The museum has no kitchen; ours complete with microwave oven is set up in the children's Discovery Room. Tables for food and bar are scattered throughout. The plants are tucked in among dioramas, exhibits, and stuffed animals, a strange combination of living flora and preserved fauna.

When the auction begins, those few harried hours and months of planning prove worthwhile. Anyone may attend the auction, and the museum is full of plant lovers from Delaware, Pennsylvania, Maryland, and New Jersey, juggling drinks, food, and catalogs as they examine the plant lots and socialize. The silent auction is a hub of activity, as bidders hover over their favorite plant and match the competition, bid for bid. Others, distracted by the array of rare plants, friends, and food, rush madly to get their bids in just moments before the auction closes.

the rare plants

The climax of the evening is the regular auction of rare plants. Anything from dwarf conifers to a beautiful weeping

continued

A bidder makes her best offer for a silent auction plant.

form of the Japanese snowbell, *Styrax japonicus* 'Pendula' may be put on the block, and it is difficult to guess how the bidding will go. Some plants are won for a song; others have their prices driven up in the heat of competition. Even if you can't afford to bid, it can be satisfying and exciting to watch some of the matches made between plant and buyer. One plant, a rose-flowered form of the Chinese dogwood, *Cornusa kousa,* went to the members of the University of Delaware's Horticulture Club, tireless workers at the auction. The tree has been planted in the University's Clark Garden in Newark, Delaware, a teaching garden and collection of woody plants that is open to the public.

This year, the auction will again be held on Tuesday, April 19 at the Natural History Museum. Though it is not yet known at this writing what plants will be featured, we hope they will be as interesting and unique as they have been for the last two auctions. If you would like to receive an invitation to the Rare Plant Auction, call or write the Wilmington Garden Center, 503 Market Street Mall, Wilmington, Delaware 19801, (302) 658-1913. We look forward to seeing you there.

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Bonnie J. S. Day, assistant to the executive director at the Garden Center, is a member of the auction's plant committee. She received a B.S.Ag. degree from the University of Wilmington, and continued her training in ornamental horticulture as a Fellow in the Longwood Program.

PLANTS FOR A RARE PLANT AUCTION

what is a rare plant?

What is a rare plant? Quality and beauty or special interest are givens. A simple definition is that a rare plant is one that is difficult to get. Plants can be "difficult to get" for a variety of reasons, though, and these reasons help show why it is worth the effort to obtain them.

A plant may be rare because it is little grown because it is difficult to propagate or cultivate. Perhaps it just hasn't attracted the popularity it deserves because its virtues are too subtle for the average grower. A fleeting sort of rarity occurs when the plant or variety is very new, just discovered or introduced. Often such a plant is an improvement or unusual variation on a well known theme: better fruit or foliage color, increased hardiness, variegated foliage or differently colored flowers, a pendulous habit rather than the normal upright form. Plants may be more rare together than separately, as were several collections offered in the 1981 auction: for example, a group of five unusual and hard to get snowdrop *(Galanthus)* and snowflake *(Leucojum)* species and cultivars from Winterthur, a garden famous for its display of early spring bulbs. A rare plant may have the added attraction of a history or a pedigree, like a descendant of Bartram's Franklin tree *(Franklinia alatamaha)* or of cuttings of other plants passed from grower to grower across the world.

It should be easy to imagine the burden of responsibility that the members of the Rare Plant Auction committee often feel. We self-appointed arbiters of taste tread a very thin line between snobbery and connoisseurship. Fortunately, we are ably assisted and guided in our choices by the institutions and individuals that provide the plants. Our sources are commercial nurseries, nonprofit institutions, and local plantsmen/women. Each source is characterized by the presence of one or more persons who have chosen to propagate and grow well beautiful and unusual plants.

One commerical source for a large proportion of the plants featured in both the '81 and '82 auctions was Environmentals, a wholesale nursery in Long Island, New York. Headed by Jim Cross, himself a plantsman par excellence, Environmentals is known for its small, needled and broad-leaved evergreens, heaths, heathers, and other exceptional plants. From them we were able to get *Daphne tangutica,* a Chinese daphne known for both its rarity and toughness, and a weeping European larch, *Larix eurolepsis* 'Varied Directions,' among others. Other commercial sources included Watnong Nurseries, Gossler Farms Nursery, Dixon Tree Farm and Nursery, Cedar Gardens Nursery, and J. Franklin Styer Nurseries.

Our nonprofit sources provide us with many of the experimental or newly introduced plants in the auction. Brookside Gardens in Wheaton, Maryland, sponsors a program designed to introduce and develop new cultivars of well-known, hardy, ornamental plants for the homeowner. They donated a large number of plants last year, among them several new cultivars and selections of the Chinese dogwood, *Cornus kousa,* a gracefully pendulous form of the katsura tree, *Cercidiphyllum magnificum* f. *Pendulum,* and a pink and white variegated cultivar of the Japanese zelkova, *Zelkova serrata* 'Goshiki.' Some of these were widely grown in Japan, but little known here; others were new to everyone. Brooklyn Botanic Garden, Morris Arboretum of the University of Pennsylvania, the Arthur Hoyt Scott Horticultural Foundation, and Winterthur Museum and Gardens also contributed plants to the auction.

Some of the most interesting plants to be put on the block come from amateur growers and gardeners. These people donate special plants, ones they are recognized for growing and enjoying. Not only are these plants unusual, they carry with them memories and local associations that are just as valuable. In 1982, Merlin Brubaker gave several of his orchids; Darrel Apps, a daylily enthusiast, contributed a hybrid of his own making, *Hemerocallis* 'Little Red Hen.' Dr. and Mrs. Joseph Kasaab provided two holly collections from their garden in Wallingford, Pennsylvania. These are just a few; to name each of the many contributors and contributions would be impossible in this space.

Though the most immediate goal of the auction is to raise money for the Garden Center, it is a privilege to be able to bring such special plants to this area. Throughout the Delaware Valley, gardens harbor specimens of plants that in their time were rare. Many of them still are, some by virtue of age alone. We hope that the plants sold at the Rare Plant Auction will continue this tradition of quality and innovation, and serve as inspiration to plant lovers of the future.

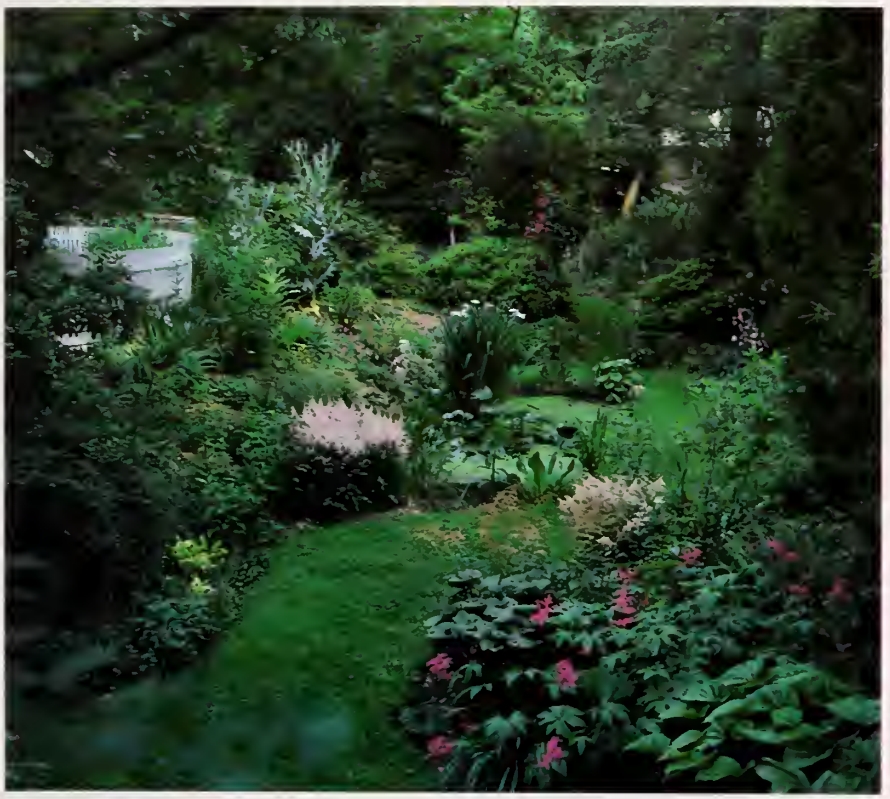
B.J.S.D.

Kurume azaleas and dogwood separate the house from formal flower gardens.

photos by Charles Cresson

HEDGLEIGH SPRINGS, A GARDEN OF SURPRISES

A garden that has been evolving for 100 years



Moisture loving plants in the Pond Garden in mid-June. Front to back: *Filipendula palmata*, astilbe, and Japanese iris.

by Erica Glasener

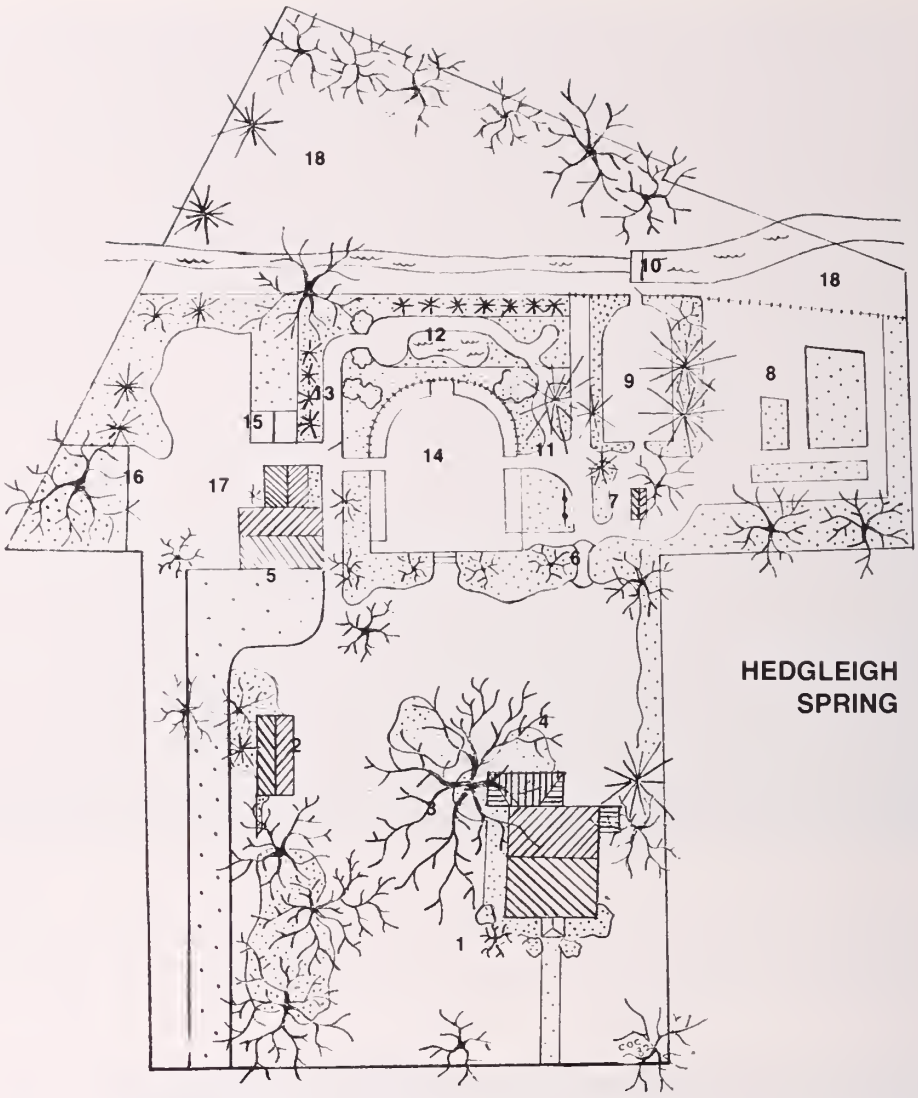
I often wonder how many people have driven past Hedgleigh Spring, the Cresson House in Swarthmore, never suspecting as they admire the front yard with its spreading English yews and specimen Japanese maple that the garden holds many other treasures. Few, for example, might notice the hens and chickens (*Sempervivum* spp.) growing in the moss of the front porch roof.

The garden reveals itself in stages, each season offering highlights: for example, the parasol tree with its yellow clusters of flowers in the summer or the *Rhododendron obtusum* 'Amoena' covered with deep magenta flowers in May (one of the largest specimens I have ever seen). Interest is held through the winter not only with evergreen azaleas and conifers, but with strong design and structural elements like the stone walls and white fence.

the history

Hedgleigh Spring goes back four generations to February 29, 1883, when

continued



1 Cut leaf Japanese maple
2 Springhouse
3 Great white oak
4 Great azalea 'Amoena'
5 Garages
6 Dog Bone Path
7 Tool house
8 Vegetable and fruit garden
9 Dam gate passage
10 Creek and dam
11 Pond path and dwarf rhododendrons
12 Pond garden
13 Holly walk
14 Formal garden roses and perennials
15 Cold frames
16 Leaf pile
17 Chinese parasol tree
18 Wildflower meadows

Ezra Townsend Cresson purchased a 40-acre gentleman's farm from Samuel Linville. He named it "Hedgleigh" after the long osage orange *(Maclura pomifera)* hedges.

The original Victorian farmhouse still stands two blocks away. Both the springhouse and the toolhouse, which was formerly the outhouse for the tenant farmer's house, are elements that add to the charm of this garden of many details.

One of five children, William Cresson, Sr. built his home between 1909 and 1911, in a grove of trees, white oak, beech and black gum, that today provide the background for the azaleas, a major feature of Hedgleigh Spring. William, Sr. frequently referred to the garden jokingly as "beechoakum," after these three major species.

The planting of 40 azaleas, which dates back to 1948, includes eight different varieties; most are kurume that still create a mass of color in the springtime. Of theses varieties *Rhododendron pulchrum* 'Maxwellii' is still a rare treat that blooms just after the other azaleas have faded. One white oak stands out, serving as an architectural accent that can be viewed from any point in the garden. The circumference is 14 ft.-10 in., and the exact age is unknown but it is believed to date back over 200 years.

In what was truly a labor of love, William, Sr. spent the last 50 years of his life designing and building the garden without assistance. The two-acre site, whose gentle slope ends at a stream and pond garden, is successfully divided into 10 separate areas. The garden includes 1/10 of a mile of dry stone retaining walls that create an outdoor room in each area. These range in style from the formal perennial and rose garden to the natural woodland garden.

When William, Sr. died in 1959, the gardens took a back seat to the younger William's priority of raising a family. Today the upkeep of the garden is a result of the combined efforts and talents of the whole Cresson family: Charles, horticulturist at the Nemours estate, knows plants and has a sense of design and color in the garden that is matched only by his brother Richard's expertise in operating, maintaining and repairing all machinery and buildings. William, Jr., the father, is a jack of all trades who also devotes much of his free time to the daily upkeep of the Cresson garden.

Restoration of the garden began in 1970, and included tasks of double digging many beds, reseeding lawn areas and rebuilding sections of stone wall. In 1980, over 70 new types of bulbs and 80 new perennials were planted. It was during this time of restoration that the decision was made to confine showy horticultural hybrids and forms to the formal garden areas, and to use species and wild plants in the more natural surrounding areas. The garden now contains over 1,000 different plants, and all are cataloged with sources ranging from the Sino-American introductions to the locally wild form of mountain laurel.

innovations: records and elevations

While the visitor to the garden observes how and where to grow many

different plants, a plant labeling system provides clarification of names and thus the garden becomes a living classroom. A plant record system kept by the Cressons offers further information on sources and performance over a period of time.

As the snow melts the many green labels begin to take on meaning, beginning in early spring with *Crocus anyrensis* 'Golden Bunch.' Soon to follow are the winter aconites and the *Tulipa pulchella* 'Violacea,' but – look closely – it is only 4 in. tall. All these bulbs are planted on the dry upper bank of the pond garden that was created, as were other changes in elevation, from the truckloads of clean fill brought into the garden in the 1920's and 1930's. The Cressons are often reminded of this when they dig up bottles or tin cans buried in several feet of coal ashes. They have also discovered that coal ashes are good for lightening heavy clay, and they often incorporate them into the soil when redoing a bed.

These man-made innovations have created an intimate space as well as providing many diverse habitats within a small area. Color continues in the pond garden with astilbes and candelabra primulas. Primulas, a favorite of William, Sr.'s, represent a family tradition and they bloom throughout the spring. The garden changes from week to week with summer bringing clematis and Japanese iris, which grows around the pond. Native plants include the arrowhead and the cardinal flower. Softening the edge of the pond and growing into the water in certain parts is the perennial forget-me-not, *Myosotis palustris.*

With fall's arrival the colors change from shades of blue and red to pink, mauve and silver with colchicums, cyclamen, sedum, ajuga and *Lespedeza thunbergii.* Even when flowers have finished blooming, dead heads like those of the coneflowers may be left to create interest throughout the winter.

As we enter the more formal perennial and rose gaden, it is hard not to notice the dominant feature, a U-shaped white picket fence that encircles one-half of the perennial garden. This fence is an example of another successful innovation, providing a permanent white backdrop that ties together the constantly changing forms, textures and colors in this room of the garden. The perennial garden with three raised beds comes to life in the summer, starting in June with the roses trained on a trellis with foxgloves and *Dianthus plumarius* planted in the foreground. The next progression of color in the same bed comes with buddleia, globe thistle, and beebalm. Another detail not to be overlooked is the delicate pink coral bells that begin blooming in June and last throughout August. Colors that were pastel in June deepen with the summer until in August another bed in the formal garden is alive with reds, oranges and yellows. One of my favorite combinations in early August is the *Lobelia cardinalis, Rudbeckia fulgida* 'Goldsturm' and *Crocosmia* x *crocosmiiflora,* a plant not often seen in American gardens that has thrived in the same location at Hedgeleigh Spring for 20 to 30 years.

The woodland garden holds treasures of its own like the dwarf rhododendrons; *R. keiskei* is especially notable, blooming in late April with pale yellow flowers that have just a touch of chartreuse. Larger rhododendrons are underplanted with herbaceous plants and bulbs that include trilliums and gentians.

Another section of the opposite side bordering a perennial bed is the home for the fig, from which I ate my first fresh fig last summer. It is an example of the rewards that one can expect if the plant is protected in the winter. A handsome new gate serves as an entrance to yet another area. First there is the cold frame, next the holding bed and nursery area and next to this daylilies planted in a group of various cultivars that create splashes of color in the summer. 'Cream drop,' creamy yellow with a green center, is Charles's favorite. "It is most soothing to look into on a hot day," he says.

As we backtrack through the gate we pass the garage with *Camellia japonica* planted very close for winter protection and you might notice the vine growing up the wall behind the camellias. The tips of the leaves look as if they have been dipped in white paint but this is the nature of this vine, *Actinidia kolomikta,* thriving at Hedgleigh.

Now we are headed back towards the front yard and only if we look carefully during September, will we notice the flowers on the rare *Kirengeshoma palmata* growing quite well next to the springhouse. This location is ideal since afternoon sun would kill this plant. Across from the springhouse a collection of native Osmunda ferns, cinnamon, interrupted, and royal accent the 3-ft. stone wall behind them and represent an unconventional use of herbaceous plants. Bulbs come and go before the ferns appear, and hardy begonias planted on the upper bed behind the ferns linger into the late summer with interesting foliage and delicate pink flowers.

Here we are back in the front yard, which seems quiet, providing no clues for the wealth of horticulture that awaits discovery throughout the rest of the garden.

Hedgleigh Spring is a special garden whose atmosphere invites us to examine closely for detail and learn or to stroll through and quietly appreciate the beauty around us.

Plants at Hedgleigh Springs

Acer palmatum 'Dissectum'
Japanese cut leaf maple
Begonia grandis
Evansiana
Buddleia davidii
Digitalis purpurea
foxglove
Echinacea purpurea
coneflower
Echinops 'Taplow Blue'
glove thistle
Eranthis hyemalis
winter aconite
Firmiana simplex
parasol tree
Heuchera sanguinea
coral bells
Iris kaempferi varieties
Japanese iris
Kalmia latifolia
mountain laurel
Monarda didyma 'Mahogany'
Osmunda cinnamomea
cinnamon fern
Osmunda claytoniana
interrupted fern
Osmunda regalis
royal fern
Primula pulverulenta
candelabra primulas
Sagittaria latifolia
native arrowhead
Taxus baccata 'Repandens'

●

Erica L. Glasener received her B.S. degree in Ornamental Horticulture from the University of Maryland in 1979. She is educational coordinator for the Arthur Hoyt Scott Horticultural Foundation located on the Swarthmore College campus in Pennsylvania. She previously was employed by Brookside Gardens in Wheaton, Maryland.

DAFFODILS: Bank to Bend and Beyond

by Philip G. Correll

The gardens at Winterthur have been described as "naturalized gardens on a princely scale." Any visitor arriving during April cannot help but agree that the thousands of daffodils that herald the arrival of spring are among the most spectacular jewels in this regal setting. Like gems and precious metals that have been favored through the centuries, so too narcissi have been a prudent horticultural investment. They have provided a lasting and golden return from a minimum outlay.

The history of daffodils at the Winterthur Gardens concerns Henry Francis du Pont and his garden. The story suggests some gardening principles of scale and design that are still valuable today and which can be applied to a garden regardless of its size.

It is not known when du Pont planted his first garden, although he indicated in a letter to Harland Phillips in 1962 that he had always loved flowers and had a garden as a child. The first of his gardens about which we have information was a narcissi garden planted in 1902 "on a gentle slope in front of our house where the lawn faded into woods." This area is now known as the March Walk. In his diary, du Pont refers repeatedly to this section of the garden as the "bank to bend" area – from March Bank to Magnolia Bend. Here the bulbs continue to bloom each spring – nearly 80 years after the first ones were planted. Clearly du Pont was correct when he wrote in 1929: "Of the many gardens one can have, there are none which, once planned and planted, give more satisfactory results with as little upkeep as the one in which Narcissi predominate."

"The so-called cheap mixtures for naturalizing in grass should be avoided as the result will be a jumble of Poeticus, Trumpets, the double varieties, and all the other kinds, which together, to me, are a perfect nightmare. Always plant the varieties separately."

Henry Francis du Pont kept notes on his horticultural efforts in a bound garden diary beginning in 1910. Although the diary is not complete, it offers a measure of insight into the history of the gardens and the methodical way in which the plantings were studied and expanded year after year. In this book he noted the dates on which the various bulbs first flowered in a given year with additional comments like that from March 6, 1919: "first daffodil bank to bend, the earliest on record," or the March 28, 1913, comment about the "lovely effect bank to bend."

creating visual effects

Du Pont was concerned with the performance of individual plants, but even more so with the ways in which different plants could be combined to create pleasing visual effects. The diary is full of comments about what plants were blooming simultaneously, how the colors, shapes, and textures complemented one another, and which plants could produce effective visual combinations.

Consideration of other plants was a major factor in du Pont's selection of a site for daffodils. In his words, "An open wood-lot, preferably one with a gentle slope which has been cleared in part of its underbrush . . . If one is blessed with a background of evergreens, trees or shrubs, such as Hemlocks, Arbor Vitae, Kalmias, or Rhododenrons, etc., with Cornus Mas, Viburnums, and Spicewood in the foreground, and Virginia Cedars here and there among the forest trees in the open, even better effects can be obtained; but with simply the contrast of the bare trunks of the trees and an undergrowth of spice bushes and wild Viburnums edging the adjacent woods, quite lovely results can be had."

The design of this first daffodil garden in 1902 reflects the overall philosophy that guided the development of the Winterthur Gardens for the subsequent 67 years of du Pont's life. The plantings were designed to enhance the existing natural features of the landscape rather than to transform it into something obviously formal and artificial. This was achieved by starting with the natural terrain and vegetation and supplementing it through the addition of beautiful flowers and the creation of pleasant vistas. The result is so successful that the viewer is presented with a paradox; tremendous efforts were invested to make the garden appear as natural as possible, as though nature intended to be that way; and yet the effectiveness of the result belies the skill and control that underlie the design.

photos by Philip G. Correll

Three basic rules, which can be applied to any garden, are at work in carrying out this philosophy. First: plant boldly in large clumps. Second: coordinate the plantings with the existing terrain and indigenous trees. Third: plan the color combinations with meticulous care.

Many catalogs and gardening books talk about naturalizing daffodils by start-

Narcissus 'Emperor' on old golf course.

ing with mixtures of many cultivars and then broadcasting the bulbs by hand over the ground and planting them where they fall. Du Pont disagreed with this technique. As he later wrote: "The so-called cheap mixtures for naturalizing in grass should be avoided as a result will be a jumble of Poeticus, Trumpets, the double varieties, and all the other kinds, which together, to me, are a perfect nightmare. Always plant the varieties separately. This is one of the essential and all important lessons the intending planter must learn."

Du Pont recommended that earlier-blooming varieties be planted in areas separate from mid-season or late-flowering daffodils. His experience with the frequent hot spells in Delaware's climate indicated that the early daffodils often faded prematurely and spoiled the effect of the mid-season and late-blooming bulbs. He also suggested that the Poeticus-type daffodil be isolated because "its white color looks almost blue in contrast to the cream whites of the Trumpets, Leedsii, Barri, and Incomparabilis."

placing the beds

The constraints of avoiding mixed plantings and separating early and late varieties might seem to suggest a uniformity and monotony that would contradict the naturalistic intent of the gardens. However, the unique method used to create the outlines of the beds at Winterthur maintains both the naturalistic ambiance of the overall plantings and the aesthetic integrity of the individual beds without allowing the design to degenerate into complete randomness.

Fallen branches were collected in the woods and stored near the cutting garden and nursery area. When du Pont wanted to lay out new daffodil beds, he would have the gardeners bring a load of these branches to the area being planted. Following his instructions, the gardeners would create the basic outline of the new bed with the branches. Du Pont would then walk around the bed and use his cane to tap the branches into the desired position. Hairpin-shaped pieces of wire were used to hold the branches in place until the bulbs could be planted. The branches provided "all the regularity or irregularity of contour one could desire."

The daffodil beds would be laid out as early as August. This gave du Pont up to six weeks or so to adjust the outline of the bed until it satisfied him. The actual planting would take place in late fall or even into the winter. Rather than digging up and disturbing the entire bed, a trowel or mattock was used to make a hole in the sod. When the planting was being done in the winter, an air hammer was necesary to open the ground.

Although the planting techniques would have been the same, daffodils

continued

DAFFODILS:
continued

Printed courtesy The Henry Francis du Pont Winterthur Museum

Unknown varieties near brick lookout at edge of old golf course in Sycamore area.

were placed in several areas of the gardens for quite different and specific reasons. As mentioned earlier, the first section of the property planted with narcissi was the area near the museum extending through the woods out to Magnolia Bend. Approximately two years after the golf course was constructed in 1928, daffodils were added along the fairways and near the tees (on the hillside opposite the Pinetum and Sundial Garden). They were planted for two reasons: In addition to being one of du Pont's favorite flowers, the daffodils helped to retain the naturalistic appearance of the landscape by serving as a visual distraction; and the artificial nature of the course's tees, greens, and sand traps was softened by the thousands of flowers waving in the spring breezes. The eye was attracted by the patches of yellow and white flowers, while in the process, the golf course itself was overlooked. The same visual trick is used along the main entrance drive to catch the visitor's eye and pull his attention away from the huge sheet of asphalt that constitutes the visitors' parking lot.

Each spring, before the daffodil foliage began to emerge, the grass was cut as short as possible. Following this mowing, the area would not be weeded, mowed, or disturbed in any way until the foliage began to die back in late June or early July. Daffodils will gradually decline and disappear year by year unless the foliage is allowed to remain until sufficient energy has been stored by the bulb for the subsequent year's growth. Therefore, daffodil bulbs should not be naturalized in areas where long grass would be unsightly in May or June.

At Winterthur the decision of when to cut the foliage was always made by du Pont himself. This usually occurred during the first week of July. The farm crew would then mow the beds with large sickle-bar mowers. The resulting grass and hay would be raked, baled, and finally used as bedding material in the dairy barns.

fertilizing and dividing

Daffodils must be fertilized regularly to maintain active growth and consistent bloom. At Winterthur the daffodils on the golf course were fertilized regularly along with the fairways. A special 5-10-5 fertilizer was manufactured in New Jersey for use on the golf course. Bone meal was also frequently used to fertilize all of the bulbs at Winterthur. The notations in the garden diary indicate that bone meal was often applied in late November along with a thin coating of well-rotted manure from the dairy operations.

When it became necessary to divide a daffodil bed, the bulbs would be dug, beginning in July. In some areas the soil was so hard and dry that the work could only be accomplished during three- or four-day stretches following heavy rains. On the rainy days the bulbs would be cleaned. They were placed in carefully-labeled, two-handled wooden flats and stored in the old soil house which was dark and cool and provided an ideal location to hold the bulbs until the planting began in the fall.

A bed that originally had been planted with a few hundred to one thousand bulbs, would produce several thousand bulbs when divided. It was through this process that the daffodil plantings were expanded year by year. In the early 1960s, for example, 50,000 narcissus bulbs were planted on the slopes of the main drive when the new visitors' entrance and the Pavilion were constructed.

During his lifetime, du Pont evaluated hundreds of new plants every year. The same procedures were applied to all types of plants from the daffodils to trees and shrubs. New bulbs would be acquired in small quantities and grown for a minimum of three years in the nursery. There was a plot 10 ft. wide and 100 ft. long devoted solely to daffodils. In addition to being critical about flower color, du Pont also looked for daffodils that had good stiff stems and flowers that would stand up in all types of weather and would continue to bloom and thrive in the grass year after year.

Not all garden varieties of daffodils will thrive under the rigorous conditions that naturalized bulbs must endure. In his book, *Winterthur in Bloom,* Harold Bruce mentions several cultivars that have performed well at Winterthur over the years: 'Emperor,' a medium yellow trumpet; "Beersheba,' a white trumpet; the large-cupped cream and orange 'Dick Wellband' and 'Franciscus Drake'; the red and white short-cupped 'Firetail'; the yellow jonquil hybrid 'Trevithian'; and the white, red-eyed poet's narcissus or pheasant's eye, *Narcissus poeticus.*

Another way to determine the enduring success of specific daffodil cultivars is to compare early garden notes and articles to current plant records. By doing so, we find that the cultivars 'Blackwell,' 'Her Grace,' and 'Madame De Graaf,' which du Pont recommended in an article he wrote in 1929, continued to appear in a 1975 list of 64 narcissus species and cultivars that could be found in the main gardens at Winterthur.

The original daffodil plantings at Winterthur from "bank to bend" were expanded on a grand scale to other areas of the property over a 70-year period. The general precepts that guided this development can be extended to gardening on any scale. The use of plants in groups or masses of single varieties, the preservation and utilization of existing trees and terrain, and the meticulous blending of colors all work together as part of the "art concealing art" which makes the Winterthur Gardens an educational laboratory and a visual delight at all seasons.

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Phil Correll is the coordinator of Gardens Education Programs at Winterthur Museum and Gardens. He is a graduate of the Longwood Program in Ornamental Horticulture at the University of Delaware.

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Does the Computer Have a Role in Gardening? See page 3.

THE green scene

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Front cover: Perennial foxglove *(Digitalis ambigua),* lupines and delphinium in the Maine garden. Houseplants are outside in the garden back in Philadelphia.
photo by Peggy Bowditch

Back cover: photo by Joanne Tinney

Woe, Oh Woe. We Goofed.

We regret that the Wilmington Garden Center was incorrectly identified in the title of the story about their Rare Plant Auction in the March issue of *Green Scene.* The correct spelling for the names of two auction chairs is Helen Detchon (1981 & 1982 Chair) and Kathryn Andersen (1983 Co-chair).

Bonnie J. S. Day graduated from the University of Delaware.

Jean Byrne, Editor

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MAYFLOWER:

Collecting Trailing Arbutus from Seed

by John and Janet Gyer

The first flush of wildflowers in the New Jersey woods entices us for long walks to welcome old friends from their winter's slumber and to see if new residents have arrived. The mayflower, or trailing arbutus *(Epigaea repens)*, is one of the old friends that we annually watch develop from bud to bloom to seed and, in the fall, back to bud again.

We began a careful watch of trailing arbutus several years ago when we wanted to collect seed for the International Seed Exchange of the American Rock Garden Society and to start new plants for friends who "had not seen trailing arbutus since childhood." As we watched the development of arbutus we learned much of what follows.

Trailing arbutus is a shrub that has predominantly male, or pollen bearing blossoms, on one plant and female, or seed producing flowers, on another. The male blooms are larger and tend to be deeper pink than the female. In both, the reproductive apparatus (anthers for the male and stigma for the female) are protected by hairs in the throat of the flower. (See photos.) In the male flowers, the female parts, a reduced stigma, style and vestigial ovary, are present but not functional. Substantial filaments raise the enlarged anthers just far enough into the throat to dust the beaks of bee flies with pollen. In the female bloom the filaments and anthers are reduced to thin white stumps at the bottom of the flower tube. The ovary is enlarged and the style carries the lobed, sticky stigma high enough in the throat to snatch pollen from a bee fly's beak as it begins to search for nectar.

We were surprised to see that most trailing arbutus are not pollinated by bees, but by a species of fly that mimics

continued

Mature trailing arbutus plant on a moss bank in a New Jersey woods

photos by John Gyer

bumblebees. These bee flies *(Bombylius major)* are sometimes called hover flies because of their habit of hanging stationary in space as they look for food or signs of a bee nest to parasitize. Bee flies have furry oval bodies about ¼ in. long, and a beak about as long as the body. They spend most of their life cycle as parasites in bee nests, but emerge in spring as adults to do their thing for their species and several wildflowers as well.

Gardeners can be more efficient. A toothpick can substitute for a bee fly's beak. Pollen scraped from the anthers of one male flower can be touched to the stigmas of nearly every open flower in a female cluster.

We watched last spring as three bee flies hovered and thrust their beaks into arbutus blossoms. They seemed random in their visits and seed set was poor. Gardeners can be more efficient. A toothpick can substitute for a bee fly's beak. Pollen scraped from the anthers of one male flower can be touched to the stigmas of nearly every open flower in a female cluster. Since not all flowers in a cluster open at once, this toothpick pollination should be done about every other day.

Arbutus fruits expand rapidly into little capsules. By the end of May these capsules will begin to split open. This happens while the capsules are still green so that a careful watch is necessary to beat the ants to the seed. One year the arbutus seed pods were not ripe when we went away for four days over Memorial Day weekend. When we returned, three-quarters of the little strawberry-like fruit had already been eaten.

Ants are attracted by the exposure of any of the sweet white pulp. As ants begin to tear the pulp and carry it away, they also scatter the seeds that lie as a fine brown crust on its surface. These ant-scattered seeds are "planted" as soon as they are ripe. Although we have seen seedling arbutus growing with several moss species, the best growth is with the moss types that inhabit infertile, rather barren ground. These retain their low stature so that the seedlings are not smothered.

In the garden a mossy bank can be simulated by scattering a few crushed moss plants or spores over an infertile soil in a clay bulb pan sunk to its rim in soil and covered by a window screen for shade and to prevent rain splash. If this is prepared in early spring, fresh seed can be sown as soon as it ripens. After the seedlings have grown, they can be planted into the garden in a sterile and acid soil, i.e., a fine sand mixed with a very well composted oak leaf humus. Then young plants should appear and develop into mature mats to grace the garden like the wild specimen graces its mossy hummock.

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For seventeen years John and Janet's Gyer's wildflower garden has been in the beginning stages, slowly settling in as they find propagating methods and sites suited to their favorite plants.

SOURCES

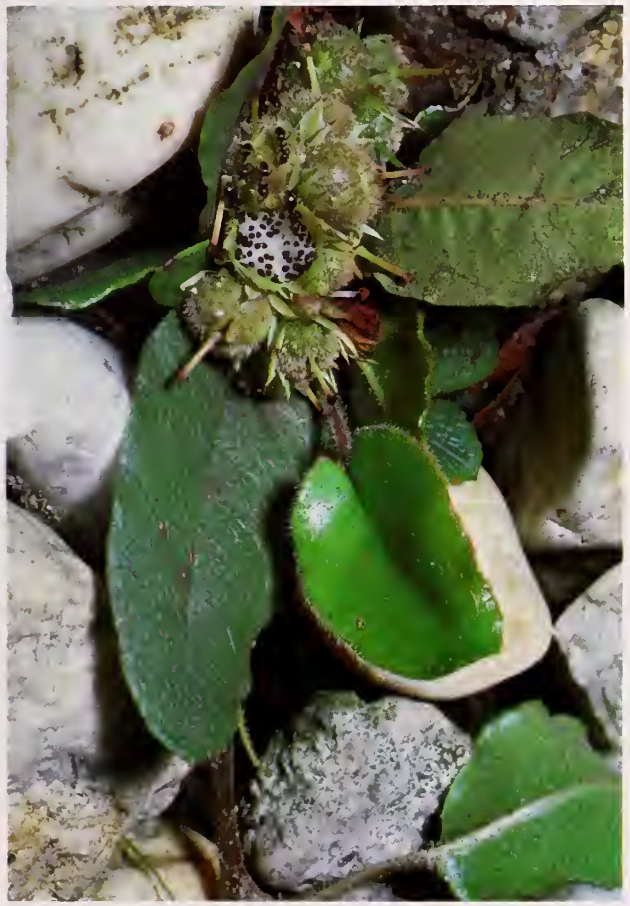
Many wildflower nurseries offer trailing arbutus plants commercially dug from wild populations. These plants are unlikely to survive the extreme trauma of transplanting. Even if they do survive, there is no guarantee that the plants will have desirable horticultural characteristics. It is much better to buy from nurseries that propagate good forms from their own plants. Even though propagated plants are more likely to survive than transplants from the wild, one nursery cautions that the garden must have the proper habitat or the gardener will have no luck growing trailng arbutus. Proper habitat for trailing arbutus is defined as partial shade (two hours of afternoon sun) over very light acid soil that should be kept moist during the first growing season. Trailing arbutus seed is not commercially available, but it occasionally appears in the seed exchanges of such organizations as the American Rock Garden Society (American Rock Garden Society, Donald Peach, Secretary, Route 1, Box 282, Mena, AR 71953). These seed exchanges, however, are available only to members of the sponsoring organization. The plants sold by the outlets listed here come from suppliers who grew them from seed:

Waterloo Gardens
136 Lancaster Ave.
Devon, PA
293-0800
and
200 N. Whitford Road
Exton, PA
363-0800

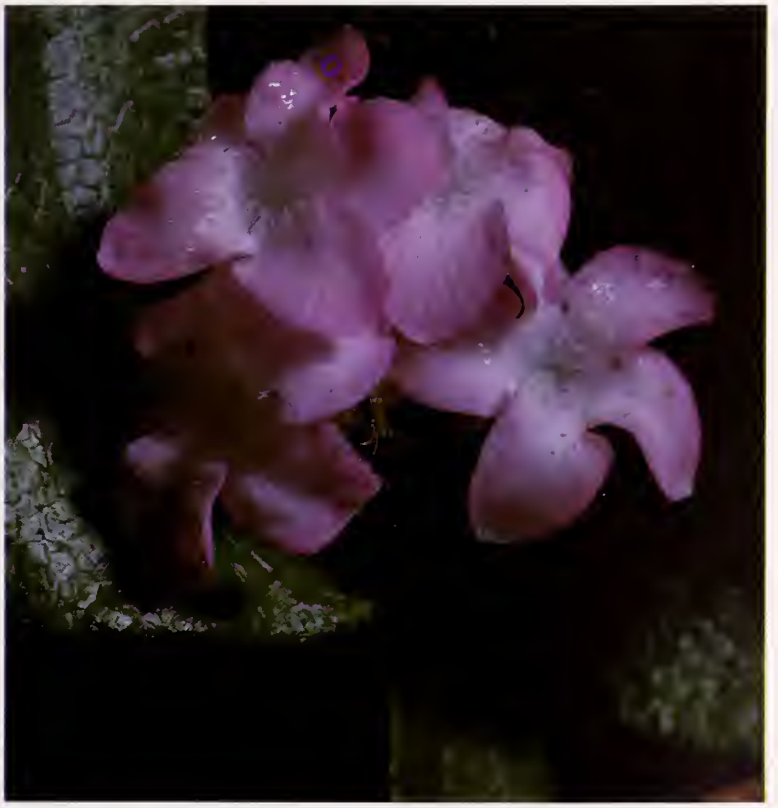
Snipes Farm and Nursery
U.S. 1 at Route 13
Morrisville, PA
295-1138

Weston Nurseries
Hopkinton, MA 01748

Section through male (left) and female (right) trailing arbutus blossoms.



Ants feasting on a ripe arbutus seed capsule



The mayflower, trailing arbutus

The Green Corner:
an exceptional place

by Mimi Cohen

A student has just potted a cutting and checks the drainage hole covered with filter paper to keep the soil in and let the water out.

In three short years, horticulture has improved the quality of the lives of a group of exceptional children in the Lower Merion School District. This shift has amply demonstrated the suitability of horticulture therapy in the special education setting.

I started the Green Corner in 1979 as a pilot horticulture program aimed at helping special education students to overcome some of the problems that keep them from learning in a conventional classroom. The setting is a converted classroom, using long tables instead of desks and growth lights to supplement natural light; the program accommodates 75 exceptional students meeting twice a week. Included in the group are 10 high school special students (ages from 16 to 21), who participate jointly in a food service and horticulture program.

Problems of starting a program such as ours have proved to be challenging for both students and teacher alike. For students the term exceptional is apt because their varied disabilities present them with exceptional obstacles for developing a positive sense of self, especially in relation to learning. For the educator the challenge is no less imposing: how to create a successful experience for students who have seldom achieved in the classroom. Developing relevant activities that hold interest and impart information has been fundamental to the program's success.

In designing the Green Corner curriculum, I was guided by three basic goals: to teach new skills, reinforce course work and to raise self-esteem. In practice these goals represent a single process.

What makes horticulture so valuable as a therapuetic and teaching tool? The answer lies in its hands-on nature which, in a highly structured program, teaches by doing. Plants are touchable, and the results of work with plants are tangible. The fascination for newly acquired information about the world around them produces pleasure for students, as can be seen in their smiling faces when a plant they have cared for thrives, blooms and sometimes produces fruit. In their worlds, where theory almost always is incomprehensible, horticulture offers the basic lesson of cause and effect.

In the Green Corner each student

learns four basic skills necessary for a successful introduction to horticulture in a sequence that follows the natural flow of plant growth. These skills are taught entirely through demonstration and student experiments. Text books are not used, a distinct advantage when teaching children who have difficulty reading. Beginning with mixing soil, the students learn to recognize the three P's: peat moss, potting soil and perlite. By taking turns at measuring the mix of ingredients, students reinforce their math and word skills.

propagating

The students learn to propagate by making stem cuttings, leaf cuttings and runners nurtured in greenhouses they construct from milk cartons and plastic bags. Satellite photographs and weather forecasters could not more effectively illustrate the concepts of humidity and the rain cycle than these greenhouses. As one child proudly explained recently to a reporter from the *Philadelphia Inquirer,* "The water zaporates and runs down the plastic bag and wets the soil."

Next the students learn to germinate seeds. In margarine tubs and egg cartons containing vermiculite they plant the corn seeds that have germinated in wet paper towels, marking the progress by drawings and by pasting a duplicate seed in their personal seed book. No longer must they be urged to visit their plants because like a magnet the growth of the green shoots draws them to the Green Corner. As each plant assumes a recognizable form, they count each leaf, measure each stem, coddle and cajole the plants to hurry and grow up. In short, they identify the plant as their own accomplishment. At the end of the school year the plants are taken home to continue growing on a sunny windowsill or in the garden.

Finally, students are taught how to pot and transplant cuttings and seedlings. Their excitement at this stage is palpable; often for the first time they possess knowledge and skills and have applied them with predictable results. In many cases they have even learned to accept small failures on the way to larger successes. They have gained confidence.

trying more new tasks

With their new confidence and skills, the students are introduced to other horticultural tasks such as hydroponic gardening, growing cotton and sugar cane and air layering.

Our first hydroponic system was crude but still allowed us to grow plants in nutrient-enriched water. Later, we purchased a horizontal pipe fitted with seven black sleeves and yellow mesh inserts, which the students promptly dubbed *The Monster.* Using growth lights, the students have produced vegetables such as tomatoes, peppers and eggplant, year-round in a medium other than soil. *The Monster* also prompted some excellent discussions about nutrition, soil and the global problem of diminishing land supply. This is one example of how their horticultural activities stimulated their interest in academic subjects, reinforcing course work in the process.

Another example of how interest in learning is reinforced was our project to grow cotton and sugar cane. When the cotton, which was started from seed, grew and finally opened the students were enthusiastic. They proceeded to separate the cotton, pulling out the seeds, surprised to find they were a

continued

photos by Myrna Ludwig, courtesy *Philadelphia Inquirer*

Mimi Cohen explains to her students how the prolific succulent "mother of thousands" plant reproduces. The seedlings drop from the mother leaf, root in the soil and begin a new life on their own.

The children work with the Monster, a hydroponic apparatus for growing vegetables year round.

Children work outside planting bulbs.

photos by Mimi Cohen

Teaching assistant Rosemarie Carson supervises students as they roll excess moisture from paper they made in class.

duplicate of the seeds they had planted. We then could discuss how cotton was made into cloth, could produce other products and its importance to the early history of this country. Our sugar cane is still growing, but when it is somewhat taller, we plan to extract juice and make sugar. Because cotton and sugar cane are crops not grown in Pennsylvania, these projects helped the students understand the different environments necessary to supply some of life's necessities.

Sometimes other projects spontaneously evolve. When another teacher brought us a very sad looking overgrown plant, I suggested that the only thing we could do with it was to air layer it. Now air-layering is not something the average child might do, but after a few demonstrations, some trial and error, the students became proficient at it. So proficient that the students immediately prescribe air-layering for every bedraggled plant that comes into our room.

When the National Arboretum started its project to exchange seeds with Japanese school children, the classes decided to collect dogwood seeds to send to Japan in exchange for the seeds of cherry trees. First we identified the dogwood trees and collected the seeds. Then we spent time studying Japanese culture, history and geography. Finally, the class wrote to the Japanese children asking them to write back in return.

winners at the junior flower show

Two of the Green Corner activities of which I am especially proud were the entries in the PHS Junior Flower Show. Our award winning first entry in 1981 was an exhibit demonstrating paper (plain, starch finish, wax) made in the classroom from wood pulp. Our entry for 1982 was even more outstanding. Entitled, "A Day on the Desert," it depicted the interaction of plants, animals and the desert on an elaborately constructed 12 ft. tableau. As preparation, the class studied the desert, learning what life exists and how it adapts to an arid environment. The children designed the setting, showing their cacti grown in class from cuttings against a mountain background. Replicas of small desert animals and reptiles appeared from around rocks stalking their prey. Signs describing the food chain and identifying the plants and animals were made by the students. This exhibit was awarded "Best of Show, First Overall" in the education division.

While our entries were in the education category, it must be emphasized that the Green Corner received no special consideration and therefore, their accomplishment is truly significant since they competed against elementary and high schools from the entire Philadelphia metropolitan area.

"In a world that the impaired child knows to be judgmental, plants are non-threatening, non-discriminatory, responding only to the care given them regardless of the race, intellect or physical capacities of the gardener."

No program of this sort exists in isolation. An important factor in the success of the Green Corner has been the Garden Club of Bala Cynwyd, Pennsylvania. From the program's inception, its members have provided us with materials, gifts and moral support. At the end of each school year they present each student with a Green Thumb Award, represented by a green silk ribbon emblazoned with a gold seal. Positive reinforcement for a job well done.

On a personal note, the Green Corner has been especially challenging and rewarding to me. As the mother of three sons, I can relate to these children as they struggle with the normally difficult problems of growing up. As a teacher there is the need to be innovative in devising ways to circumvent the unique learning problems of such special children. As a nurse, my training has been to care and aid. Obviously, as a horticulturist, a great love for the growth and care of plants exists. I have drawn from the experiences of each part of my life in order to fashion a different approach to learning for these students, convinced that every child learns differently, that each child is special.

Victories are small and yet significant in the Green Corner. When a school official visited us, one of my students eagerly tugged him about the room to tour the plants, and upon reaching his own, told the administrator: "Mister, everyone says begonias don't bloom in the winter, but look at mine." There on the windowsill was his begonia, grown from a cutting and full of blooms. This was a big victory. One student had discovered enough confidence to exhibit his own accomplishment boldly.

We are happy to have people visit us in the classroom. The children themselves are capable guides, anxious to exhibit their achievements. I would like to think the Green Corner program is not unique to public education in general or special education in particular. Hands-on horticulture is a valuable adjunct to any school program and is an excellent early exposure to what for so many becomes a lifelong enjoyment, if not real vocational training. It is easily adaptable to various age and experience levels. For the exceptional student, it provides a setting in which he or she can take significant steps toward self-confidence and educational achievement. As Charles A. Lewis of the Morton Arboretum has said, "In a world that the impaired child knows to be judgmental, plants are non-threatening, non-discriminatory, responding only to the care given them regardless of the race, intellect or physical capacities of the gardener."

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Mimi Cohen is a special education teacher. She directs the horticulture program in the Lower Merion School District. She has received her masters degree in Special Education and is a registered horticulture therapist. At present she is writing a teachers' manual for the Pennsylvania Department of Education explaining how horticulture can be adapted as a tool in the educational process in schools throughout Pennsylvania.

GARDENING IN PHILADELPHIA & MAINE:

A Horticultural Balancing Act

by Peggy Bowditch

winding down in philadelphia

I enjoy having lots of house plants, a spring garden with bulbs and perennials, a vegetable garden and summer flower beds. That's not unusual for an avid gardener except that my spring and summer gardens are 600 miles apart. Over the years I've learned a bit about managing home and vacation gardens.

In Philadelphia, after all danger of frost, I move my house plants to an outside porch. They are repotted as necessary, using clay pots. After acclimating them to the outdoors I put them in beds in the exposure they require: most succulents in full sun, begonias and gesneriads in a semi-shaded area and ferns in indirect light. I dig holes and sink the pots into the soil up to their rims. They'll get water from occasional sprinklings, from rain and by absorption of soil moisture through the porous clay pots. I mix slow-release fertilizer into the upper layer of soil in each pot. Gradually rain and sprinkler water will dissolve it to fertilize the plants over the summer. The whole area is then mulched with compost or woodchips to keep down weeds and to prevent the soil from drying out. More than 100 plants are tucked in but many are miniatures and don't take much space. A few special treasures and all hanging baskets go to a friend for tender loving care.

After the house plants are settled I attend to the rest of the garden. Chrysanthemums are pinched back to force branching so that I'll have a good show of bloom in the fall. Many of the shrubs in our yard belong to the Ericaceae family, mostly azaleas, rhododendrons, pieris and laurel. All have finished blooming by the time I leave and can be pruned back if necessary. In late fall or early spring I apply an acid-based fertilizer. In June a new layer of an organic mulch is added to discourage weeds, keep soil moist and roots cool. As these plants are shallow rooted, I find it's important to give them this extra care. Other types of shrubs are pruned as necessary.

I hang a white tag on any recently planted shrubs and trees so they'll get more frequent watering if needed. Taking this extra care for the first couple of summers lowers the mortality rate considerably. Lawns, beds, trees and shrubs are watered only during hot or dry spells. My husband attends to the watering, hedge pruning and grass cutting chores over the summer as his vacation time is much less generous than mine.

starting in maine

Late in June I leave for 10 weeks in Maine. I arrive to find a flourishing crop of weeds and the perennials half grown, the taller ones tottering without stakes. But flowers must wait until the vegetable

continued

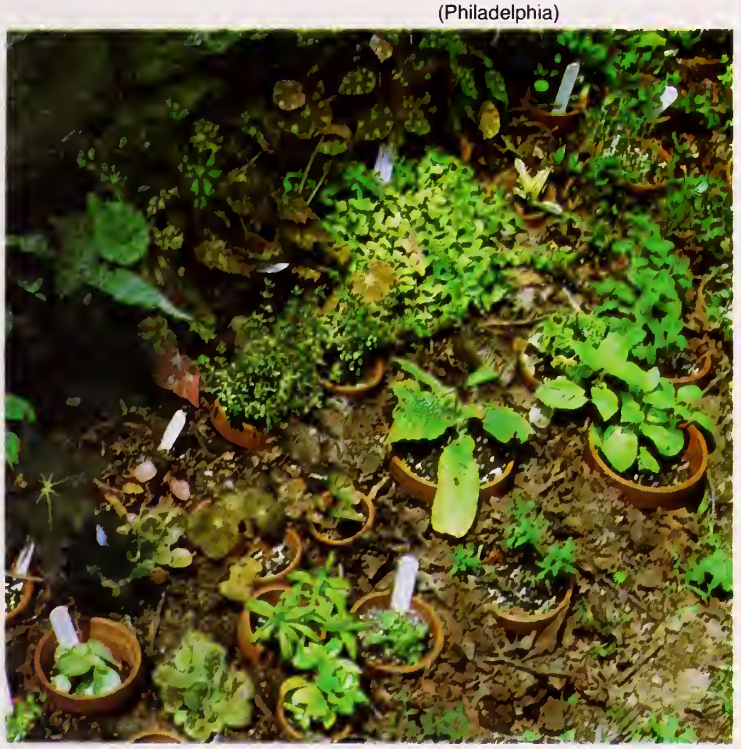
GARDENING SCHEDULE FOR TWO GARDENS 600 MILES APART

PHILADELPHIA	
Early spring (late March - early April)	Fertilize rhododendrons & azaleas with acid based fertilizer (or fertilize in late fall instead).
	Start tuberous begonia bulbs for Maine garden: one salmon/yellow pendulous begonia, one small yellow multiflora 'Helene Harms.' As growth starts, take stem cuttings for extra plants.
Mid-May (after danger of frost)	Move houseplants to outside porch to acclimate; repot if necessary.
Late May	Dig holes for house plants in area with proper exposure. Top dress with slow release fertilizer, and mulch house plant and garden beds.
Early June	Continue pinching back chrysanthemums through end of June.
	Apply organic mulch to azaleas and rhododendrons. Prune azaleas and rhododendrons (if needed) after bloom.
Mid-June	Tag newly planted trees and shrubs with special watering instructions.
Through summer	Someone will water, cut grass and prune hedge.
Fall	Bring house plants inside.
	Let tuberous begonias go dormant for winter.

MAINE	
Late June	**Vegetables** Vegetable garden has already been rototilled.
	Sow seeds of green beans, beets, lettuce and chard; buy peat pots with seedling squash and cucumbers; buy market packs of broccoli and cauliflower.
	Flowers Plant tuberous begonias I've bought into garden or containers.
	Buy market packs of lobelia and other annuals as available.
	Replace perennials if necessary.
Through July & August	Stake, deadhead, fertilize, weed, mulch. Watch for and treat pest and disease problems.
Sequence of Bloom of Key Perennials	
Late June	oriental poppy 'Helen Elizabeth'
Early - mid-July	white lupine, delphinium
Mid - late July	shasta daisy
Early - mid-August	heliopsis, monkshood
Mid - late August	phlox
Early Sept.	**Putting the Garden to Bed** Pull out annuals; cut off remaining blossoms on perennials so they don't go to seed; add more mulch to flower beds.
	Bring home tuberous begonias.
Late fall	After frost, our caretaker will cover flower beds with evergreen boughs for winter protection.

Tuberous begonia thrives in a basket in the cool Maine summer.

A few of the house plants tucked into bed for 10 weeks without further care from their author. (Philadelphia)



photos by Peggy Bowditch

Heliopsis and monkshood are the mainstays of the garden in August. (Maine)

GARDENING IN PHILADELPHIA & MAINE:

continued

garden is underway. It has been rototilled and is ready for planting. I bring seeds with me to save time. I've learned by observation and experience which varieties grow well in a coastal Maine garden. Given my 10-week time limit and the cool climate I eliminate the slower growing crops and the heat-loving tomatoes, peppers and eggplant. With luck I'll get a crop or two of green beans, beets and swiss chard. It's too late to try spinach but most lettuce grows well all summer long without bolting. At a nearby garden center I buy squash and cucumbers in peat pots and try broccoli and cauliflower transplants as well. Local garden shops carry plants known to do well in the area. I find that local outlets of national chain stores sometimes carry things not suited to our conditions.

Flowers are the next item. By the end of June local garden center stocks are often depleted. Plans must be revised rapidly and flexibility is important. After some initial disappointment I often find the substitutes do as well as or better than I'd planned.

Plants that thrive in Maine's long summer days and cool nights include lobelia, nasturtiums and tuberous begonias. As the begonias are expensive to replace each summer, I hold on to a couple of tried and true favorites. A handsome yellow and salmon hanging basket plant is carried to Philadelphia each fall and kept dormant over the winter. It's started up in spring and is brought back to Maine for the summer. A small yellow multiflora, *Begonia* 'Helene Harms,' receives the same treatment. Each spring I take stem cuttings so that I have extra plants as well.

Once the annuals are planted in the garden and in containers and a few perennials replaced, garden maintenance is much the same as it is elsewhere. Staking, deadheading, fertilizing, weeding, mulching and watching for pest and disease problems are routine. Just as the flowers and vegetables that grow well there differ from Philadelphia choices so, too, are the weeds different. Chickweed definitely prefers the Maine climate and pops up all over my garden. In Philadelphia I find a bit of chickweed in spring and fall but it's hardly the menace I struggle with in Maine.

Succession of bloom in the perennial garden tells me the month if not the week. Late in June the oriental poppy, 'Helen Elizabeth' *(Papàver orientale),* casts its peachy glow next to the white lupines. Blue spikes of delphinium abound in July with shasta daisies coming along below. August brings heliopsis and monkshood. Late in the summer, when the pinks and whites of the phlox begin to fade, I know it's time to put the garden to bed. I pull out annuals and cut off the remaining perennial blossoms to make sure they won't go to seed. More mulch is added. Later in the year our caretaker will cover the beds with evergreen boughs for winter protection. I give away the containers of annuals, which can provide another month of bloom. The vegetable garden is picked and mulched with some crops left for neighbors to enjoy.

If I were able to get to Maine in spring and again in the fall I'd have more scope, especially in the vegetable garden. Earlier planting would mean earlier harvests and greater choice of crops. And I'd have time to take better care of my raspberries, which are a real disgrace. But I can hardly complain about a 10-week vacation. Being able to have some vegetables and a great many flowers makes the planting well worth the effort.

Labor Day weekend finds us on the road to Philadelphia. It's a 13-hour drive, and I pass part of the time planning improvements to next year's Maine garden. When we arrive home I rush to see how all those house plants have fared in my absence. Another yearly gardening cycle begins.

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Peggy Bowditch is an instructor in the Horticultural Department at Temple University, a teacher in several adult education programs and a garden club lecturer. She is a frequent exhibitor and award winner at the Philadelphia Flower Show and is a member of the PHS Council.

House plants on porch awaiting repotting after summer hiatus in the garden. (Philadelphia)

Horticultural Hazards

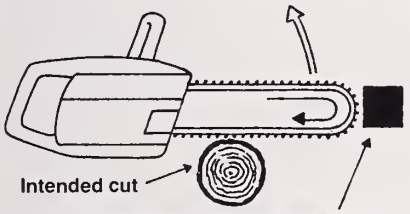
by Howard J. Holden

Gardening requires a great deal of care, not only of the garden but also of the gardener. Oftentimes, the enthusiastic gardener is tempted to overlook his own well-being for the sake of his plants. The tools and materials of horticulture, however, can be hazardous if used carelessly.

The **lawn mower** causes most horticulturally related accidents, mainly when the operator unclogs the discharge shoot while the mower is still running. Other calamities occur when mowing in barefeet or sneakers, mowing with children in the yard, mowing slopes up and down instead of sideways, mowing wet grass, refueling a hot mower, and neglecting to clear the lawn of debris. *The New England Journal of Medicine* has recently assigned another malady to the mower called lawn mower arm. This befalls the operator when the starter cord jams midway through the pull, causing a burning pain in the forearm that lasts several hours. The physician author suggests that the best therapy is to keep mowing the grass.

Lawn mowers manufactured for home use after June 30, 1982 are required to have three second blade brakes. This should help reduce the growing number of lawn mower accidents, but it will not compensate for carelessness.

The **chain saw** has recently become more popular because it is now smaller



Stationary obstacle here can kick saw up and back toward operator.

and less expensive. Concurrently, the number of chain saw accidents has doubled. The bulk of serious accidents are due to kickback. This happens when the blade tip comes too close to something other than what it being cut. This can kick the saw up and back toward the operator faster than he can react. So far, there are no mandatory regulations to make chain saws safer, but some models are equipped with chain brakes that stop the chain instantly should kickback occur.

Some basic chain saw safety rules are:

- Wear goggles, hearing protectors, and stout shoes.
- Don't wear loose clothing.
- Start the saw on firm ground and plant your feet firmly.
- Grip the saw with both hands, keeping the left elbow straight, and place yourself well to the left of the saw's path. Check the manual for correct position.
- Cut with a full throttle to avoid binding.
- Don't cut above shoulder height.
- Carry the saw carefully with the engine stopped, guidebar and chain pointed behind you, and the muffler away from the body.
- Keep the saw in good running condition.
- Take frequent breaks. The sound and vibration of a chain saw can bring on fatigue sooner than most power tools.

The **electric hedge clipper** possesses a twofold potential for danger. First, fingers are often sliced because both hands are not kept on the machine. Newer models include two handles and safety on/off switches to encourage the operator to keep hands out of danger. Secondly, a severed power cord exposes the operator to electrical shock, the severity of which increases if the operator is standing in wet grass. More electrical accidents occur outside the house than in.

photo by Howard Holden

Horticultural safety devices from top left: rubber gloves, dust mask, goggles, safety glasses, respirator, hearing protector.

The dust generated by various horticultural materials is an often overlooked peril. An occupational disease of people working with plants, *Sporotrichosis,* results from inhaling a saprophytic fungus associated with soil, peat moss, and decaying vegetation. Wearing a simple particle mask when working with dusty organic matter will protect the gardener from this respiratory ailment. Also, breathing the dust of inorganic materials such a perlite, vermiculite, lime, and chemical fertilizer should be avoided. *Sporotrichosis* can cause skin irritation when the fungus enters wounds. This is treated with oral doses of potassium iodide. People who work with sphagnum moss particularly should wash their hands often and dress wounds properly.

Tetanus, or lockjaw, can be picked up from soil rich in organic matter. This often fatal disease can enter the body through a mere puncture or cut. Since most gardeners shed blood now and then, and since the bacillus is likely to be in almost any soil an immunizing tetanus shot is recommended unless you've had the primary series of childhood injections. John Trevi, a spokesman for the Philadelphia County Medical Society, agrees that it is a sensible precaution and should be discussed with your physician; if you've had an initial tetanus shot, a 10 year follow-up booster shot is recommended.

The large array of **pesticides** available today is indeed a serious threat to the gardener. Some insecticides are designed to attack an insect's nervous system. Misused, they can attack the human nervous system as well. Herbicides are designed to alter plant tissue, but it is known these chemicals will also alter animal tissue. Even fungicides can be toxic to man. Therefore, pesticides should be treated as poisons. They should not contact the skin or be inhaled. They should be locked up and stored out of children's reach. Always read the label *before* using, handle carefully, measure accurately, and apply properly.

Failure to keep track of **tools** can become a dangerous habit. Keeping a mental inventory of the tools used on each job will prevent someone else from stumbling upon them later.

Then there are those times when you find yourself reaching on a **ladder** that isn't quite high enough, or wrestling with a **too heavy root ball.** We should develop patience at such times, an attribute that is necessary for good gardening anyway.

As James and Louise Bush-Brown have understandingly stated in *America's Garden Book,* ". . . the gardener should possess something of the creative, bouyant spirit of the artist, the eager, inquiring mind of the scientist, and the skillful hands and diligent zeal of the craftsman." I suggest the gardener also possess a steadfast concern for safety.

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Howard Holden is superintendent/horticulturist of Chanticleer, a private estate in Wayne. He is a frequent contributor to *Green Scene.*

Scavenging for Body & Soul Along the Railroad Tracks

by Carolyn Waite

photos by Joanne Tinney

Cape May Court House resident Elizabeth Tinney starts scavenging early in life. Finds: daisies, asters and squash. Elizabeth is the author's grandchild and is quite safe since only two trains a day for commuters run on this line.

In Stone Harbor, New Jersey, the largess of the sea is well known to all. Strolling the tide line on the beach yields shells and driftwood, treasures to be stored away. Free for the catching are fish, crab, mussels, and even the seaweed itself to be tossed into the steam pot with little necks to add delicate, elusive flavoring. These seaside pastimes are popular diversions, but I would like to acquaint you with another wealth of South Jersey treasures due west of the beaches and salt marsh. The cost is only time; the yield, hours of pleasure.

My daughter, Joanne, a year-round resident of Cape May Court House, introduced me to a new kind of scavenging. Four miles inland of Stone Harbor, paralleling historic Route 9,* stretching from Ocean City, terminating in Cape May, runs a one track railroad. The only traffic is a tiny train chugging by at 6 am and back at 6 pm transporting a few hearty commuters. Banding both sides of this track in Cape May Court House in six-foot swaths is nature's bounty at its best. In the spring we have cut asparagus as it grows its daily inch. Following that crop came wild strawberries, enough fruit to not only nibble warm and juicy from the vine, but also to put up as preserves. One picking and one evening's work produced three dozen jars already glistening like red Christmas jewels when we added ribbon and a sprig of holly in December. Blackberries followed on the heels of strawberries. Mother Nature's succession planting is without fault. As I was picking blackberries for pies I could see the green huckleberries forming and knew that our jelly making would continue throughout the summer.

Butterfly weed, an all summer bloomer, is also known as Railroad Annie or iron root, a most descriptive name as I had to dig three feet in poor, hard soil to transplant this orange beauty.

Food for the body is not all that grows on the tracks. Food for the soul is there, too. Wildflowers are rampant, nodding dewy heads in the early morning breeze. Phlox, butterfly weed, Queen Anne's lace have been planted indiscriminately by the wind, tiny animals, and birds on the wing. Great armsful of flowers are there for the taking or digging. Butterfly weed, an all summer bloomer, is also known as Railroad Annie or iron root, a

*Site of Leaming's Run Botanical Garden. See *Green Scene*, Sept. 80, Vol. 9, No. 1, page 14.

These beach plums will make an excellent jelly or syrup for pouring over ice cream.

most descriptive name as I had to dig three feet in poor, hard soil to transplant this orange beauty. Wild carrot and yarrow spread their Victorian lace tablecloth over the greenery, and the air is perfumed as we brush by clumps of bayberry.

We have harvested all this bounty in the space of a city block so lush that you would never know we had been there. When we tire of picking, we visit an old graveyard bordering the tracks. It lends a sense of history and we enjoy reading the stones marking graves from the 1600s.

Consider the change of enjoying a countrified, seashore day gathering yarrow and field weeds for dried fall bouquets. This inland compass point is as generous with its gifts as the sea itself.

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Carolyn Waite is a member of Huntingdon Valley Garden Club and Greene Countrie Garden Club. She chaired the niche section in the competitive class at the 1983 Philadelphia Flower Show and is working toward her accreditation as an arrangement judge, Garden Club of America. At present she is studying watercolor painting with Pearl Slobodian.

Stalking the wild strawberry along the railroad tracks. Yield: 24 jars of strawberry preserves.

GROWING GOURDS FOR

photos by Ted Kiefer

Joey doesn't seem to mind gourds taking over his monkey bars.

Freshly painted gourds drying in dogwood tree. Bright colors have proven attractive to wrens.

BIRDHOUSES

by Lorraine Kiefer

growing the gourds

Birdhouse gourds are practical, easy to grow and fun to have in the garden. My interest in birds and natural crafts motivated me to start growing them many years ago. Once the gourds dried and were hollowed out, I found myself with several shoe boxes filled with gourd seeds. I offered them free on a radio program and they were immediately snapped up.

The gourd birdhouses make thoughtful gifts for bird loving friends.

Although the plants can be started indoors about a month before the last frost date, I usually sow my gourd seeds directly in warm soil. A warm weather plant, they should follow tomatoes and beans on the planting calendar. Like pumpkins and melons these plants need space and good rich soil. I use soil that has been filled with lots of compost and very well rotted manure. Full sun and water during the growing season are all that are needed to produce a good crop. A good mulch applied around the base of the plants when they are about 5 in. - 6 in. high is the best insurance for a really good crop. They can be planted in rows, hills, or near a fence or trellis. Some people let gourds climb, while others allow them to spread. If allowed to spread, they do best with a thin salt hay mulch. It keeps the fruit from sitting in soggy soil. A unique crop of gourds grew over two stories high the year my sons planted seeds at the base of my parents' tall television tower. This is exceptional growth, but was encouraged by heavy fertilizing and ample watering, as well as a mulch.

The gourds grow without much problem all summer; the fruit is produced after an attractive white flower fades. Lush green foliage and graceful tendrils make the plant a great cover for bare spots, unsightly fences or walls, and even on problem hillsides.

The small fruits are light green in color and often hard to spot at first. While they are increasing in size, interest mounts as we check to see just how large the gourds will be. Supplementary applications of a good garden fertilizer such as 5-10-5 or even a tomato fertilizer will work. Do not use a high nitrogen fertilizer as it will only encourage jungle-like growth and very little fruit.

I watch the gourds carefully at the end of the summer and only pick those with stems that have browned or shriveled. If the stem is healthy and green, the gourd can continue to grow right up to the frost date. Although mine have sometimes been tinged with a very light frost, they are never allowed to freeze.

Cut the gourd from the vine, leaving at least 2 in. of stem or more if possible. This may be done before frost if the weather seems to be causing the fruit to spoil. Wash the gourd with a solution of bleach or lysol and water, and dry it well. It will need about three months to cure and dry before you can drill a hole in it and paint it. Do not puncture the gourd before it is dry as that might allow bacteria to enter and cause decay.

We have dried gourds in the attic on newspapers or hung them by the stems in the shed. Often an exterior coat of mildew appears on the gourd as it dries. That is a part of the natural drying process and does not harm the gourd. It can be sanded off with steel wool before painting the gourd. Always check the

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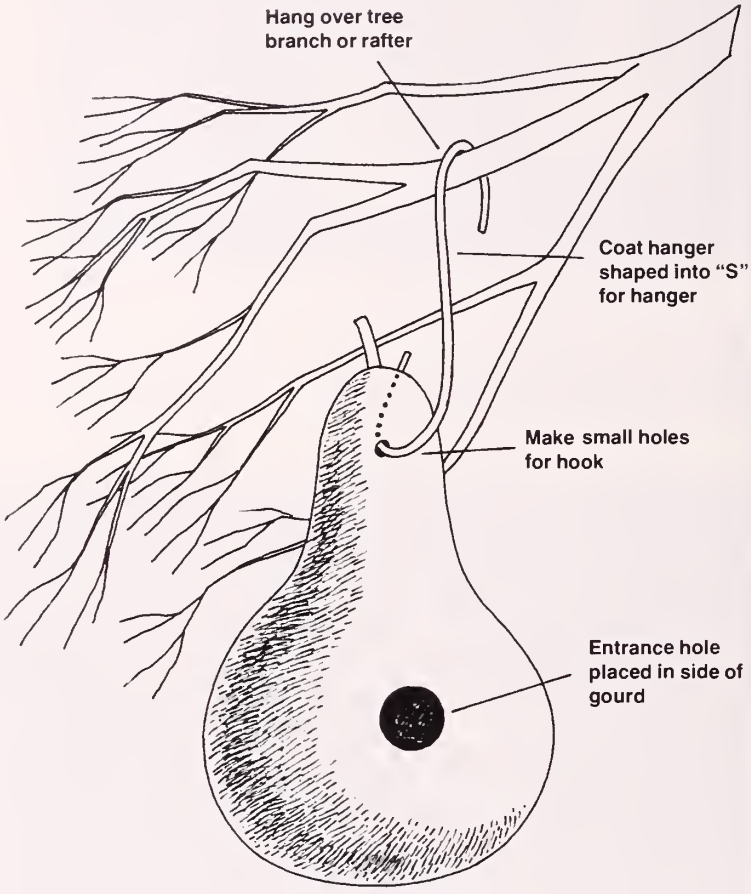

Young Ted inspects gourds grown on TV tower.

gourds and throw away any that are spoiled.

making the birdhouse

When the gourd is hard and dry and the seeds rattle inside, it is time to drill or cut a hole to remove the seeds and make a birdhouse. We make the holes about the size of a quarter. I usually put two small ice pick holes near the top and place an "S"-shaped piece of coat hanger there. A long piece of this same hanger can be used to remove the dried seeds from the inside of the gourd. (See illustration.)

Once the seeds are removed, shake them apart, cleaning off the pieces of dried gourd. Store the seeds in air-tight jars for spring plantings. We have painted our gourds different colors, but find that the suggestion made in one of our bird books to paint them red has worked best. Wrens really take to these shiny red gourds. The gourds can be spray-painted or brushed, as long as two good coats are applied. The gourds are hard and weather-proof, and the paint adds an extra couple of years to the "tree life" of the birdhouse. Ours have lasted for many years, often housing two broods of birds a summer.

Wrens, small woodpeckers, and other cavity nesting birds will investigate your birdhouse gourd once it is hung. The wrens seem to love this rocking home best, especially when hung high in our dogwoods or birch trees. They are our favorites as they sing all the time and consume countless insects for their forever hungry young.

The gourd birdhouses make thoughtful gifts for bird loving friends. A finished house, a small bag of seeds with instructions, and a little note about the type of birds that will take the house make a great "package" for gift giving, garden club projects and bazaars, as well as youth group activities. The seeds are available from most reliable seed companies, but be sure that you get birdhouse gourds. Many of the others, such a bottle gourds, are long and thin, rather than wide at the bottom.

Birdhouse gourds are fun to grow, useful and longlasting. We still have a beautiful gourd that my husband sanded, stained, laquered and gave me as a gift many years ago. If you would like these gourds for colorful birdhouses, crafts or gifts, I recommend that you plant some seeds this spring. Even if you have no specific use now, they are easy to grow: full sun, decent soil, fertilizer and water are their only requirements.

Seeds Available

If you are interested in receiving seeds, we will send them if you will enclose a self-addressed, stamped envelope to: Bird House Gourd Seeds, Triple Oaks, Franklinville, New Jersey 08322

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Lorraine Kiefer is a frequent contributor to the *Green Scene* and writes a weekly garden column for *The Franklin Township Sentinel*. Lorraine and her husband Ted operate the Triple Oaks Nursery and Gift Shop in Franklinville, New Jersey.

Gather Ye Rose Hips

This collector combines the ferocity of the Collier Brothers with the organization of an MBA. Voila! Activity that never bores and never wanes.

by Lucie B. Steele

photos by James W. Steele

Detail of a wreath: *Magnolia grandiflora, Statice tatarica, Solidago canadensis, Asclepias syriaca, Rosa multiflora.*

I amass things, constantly and compulsively. Sometimes I collect before breakfast and many times I hide what I have gathered so others won't know I have indulged myself. My addiction affects members of the family. They complain about my loss of time on the homefront and about the clutter in the attic, garage and closets.

While I am a picky collector, most of the things I pick are free. I squirrel away only flowers, fungi, foliage, barks, branches, nuts, pods, boxes, tin cans, plastic bottles, string – and occasionally a root.

Not only is my pastime inexpensive, it has a purpose. I collect not to escape from tensions and anxieties but to preserve the flowers and fruits of summer and fall for dried flower arrangements in winter.

Nature, however, imposes a time limit on my fun: frost. I can collect plants only from Memorial Day until Halloween, although I have extended the season by gathering branches and stumps in January and February at home or by taking a winter vacation in the tropics and importing plants with a special license. When weather keeps me indoors and away from the fields I yearn for, I still have to satisy my urge to amass and, thus, from November to May I gratify myself by visiting flea markets and thrift shops for unusual containers in which to arrange the contents of the attic, garage, closets, etc. I have hundreds of pieces of beautiful junk – cigar boxes, carpenter's planes, leaky oil cans and old tin scoops. In addition to rooting through rummage, I also frequent liquor stores for boxes – hundreds of them. They are containers for my containers, flowers, roots, nuts and pods.

I have even placed agapanthus and Harry Lauder's walking stick in an oil filter lifted from my son's car.

Collecting cartons and somebody's castoffs in the off season is a poor substitute for the real thing – collecting flowers. Thus, in the colder months while I feverishly fashion the contents of the attic, garage and closets into dried arrangements so that I will have space for next year's gathering, I dream about June when my euphoria can begin again.

As soon as the flowers of curled dock and sumac emerge that month, I am transported. I dart from beaches to forests to the fields of Waverly, Pennsylvania, I knew as a child. I behead thousands of plants with my Wilkinson pruners.* For four months I am in ecstasy until my binge ends with ripened rose hips and milkweed pods and frost. By November first I am bent with exhaustion. (See chart for schedule.)

Although weather calls a halt to my excitement, each treasure I have gathered recalls past pleasure and must be preserved. The pods and fruits already dried by nature are placed in open boxes (closed ones cause mold and mildew) in the attic, garage or closets. In these places, too, flowers that have dried on the vine are positioned upright in sectioned cartons, one species per box. The fresh flowers are defoliated, tied in bunches with string I have wisely saved and taken to the attic. There, hanging upside down, they will retain shape and color by air drying. The fruits of my labors are never allowed to dry in garbage bags because excessive transpiration in the plastic causes rot, except for boxwood, which will stay green only if shielded from sun in opaque sacks.

In addition to boxwood, I collect other broad and needle leaf evergreen foliage, which softens and adds depth to a dried arrangement. I preserve these in a different way. They are not allowed to dry – they soak – in glycerin.** One part glycerin (purchased in gallon jugs at the pharmacy), two parts boiling water mixed in old coffee cans is the brew for *Magnolia grandiflora,* leucothoe, inkberry, rhododendron, juniper and arborvitae, all gathered in mid-July after a period of no rain. I smash the ends of the branches with a hammer so the glycerin moves rapidly to the leaves. Then I

*I am not a wanton collector. I always leave behind some plants as food for birds and as seed for next year's crop.

**In addition to air drying and glycerin, flowers and foliage can be preserved in silica gel. I do not use this method because it requires too much storage space.

The collector holds sway in the attic.

plunge the boughs into the hot mixture and take the filled cans to the garage. There they rest for two to four weeks or until beads of oil appear on the leaves and feel supple. When that happens, I take branches to the attic and hang them upside down to shed excess glycerin.***

The attic must shed its excess too. In the fall after the flowers are thoroughly dry, I transfer them and the nuts, pods, fungi and branches to my workroom where I fashion them into wreaths and bouquets. The yarrow, rose hips, and milkweed pods I mooned over in summer will decorate wreaths of preserved magnolia leaves. Hydrangea (dried while white), black baptisia pods and bronze rhododendron leaves will be affixed to an old iron plate for a coffee table arrangement. Arborvitae, blue sage, rose hips, bayberry, sweet gum balls will be wired into a design for a mantle. An old downspout will serve as a vase for a mass arrangement of curled dock, burdock, yarrow, okra, goldenrod and rhododendron. An ancient bread board will be the base for a line arrangement of wisteria branches, artichokes and wild parsnip. I have even placed agapanthus and Harry Lauder's walking stick in an oil filter lifted from my son's car. The list goes on and on.

So does my craving for collecting. I'm running out of space, yet my appetite for collecting increases voraciously and daily. I need more room to store my collection. Do you suppose a K-Mart warehouse might be coming on the market soon?

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Lucie B. Steele, an alumna of Vassar College and The Arboretum School of the Barnes Foundation, arranges dried flowers for her business in Haverford, Pennsylvania, when she is not going off to fields, forests, and beaches.

***WARNING:** The glycerin/water mixture may be reused, but should never be heated on an open burner as it is highly flammable. Use a double boiler.

A MINI-GUIDE FOR COLLECTORS
Partial Contents of My Attic

Plant	Color	Collect	How to Preserve	Note
Achillea filipendulina Fern leaf yarrow	yellow	July Aug.	air dry upside down	
Achillea millefolium Yarrow	yellow	July Aug.	air dry upside down	
Agapanthus africanus Lily of the Nile	blue white	Aug.	air dry upside down	Flowers will drop leaving tan sunburst structure. Insert wire inside stem before drying.
Allium giganteum Giant allium	lilac	June July	air dry upside down	Insert wire inside stem before drying.
Anaphalis margaritacea Pearly everlasting	white	Aug. Sept.	air dry upside down	
Artemesia sp. Dusty miller	grey	Aug. Sept. Oct.	air dry upside down	Foliage plant

continued

continued

Plant	Color	Collect	How to Preserve	Note
Asclepias syriaca Milkweed	grey pods	Oct.	place upright in cartons	Remove "silk" before storing.
Astilbe arendsii	pink rose	July	air dry upside down	
Baptisia australis False indigo	black pods	Aug.	place upright in cartons	
Buxus sp. Boxwood	green foliage	Oct. Nov.	store in opaque bags	Do not collect after 11/15 as shrub could be damaged.
Celastrus scandens Bittersweet	yellow orange	Sept. Oct.	hang upside down	
Clematis henryi	beige	July	stand in cartons	Dried on vine
Daucus carota Queen Anne's lace	brown	Sept. Oct.	stand in cartons	Flower picked when white will not hold shape when air dried.
Dipsacus sylvestris Teasel	brown	Aug. Sept. Oct.	stand in cartons	
Echinops exaltatus Globe thistle	blue	July Aug. Sept.	air dry upside down	Pick when immature.
Eupatorium maculatum Joe Pye weed	pink	Aug. Sept.	air dry upside down	Pick when immature. Treat with hair spray before arranging.
Eupatorium rugosum White snakeroot	white	Sept.	air dry upside down	Pick when immature. Treat with hair spray before arranging.
Filipendula venusta Queen of the prairie	pink	July Aug.	air dry upside down	
Hydrangea paniculata	white pink brown	Aug. Sept. Oct.	air dry upside down	
Ilex glabra Inkberry	brown when preserved	mid-July	glycerin	Foliage plant
Juniperus sp. Juniper	grey/green when preserved	mid-July	glycerin	Foliage plant
Kalmia latifolia Mountain laurel	brown/black when preserved	mid-July	glycerin	Foliage plant. Gather on collector's property only.
Leucothoe axillaris	brown when preserved	mid-July	glycerin	Foliage plant
Magnolia grandiflora	brown when preserved	mid-July	glycerin	Foliage plant, sometimes takes 12 weeks to preserve.
Monarda sp. Bee balm	red pink	July Aug.	air dry upside down	
Myrica pensylvanica	grey fruit	Sept. Oct.	stand in cartons	
Pastinaca sativa Wild parsnip	yellow/green	July Aug.	air dry upside down	
Rhododendron sp.	brown when preserved	mid-July	glycerin	Foliage plant
Rhus glabra Smooth sumac	green red	June Sept.	air dry upside down	
Rosa multiflora Rose	red fruit	Oct.	store in cartons	Keep away from squirrels.
Rudbeckia hirta Black-eyed susan	black centers	Oct.	place upright in cartons	
Salvia azurea Blue sage	blue	Sept. Oct.	air dry upside down	
Solidago canadensis Canadian goldenrod	yellow	Aug.	air dry upside down	Preferred species because flower head is fuller than *S. ulmifolia.*
Solidago ulmifolia Elm-leaved goldenrod	yellow	Sept. Oct.	air dry upside down	
Tanacetum vulgare Tansy	yellow	Aug. Sept.	air dry upside down	
Thuja sp. Arborvitae	green when preserved	mid-July	glycerin	Foliage plant
Typha angustifolia Cattail	brown	July	place upright in cartons	Pick when immature – mature cattails will "blast."
Zea mays Corn	beige flowers	Oct.	place upright in cartons	

GALAXIES OF STARFLOWERS

A botanist tweaks his colleagues for their inability to soar when writing about plants. He pinpoints the collective noun as one of their weak spots.

A kiss of tulips

by Paul G. Wiegman

Botanists are dreary. Not personally mind you – some of my best friends are botanists – but often their writing is unimaginative, and dreary. Now before you take exception, or get upset, let me explain.

As you know, collective nouns are words that identify a collection of individuals. Instead of having to say, "Look at the 157 geese!" a simple "Look at the flock!" will suffice. Zoologists have developed a broad repertoire of collective nouns. These words are often beautiful, sometimes lyrical, or at the very least, descriptive.

Words describing groups of birds are especially interesting. You're probably familiar with such terms as a *gaggle* of geese, or a *bevy* of quail. Large groups of ducks on an open lake appear as a solid body, and thus are called a *raft*.

The beauty of the collective noun's use in writing is apparent if you imagine a cool fall morning along the edge of a quiet lake. A gray mist drifts from the dark purple forest as a *whiteness* of swans rises from the mirrored water. Beautiful.

But what have botanists given us? A *stand* of trees. A *bunch* of daisies. A *clump* of grass.

Imagine a cool fall morning along the edge of a quiet lake. A gray mist drifts from the dark purple forest as a *clump* of grass shimmers on the mirrored water. The *clump* of grass compares to a *whiteness* of swans as a Hostess Twinkie to Beef Wellington. No romance, no style, no flair. Sure, flowers come in bouquets, nosegays, and sprays, but beyond these few, botanists have failed in their collective noun imagery.

But we can fill the void. We have the opportunity to begin a whole new list of words and meanings for botanists of the future. Think of the possibilities for floral collective nouns.

For a start, as spring nurtures a blanket of green over the landscape, it's time to search for *sprays* of skunk-cabbage. Standing guard over the forest floor are *packs* of dogwood (easily identified, of course, by their bark). Under the dogwoods' spreading branches are *pints* of bloodroot. *Plates* of toothworts chatter in the sometimes cool spring breezes. *Ripples* of watercress flood edges of brooks. In the same habitat are *triumvirates* of trillium. Alongside the blanket of white are *individuals* of stinking Benjamin. A quick sniff of this species, and it is apparent why the plant stands alone.

Our imagination need not be limited to native woodlands. Suburban yards at this time of year have a *kiss* of tulips, while *prides* of dandelions stalk the greening grass. In the garden are planted *gallons* of watermelon and *cartons* of eggplants. *Counsels* of sage and *hours* of thyme are beginning in the herb garden.

So botanists, come out of your dreary herbariums and brighten our world with *risings* of sunflowers and *galaxies* of starflowers.

Meanwhile, back in the spring woodlands, *lobes* of liverworts bloom early on wooded slopes, heralded by a *pealing* of bluebells in the bottomlands. *Schools* of trout lilies line the edges of tumbling streams. (The best time to see this yellow flower is listed in brook reviews.) The vernal displays are watched by a *congregation* of Jack-in-the-pulpits, shivering in *gusts* of windflowers.

See, plants can have collective nouns. They can be free of bunches, stands, clumps, and thickets. Plants can be described with words as interesting as the flowers themselves. But why stop at spring? Let's catch our collective breaths and ebb with the *tides* of sandworts under *waves* of beeches.

In early summer, *drifts* of wintergreen are whitening the woodland floors, dotted with *pairs* of lady's-slippers tucked neatly under a *canopy bed* of green leaves. Babbling brooks tumble past *barrels* of monkey flowers watched over by *flights* of cardinal flowers. Of course, to the more religious, the cardinal flower crimson patches might be more appropriately called a *mass*. Would picking a bunch and carrying it away be *mass transit?*

While you're out enjoying the summer and taking a slow easy morning stroll along a rural lane, *pounds and dozens* of butter and eggs display their bright spikes of yellow. Just beyond in the meadow market are *quarts* of milkweeds. Sounds delicious. *Flutters* of butterfly weed add a brilliant centerpiece to the pastoral breakfast spread on *yards* of Queen Anne's lace.

In August, *constellations* of blazing stars twinkle a signal that fall is nearing. The autumn mines' first payloads are *nuggets* or *bars* of goldenrod. Fortunately, silverrod, the only ungolden goldenrod, can share the same collective noun. *Fluffs* of cattails stalk the wet meadows, shrouded in purple *banks* of mistflowers. Since only a few plants are found in the woodlands, it is fitting for the reclusive *abbeys* of monkshood to be in bloom.

You see, botany can be descriptive. Plants can have descriptive collective nouns. All it takes is some imagination and a close look at the flowers around us. So botanists, come out of your dreary herbariums and brighten our world with *risings* of sunflowers and *galaxies* of starflowers.

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Paul G. Wiegman is the director of the Natural Areas Program for the Western Pennsylvania Conservancy. A botanist, writer, and photographer, his work takes him to the natural nooks and crannies of Pennsylvania to see some of the state's most scenic treasures.

Triumvirates of trillium

photos by Paul Wiegman

Pints of bloodroot

Flights of cardinal flowers

A pride of dandelions

illustrations by Anthony Hillman

New Azaleas from Old Wood

by Alan Slack

There is a short period of time in early summer when you can increase your favorite azaleas using a simple method.

Shortly after the abundant azalea bloom wanes in late May or early June, you can begin to propagate the azaleas from year-old wood. Do it after they have finished blooming and before their new growth is fully extended.

Timing, closely followed simple instructions, and a bright but shady place are all that are needed for success. Further, the advantage of this method is that in about a year you will have an azalea that's large enough to plant in your garden.

here's how

1. Thoroughly mix one part sphagnum peat moss and three parts coarse, sharp sand (not seashore sand) or three parts horticultural perlite. Place this mixture in a pail or plastic container and add just enough water to moisten the mix. Let stand for about 24 hours before you plan to take your azalea cuttings.

2. Select a 10 in. or 12 in. clay azalea pot or bulb pan and a 2 in. - 2½ in. **clay** standard flower pot. Place some crocking (small stones or broken pieces of clay flower pots) to a depth of about ¾ in. Then fill the large pot to within ¼ in. of the rim with the moist mix. Place a daub of putty or Moretite over the drainage hole in the small pot and plunge it into the center of the large pot (see figure 1). Firmly tap the large pot to make sure the mix has completely settled, eliminating air pockets. Water well and add more mix bringing the level again to within ¼ in. to ½ in. of the large pot rim.

3. Choose a favorite evergreen azalea that has just bloomed vigorously and is pushing a lot of new growth. Selecting side branches from this bush, prune pieces from the bush at the bottom of last year's growth. Take as many cuttings as you think will be needed to fill a row around the outside of the large pot spaced about 1 in. apart. Pick off all dead blossoms and flower parts and pinch off all but three of the new leaf shoots that are sprouting from the base of the spent blooms. **Use only branches that have bloomed.** (See figure 2.)

4. Using a sharp knife or a new single-edge razor blade, make a fresh 45° cut about 1½ in. to 2 in. below the point where the branch bloomed. Dip this fresh cut immediately into some water and into your jar of Rootone. Shake the excess Rootone from the cutting, make a 1 in. deep hole in the mix using your little finger or a lead pencil and insert the cutting. Firmly pack the mix around the inserted cutting. Follow this procedure until you have completed the row around the large pot (see figure 3). Water well (until water seeps from the drainage hole).

5. Fill the little reservoir pot with water that will gradually leach into the mix and keep it moist. Label the mix with the variety of azalea and the date you made the cutting and cover with a polyethylene bag large enough to go over the rim and down to the bottom of the pot. **Do not pull the polyethylene bag below the bottom of the pot.** Place a large rubber band or a twistem around the pot just below the rim. This will keep the polyethylene bag in place.

6. Place your pot with the cuttings on an inverted pot of about the same size in a bright but shady spot. **Do not let your cuttings receive any sun.** Along the north wall of a building or beside and in the shade of a large shrub is best. Be sure your cuttings are in bright shade at all times. Rooting should occur in about four to six weeks. It is important to keep an eye on your cuttings and not let them dry out. Make sure there is some water in the little reservoir pot at all times.

7. When your cuttings are rooted (easily discernible by gently tugging the cutting and feeling resistance) poke a couple of small holes in the polyethylene bag using a lead pencil. Leave everything else alone. In a few days, poke a few more holes, repeating this process until the polyethylene bag looks something like a Swiss cheese. Keep water in the little reservoir pot throughout the process.

8. Let your rooted cuttings grow on in the pot for about two weeks. Remove the polyethylene bag and let these little plants grow on some more. **Do not let them dry out. Water daily.**

9. In about a month after rooting, gently lift the rooted cuttings from the mix (I use an old dinner fork) and pot up your new azaleas using a well-mixed and moist growing medium of one part sphagnum peat moss, one part coarse sand or perlite and one part garden loam (soil that grows good tomatoes). Use

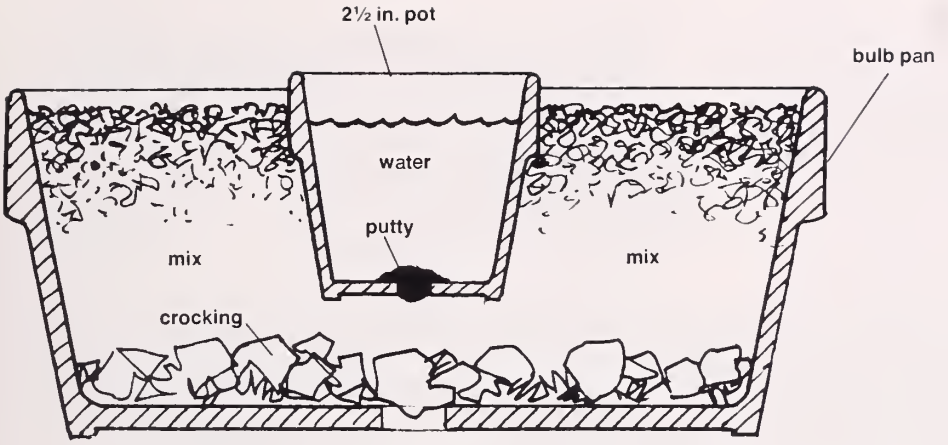

Fig. 1

three or four inch plastic pots, one plant to a pot.

10. Water your freshly planted cuttings well and place them in a bright but shady location for the rest of the summer. When potting up your new treasures, pinch half of the new growth from each of the three leaf shoots (or branchlets) you left on the cutting. From the point at which you pinch, two or three new shoots will emerge, thus creating a fairly dense little bush.

11. These freshly rooted plants require winter protection the first year. When winter arrives (late November or early December) place your plants in a well shaded cold frame or in a shady cellar window well covered with plastic or glass cover. Remove the cold frame or cellar well window cover in early March. In late March or early April, you can place your new azaleas in a shady to semi-shady spot in your garden. After any blooms are faded, pinch a little of the new growth from all of the new shoots and the following year your new azalea will bloom amazingly well.

For further reading:

Brooklyn Botanic Garden Handbook on Propagation.

Plant Propagation in Pictures by Montague Free, Doubleday, Garden City, New York, 1979.

Plant Propagation by Philip McMillan Browse, Simon & Schuster, New York, 1979.

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Alan Slack lives and gardens in Bowling Green near Media, Pa. He lectures and writes on garden subjects and is active in many horticultural organizations including the International Plant Propagators Society.

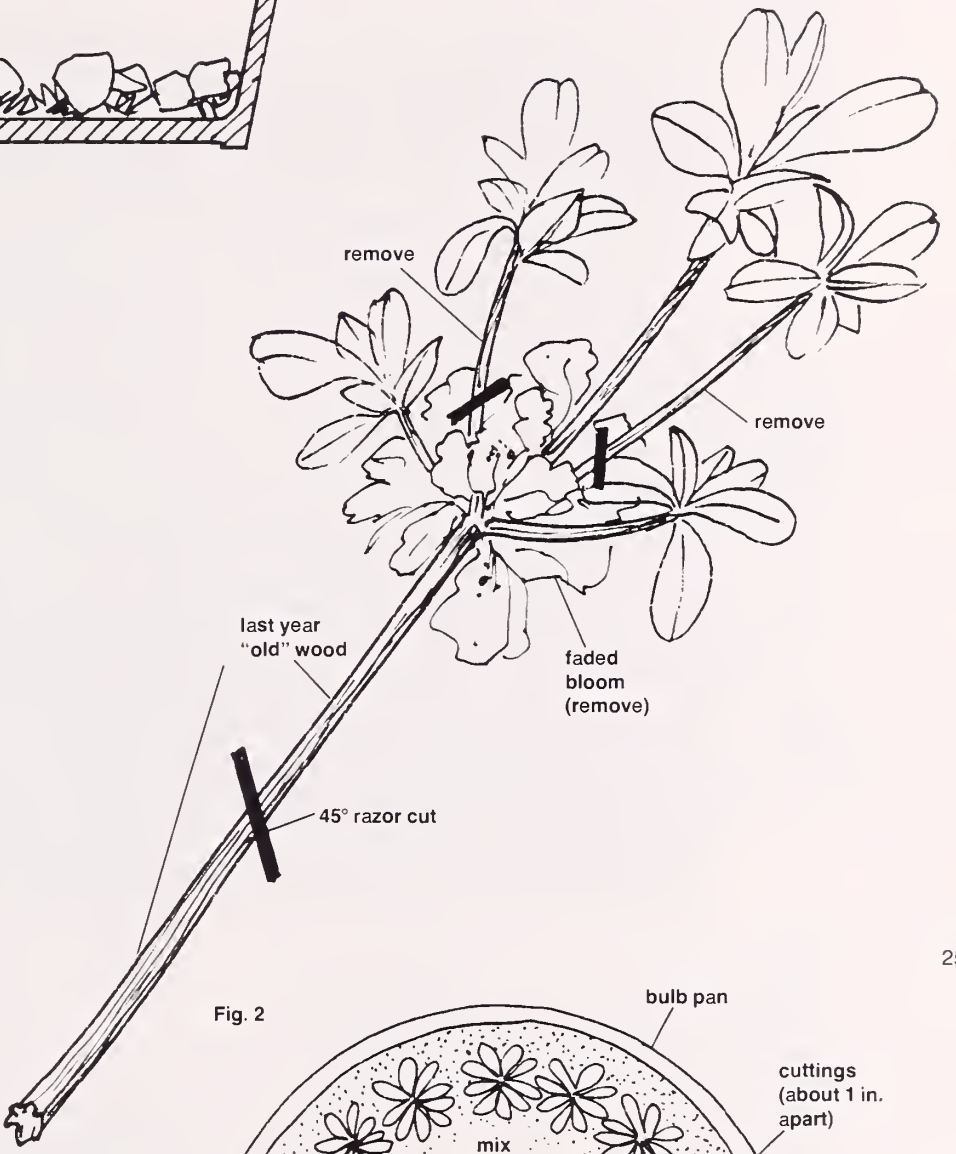


Fig. 2

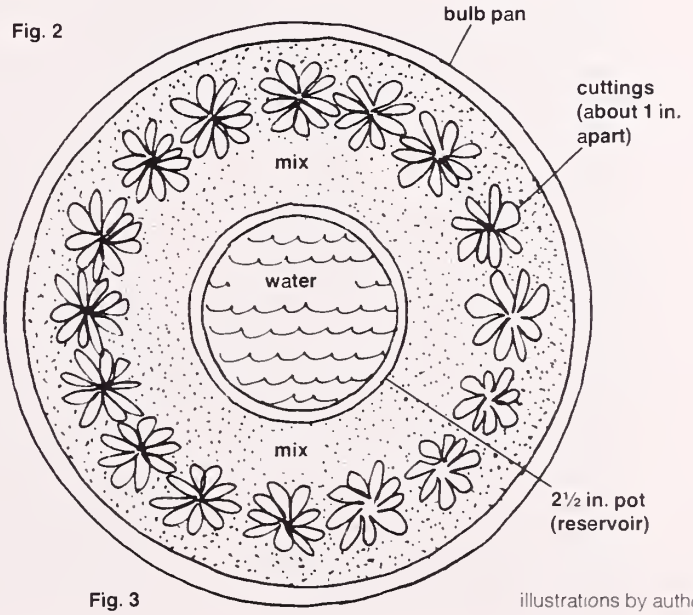


Fig. 3

illustrations by author

Say It With a Tussie Mussie: Yes, No or Maybe

by Jan Riemer

photo by Lynn Bassett

Bouquet of roses, asters (deeper colors) and candytuft framed with geranium leaves.

Although the origin of the word tussie mussie (also spelled tuzzy-muzzy, tussy mussy and tussimussie) remains unknown, we do know that it's a nostalgic, English expression used interchangeably with nosegays.

During the middle ages these fragrant hand bouquets were carried by judges and travelers to ward off diseases that plagued the lands. Later, stylish women used them as an attractive accessory to bury their noses into whenever the unpleasant odors of the day offended their senses. Aromatic herbal tussie mussies, with alleged antiseptic properties, were also carried to counteract disease and infection. The subtle scents so delighted these ladies that the name "nosegay" was soon adopted.

Individual gardens were designed for the sole purpose of raising heavily scented flowers and herbs for the exclusive use in the arrangements of tussie mussies. Wall flowers, pinks, sweet violets, elder flowers, hyacinths, sweet peas, pansies, stock, lilies-of-the-valley, heliotrope, lime flowers, carnations and roses were grown in these special beds. The herbal gardens were comprised of mint, rosemary, sweet woodruff, lavender, lemon and rose geraniums, the gold and silver thymes, pineapple sage, beebalm, clover, scented basil, the sweet scented artemisia and verbena. Foliage for framing the bouquet might include begonia, maidenhair fern, geranium, mint and parsley.

During the early 1700s, tussie mussies became so fashionable that no well dressed Victorian lady would appear at a social function without a bouquet of fresh flowers or herbs, or a dried arrangement of either, adorning her costume. When it was inconvenient or cumbersome to carry the bouquet, fashion also dictated bosom bouquets that were placed in specially designed bottles of metal or glass, while others were tucked into a coiffure or a waist sash.

Proper young ladies were tutored in the arts of making arrangements pertinent to the occasion. For example, a bride might carry a tussie mussie of sage, rosemary, and myrtle with miniature rose buds.

John Parkinson, herbalist and physician to King Charles I, wrote about both tussie mussies and their adaptation to the language of flowers in the early 1600s, but it wasn't until a century later that "floriography" caught the public's attention. (See page 28.)

The language of flowers presented a

continued

1. Assemble all the materials you will need to create the tussie mussie. Jane Lennon is using dried plants for this tussie mussie; they are (left to right) bay leaf, statice, baby's breath, rosebuds and lavender. Other materials are: florist's wire, clippers, scissors, ribbon and florist's tape (optional) to bind the stems. The paper doilies are under the ribbon. To soften the brittleness of the dried flowers, Jane momentarily dipped them in warm water about 15 minutes before she made the bouquet.

2. The central flowers are roses encircled with baby's breath. The roses are at the peak of the bouquet; the baby's breath slightly below the roses and each addition beneath the previous one, creating a mounded effect.

3. Holding the bunch firmly in the left hand, add statice all the way around.

4. Space lavender flowers evenly around the bouquet. To get mounded look, place at angles to the roses, gently bending the lavender stems.

5. Add bay leaves or other foliage (scented or unscented). Holding bunch firmly in left hand, wrap wire around base of tussie mussie and down the stem.

6. Cut an X in the middle of the paper doily; thread bouquet through X. Staple the doily to some of the leaves on the bouquet.

7. Tie ribbon and the bouquet is complete. Note that Jane tied a rosebud to the bottom of the streamer for an added effect.

photos by Patrick Radebaugh

Tussie mussie created by Jane Lennon

delightful and often amusing form of communication for lovers, friends and enemies. Many courtships evolved using such symbols: for example, a gentleman with romance on his mind might send his lady a tussie mussie of red tulips as a declaration of his love. If the lady was a bit enchanted with the idea, she'd return a China aster, which meant she'd consider his expression of love. If, however, she sent dogwood instead, she was signalling indifference.

Because the language of flowers had a myriad of regional interpretations it was sometimes a delicate task to choose a definitive arrangement to convey clear and concise messages. Unfortunately, the printers of these dictionaries didn't always concur and ambiguous nuances were inevitable.

If the lady was a bit enchanted with the idea, she'd return a China aster, which meant she'd consider his expression of love. If, however, she sent dogwood instead, she was signalling indifference.

A tussie mussie is made by arranging flowers, herbs and leaves around a central blossom of outstanding fragrance. It is framed in a lace paper doily, or a specially designed gold or silver filigree holder. Begin by selecting fresh material. To condition flowers, cut the stem clean with a sharp knife and place the cuttings in tepid water for 20 minutes or longer. To make the arrangement, hold the center flower in your left hand, and surround the circle with flowers or herbs by placing them slightly lower. Then add a frame of foliage. Secure the bouquet by anchoring it with twine or a rubber band taking care not to break the stems. Wrap the bottom of the stems with moist tissue and surround with aluminum foil before inserting the bouquet into the X made in the center of the doily. Staple four points of the doily to the leaves for further security. Tie the bouquet with colorful satin, velvet, or lace ribbon, allowing lengths of streamers for a charming finish.

Tussies mussies enjoy periodic revivals because of their uniqueness as gifts to the sick, for the new baby, the bride, bridesmaids, mother's day, Valentine's day, hostess gifts, the graduate or whatever your imagination commands. Whether it becomes a hobby or an occasional experience, you'll find it a challenge to develop the skill of a well made tussie mussie.

Floriography

Aster - sentimental recollection
(China - single blossom) - I will think of you
(China - double blossom) - I partake your sentiments
Baby's-breath - pure heart
Bachelor's button - single blessedness
Basil - hatred or love
Bayleaf - I change but in death
Begonia - unrequitted love
Betony - surprise
Borage - courage
Broom - ardor and humility
Camomile - energy in adversity, humility, patience
Candytuft - indifference
Carnations - passion
(white) - living for love
(red) - less strong passion, alas for my poor heart
(yellow) - I do not believe you, disdain
(striped) - refusal
(pink) - women's love
Chrysanthemums - nobility, simplicity
(Chinese) - cheerfulness under adversity
(red) - I love you
(yellow) - slighted, indicates vague memory
(white) - truth, symbolic of a faithful wife
Clover (four-leaved) - be mine
(red) - industry
(white) - think of me
Columbine - folly
(purple) - resolution
(red) - anxious, trembling
Coreopsis - always cheerful
Coriander - concealed merit
Cosmos - pure love of a virgin
Daffodil - regard
Dahlia - instability
Daisy (white) - innocence, fond memories
(wild) - I will think of you
Dandelion - absurdity
Dogwood - indifference
Elder - zealousness, flattery
Fennel - worthy of praise
Fern - fascination
Foxglove - decision
Geranium (oak-leaved) - true friendship
(pink or rose) - preference
(scarlet) - comforting
Gladiolus - strength of character
Goldenrod - indecision
Hollyhock - simplicity, peace
Honesty - honesty, sincerity
Honeysuckle - bonds of love
Hosta - devotion
Hyacinth - sport, game, play
Hyssop - sacrifice
Iris - message
Ivy - friendship, fidelity
Jasmine (white) - amiability
Jonquil - have pity on my passions
Lady slipper - capricious coquette
Larkspur (pink) - fickelness
Laurel - glory, honor
Lavender - sweetness and undying love; also distrust, cleanliness and silence
Lemon balm - sympathy, love
Lilac (purple) - first emotions of love
Lily (day) - coquetry
Lily-of-the-valley - return of happiness
Marigold - grief, despair, cruelty in love
Marjoram - a mascot flower for lovers, blushes
(sweet) - happiness
Mint - virtue, wisdom
Mrytle (Egyptian) - love, mirth, joy
(Hebrew) - emblem of marriage
Nasturtium - patriotism
Pansy - sad thoughts
Parsley - festivity
Pennyroyal - flee away
Periwinkle (blue) - easy friendship
Phlox - coquetry
Poppy (oriental) - silence, oblivion
Rose - beauty, youth, love
(white) - innocence, silence
(red) - love and desire
(yellow) - jealousy and stagnant love
(pink) - beautiful girl
(deep pink) - shyness
Rosemary - devotion, fidelity, remembrance
Rue - symbol of virginity, disdain, sorrow, repentance, purification
Sage - esteem, immortality, good health, long life, wisdom
Salvia (blue) - I think of you
Sedum - restfulness
Sorrel - affection
Southernwood - jest, constancy
Spearmint - warmth of sentiment
Stock - lasting beauty
Strawflowers - always yours
Sweet basil - good wishes
Sweet pea - delicate pleasures
Sweet William - gallantry
Tansy (wild) - I declare war against you, immortality, hostile thoughts
Thistle - austerity
Thyme - activity, bravery
Tulip (red) - declaration of love
Verbena (yellow) - hopeless love
(scarlet) - sensible, pure
Violet - return your love
(blue) - faithfulness
Wallflower - fidelity in adversity
Wormwood - absence or bitterness, displeasure
Yarrow - war
Zinnia - thoughts of absent friends

●

Jan Riemer has written a weekly garden column for a decade. As a free-lance writer, her concentration is on horticulture, and she has contributed frequently to *Green Scene*.

Seedling cole plants ready to set out.

Well blanched cauliflower

photos by James J. McKeehen

PLANTING TO HARVEST FALL VEGETABLES

by James J. McKeehen

Vegetable gardeners enthusiastically await the first opportunity to plant their favorite spring vegetable crops. We can hardly wait to taste the freshly-picked sweet peas, young leaf lettuce, crisp radishes or succulent bunching onions. And what about tomatoes? There isn't one of us who wouldn't enjoy a basket of vine-ripened red tomatoes right now. As I write this article in early winter, I have already had several dozen phone calls from anxious gardeners who are plotting and planning seed varieties, soil mixes and vegetable transplants for spring.

Unfortunately, too many vegetable gardeners only plan and develop their gardens for two-thirds of its potential: spring and summer vegetable production. Most gardeners do not fully use their gardens for fall vegetable growth. In the Delaware Valley, September, October and November are great months to produce a variety of useful and tasty vegetables. In fact, for some vegetables, such as cauliflower, the fall months are the best time for maximum production and quality.

Successful fall vegetable production takes advance planning. Many of the vegetables to be harvested in September through November must be planted in July through mid-August. These planting requirements can be worked out compatibly with normal spring and summer vegetable production with a minimal amount of planning. For example, when the pea harvest is complete in early summer, that space can be used to plant seeds for later transplants in the cabbage family: cauliflower, broccoli, brussel sprouts, cabbage. Another example is spring leaf lettuce, followed by summer green bush snapbeans, followed by August-planted turnips for harvest in late September and October.

The list (see box on page 31) includes many familiar vegetables, all of which can be started from seed at the time indicated. Some of the vegetables could later be transpanted depending on space available. I usually start vegetables for later transplanting in a short (2 to 3 ft. long) row, scattering the seed in an 8-in. to 12-in. wide band. About three to five weeks later I transplant the 3-in. to 4-in. high new seedlings to open spaces throughout the garden. Transplanting in mid-summer definitley sets back the growth of these plants, so if space and seed are available, they are best planted in a long single row like other vegetables, and either thin or transplant the excess plants. This system has some advantages, since the transplanted vegetables are set back and should mature a week or so later, thus staggering the future harvest.

I mentioned planning ahead. Not only

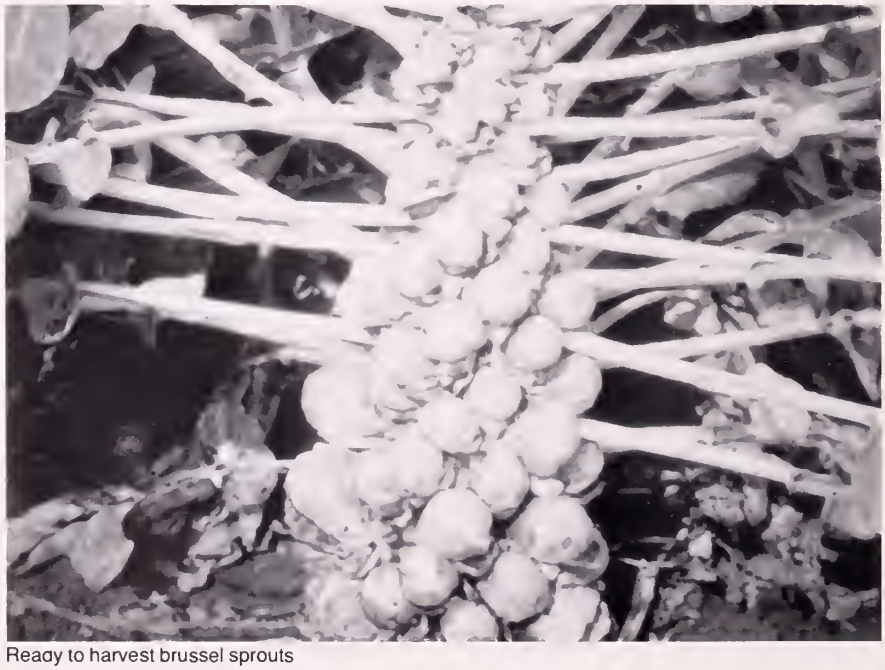
continued

PLANTING TO HARVEST FALL VEGETABLES

continued

Escarole ready for a salad; note blanched center.

Chinese cabbage picked at correct stage.



Ready to harvest brussel sprouts

is it important to plant vegetables for fall harvest at the times indicated, but it is equally important to decide on the quantity of vegetables you want and have space for. Presuming a family of four, five to eight broccoli plants are enough for most families throughout the fall months unless you plan to freeze broccoli for future use. Likewise, eight to fifteen Chinese cabbage plants will provide you and the neighbors with enough, especially if you plan to grow five to ten other fall vegetables. Obviously, each family's needs and desires vary when it comes to enjoying fall-grown vegetables.

Here are some vegetables I like to grow in the fall and a description of how my family uses them.

Beets. Only half of the family really loves beets, but those of us who do insist that a short row be planted for fall. We usually harvest them at about the 2-in. size. For best results, thin the stand.

Broccoli - a real family favorite. I grow the varieties that produce a large central head that is followed by many nice small side shoots well past the light fall frosts. Watch for feeding damage (holes in leaves) from cabbage worms for this plant and for the cabbages, including Chinese cabbage. Spray as soon as you notice the holes; you can use the biologicals, e.g., Dipel or Thuricide (BT, *Bacillus thuringiensis)* or pesticides, e.g., Sevin (carbaryl). Apply at least two sprays seven to ten days apart. Continue to check for further damage and spray when necessary. The biological sprays can be appied up to the day of harvest; if you use Sevin or another insecticide, read the label carefully to determine the hiatus between spraying and harvesting; in most cases 14 days is acceptable.

Chinese cabbage is becoming more and more a family treat. We eat it raw like celery, and broken up in a tossed salad, as well as cooked like spinach. If you haven't grown it, try a half dozen heads.

Cauliflower is everybody's favorite. Eaten raw, with or without a dip, or cooked, cauliflower is a treat that is best grown in the Delaware Valley as a fall crop. Don't forget to tie up the leaves in order to blanch the head. (See description for blanching in the garden in endive section.)

Endive and Escarole are great addi-

tions to any tossed salad. If I had to choose, I prefer escarole, with the flatter type leaves, to endive. In order to reduce the bitter taste of endive and escarole and to increase quality, the grower should blanch the crop a few weeks before harvest. One system of blanching calls for gathering the outer leaves of each plant and tying them loosely together with string just below the tips. Rot may develop if tied too tightly. Blanching keeps the sunlight from the inner leaves of the head, making them white since chlorophyl production is reduced. Harvest the whole plant and use only the high quality crips white inner leaves; discard the tough, bitter, outer dark green leaves.

Kale can be cooked or eaten raw. We like to harvest some of the young, tender new growth and add it to tossed salad; it adds distinctive flavor.

Kohlrabi and **turnips** are different but similar. Both are delicious peeled and eaten raw or cooked. Here again, a few kohlrabi, perhaps six to ten, are enough for a family of four.

Spinach sells best in our house added to a tossed green salad or as the entire salad. A 10- to 15-ft. row in the fall is about the right amount.

As the fall moves closer to winter and the frosts and cold weather settle in once again, a good fall vegetable grower plans ahead. First, protect the vegetables remaining in the garden. To protect some of the low-growing plants such as parsley, lettuce, spinach, escarole, cover with leaves. The taller plants require a different cover be put on and removed daily, based on your favorite weatherman's report. Use old sheets, blankets, a tarp, or plastic. If you follow these suggestions, you will be amazed how long you can extend the fall harvest of fresh vegetables. And if you share any freshly-picked vegetables with a neighbor or friend, you will be rewarded with a variety of compliments.

Fall vegetable gardening is an interesting challenge. Look on it like the contest you may have entered in the spring; you know the one, "who can pick the first tomato in the neighborhood." Now the contest is, "how long can you keep your garden producing in the fall of 1983."

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Jim McKeehen is the Delaware County Agricultural Agent for the Cooperative Extension Service, College of Agriculture, Pennsylvania State University. He is a frequent contributor to *Green Scene*.

Suggested Plantings for Fall Vegetables

Vegetable	Suggested Varieties	Approximate Planting Date	Space Between Plants in Row (inches)	Days to Maturity
Beets	Ruby Queen or Detroit Dark Red	Mid-July	2-3	50-70
Broccoli (t)*	Green Comet Hybrid	Early to mid-July	18-24	60
Brussel Sprouts (t)	Jade Cross E. Hybrid	Early July	18-24	90-100
Cabbage (t)		Early July	15-24	70-90
Cabbage, Chinese	Jade Pagoda or Early Hybrid G	Late July to early August	12-18	75-90
Carrots	Imperator Strains	Mid-July	2-3	70-85
Cauliflower (t)	Snow Crown Hybrid	Early to mid-July	15-20	55-80
Celery		Early July	6-8	100-120
Celeriac	Alabaster	Mid-July	4	90-115
Collards		Mid-August	4	80
Endive (t)	Green Curled or Florida Deep Heart	Late July to early August	12	70-90
Escarole (t)	Broad Leaf Batavian	Late July to early August	12	70-90
Kale (t)	Dwarf Blue Curled	Late July to early August	12-18	55-65
Kohlrabi (t)		Late July to early August	6-9	45-60
Lettuce (t)	Buttercrunch or Salad Bowl	Late July through mid-August	10-15	45-75
Mustard Greens		Early to mid-August	12-18	40
Parsley		Late July	8-12	70-90
Pak Choi (also known as Bok Choy)		Late July to early August	12-15	45-50
Radish		Early August	1-2	30-50
Rutabaga		Early to mid-July	5-8	90-120
Spinach	Melody Hybrid or Winter Bloomsdale	Early to mid-August	3-4	45-50
Turnip	Just Right Hybrid or Purple Top White Globe	Mid-August	3-6	35-50

*(t) May be grown from seed for transplanting.

photos supplied by author

View of garden from the house

Designing an Herb Garden

by J. Liddon Pennock, Jr.

The most important factor in successfully creating a workable herb garden is design. Most failures are due to lack of planning, resulting in a potpourri of trailing, crawling, climbing or creeping plants, an utterly confused mass of verdure.

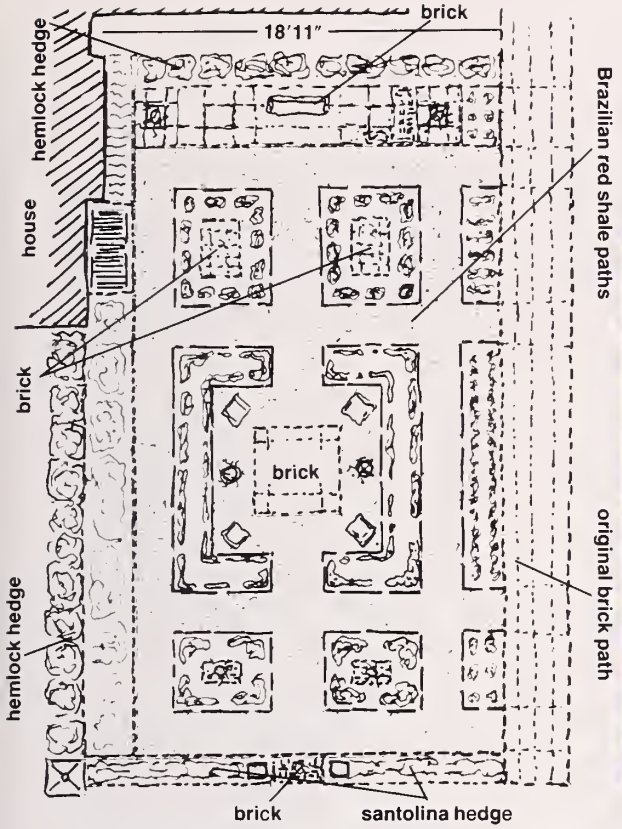
When I was named honorary president-at-large of the Herb Society of America and was to attend my first national meeting of that group, I found myself somewhat in the same position as many of my gardener friends. We possess endless varieties of herbal stars in our horticultural firmament, all sadly disorganized and in a setting that could not possibly be considered an herb garden.

The first step toward organizing these herbal stars was to pick a site convenient to the kitchen, because in principal the culinary value of herbs far outstrips any floral value they may have in the garden scene. The area selected was a rectangle 25 ft. by 50 ft. bordered on two sides by the house. The third border was an existing brick walk and the fourth a low clipped santolina hedge dividing the proposed garden from a long panel of grass that is an important element in the design of the rest of the garden; thus a rectangular area was attained. (See illustration.)

Since many herbs are rampant in their growth we wanted to confine all the plants in a definitely delineated area, much like a zoo, separating one species or group of species from the other. All beds were bordered with one-inch thick flagstone upended and sunk 8 in. or so into the earth and secured into a cement base.

Since the existing path was constructed of old brick paving, additional brick was used to outline the perimeter of the proposed garden. Brick was also used in areas where decorative pots containing plants that were not winterproofed were to stand, as well as the areas where outdoor furniture was to be used.

The paths dividing the planting spaces were planned to be about 2½ ft. wide with the beds varying from that to 3 ft. wide. These were to be made of a crushed stone, Brazilian red shale, found in the Scranton area of Pennsyl-



View from end of garden toward the house

vania. Its dark terra cotta color makes a pleasant contrast to the green of the garden.

After we established a workable design, the planting plan followed with the ease of solving a jigsaw puzzle. The choice of material was far-reaching and included both annual and perennial herbs. It actually doesn't matter what variety of herbs are used. The choice is primariy dependent upon one's palate, with some thought to creating a pleasant contrast in shades of green as well as a combination of contrasting textures.

I make no attempt to proffer advice on how to achieve an effective pattern, since what I use in my garden would not necessarily be what you would want for yours. Besides your choice is limitless. We started many of the herbs indoors to get a jump on the growing season. As in most gardens it was hardest during the first year to achieve that abundant look, which is likely to become an overabundance in the following years. Adding varieties of lettuce, cress or other edibles was an interesting way to fill vacancies that inevitably occurred in the late summer and early fall.

We trimmed constantly throughout the growing season using the cuttings for meals, or for freezing or for drying. Final grooming and mulching occurred before the first frost so that by the following spring all was in readiness to grow an even bigger and better crop.

With a practical design at the outset, success is bound to follow. I suggest you do not let your voracious horticultural appetite get the best of you during the deluge of catalogs that rain on all of us shortly after the first of each year. None of us can grow everything so be satisfied with what works well for you, rather than attempting an herbal ark, two of everything. Planting, even on a modest scale, should be done in masses for an appealing aesthetic effect. Individual specimens simply do not work. The planting plans should follow that of the overall design itself.

The design that I created for my own use has become a show garden rather than utilitarian. Backup plants are grown in the main vegetable plot much as a well organized perennial border has spare plants to be used for cutting.

We were fortunate that when the backbone of the garden was complete, my good friend Charles Gale had an herb garden in his prize winning 18th century garden featured that year in the Philadelphia Flower Show. When he heard of the dearth of herbs in my newly created herb garden he, in his typically generous style, brought me everything he had from his spectacular exhibit. A veritable windfall!

One of the difficulties that all newly built gardens are faced with are predators, the prime such pest being rabbits.

We, too, were faced with this problem at the very beginning. Much damage was done before wire fence was installed and securely imbedded in the soil on two sides of the garden, the house acting as a wall on the other two sides. The garden then became rabbit proof. A short time after the fence was installed I discovered our cook picking her way carefully down the brick path eyeing the beds of succulent herbs. In her hand was a most conspicuous pair of shears. I halted her anticipated predations and told her how difficult it was to rabbit proof the area. How high a fence should I build to keep her out, I wondered aloud.

It was hard to explain why my herb garden was primarily for show rather than a source of delightful flavorings. If she persisted in picking, my display garden would no longer be. So from then on she made her selection from the backup garden many yards away.

Avid harvesting was thus stopped. Future picking was confined to judicious pruning, only to keep the plants within bounds. My goal was to prevent my pristine creation from rapidly deteriorating into just another potpourri of trailing, crawling, climbing, creeping plants, an utterly confused mass of verdure.

●

J. Liddon Pennock, Jr. chaired the 1983 Flower Show, and is a past president of the Society. He is president of the Academy of Music and a member of the executive committee of the Board of Trustees of the Philadelphia Orchestra. Pennock is a member of the Advisory Board of Longwood Gardens and honorary president of the Herb Society of America. He is a member at large of the Garden Club of America.

photo courtesy of George W. Park Seed Co., Greenwood, S.C.

talinum paniculatum

Although *Talinum paniculatum* is not widely used in annual gardens it is a handsome plant and should be sown more generously. A member of the Portulacaceae family of fleshy succulent leaved plants it is endowed with quite a few common names, such as jewels of opar, rock pink and sun bright.

Various species of talinum are native to Senegal in West Africa, the West Indies and South America. An easily grown annual liking warm weather and full sun, it may be started by sowing seed indoors under lights or outdoors after the soil is thoroughly warmed up.

Plants in my garden self-sow year after year and appear in July. They form a rosette of fleshy leaves from which arises a 12 in. to 15 in. stalk carrying a panicle of small dainty lavender-pink flowers. The flower life is very short, lasting only part of the day but new blooms persist over a long period. As the flowers fade tiny red fruits are formed containing seeds.

The stiff stemmed panicles of red fruits make light airy additions to summer bouquets. A planting of *Talinum paniculata* interplanted with double portulaca makes a charming contrast in bright sunlight. Another location for this plant is in the rock garden where it should thrive.

The best news is that *Talinum paniculatum* has no enemies in the form of insects or diseases, making for more enjoyable, carefree gardening.

Charles Becker, Jr.

●

Charles Becker, Jr. was vice president of PHS from 1958 to 61. With help, he is currently enjoying an acre of annuals, perennials, bulbs, rock gardening and vegetables.

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Growing Interest articles should be about uncommon or successful but hard to grow plants in this area. We're looking for the unique plants indoors and outdoors, woody and herbaceous, fruits and vegetables, large and small. The article should focus on only a single species, should generally not be more than a page and a half (typed, double-spaced). It should detail cultural information, special problems and how you have handled them, and should be accompanied, if possible, by a color transparency, slide or a black and white photo. On the top of the manuscript include your name, address and phone number (day and evening). We will pay a small fee for each article and photo we print.

the plant finder

– A free service for *Green Scene* readers

If you can't locate a much wanted plant send your name and address (include zip), the botanical and common name of the plant to Plant Finder, Green Scene, PHS, 325 Walnut St., Philadelphia, PA 19106. People who have the plants or seeds you want will contact you to make arrangements about selling or giving them away, mailing, etc.

WANTED

Golden Dawn Rose
Contact: Raymond Heuges, Attorney at Law, 1718 PNB Bldg., Broad & Chestnut Sts., Phila., PA 19107. LO3-0577

▼

We've had a charming letter from Mr. I. Gulliksson in Sweden asking if some private growers would help him to get cuttings of ***Hoya imperialis, H. pubera [sic]*** **'Red Buttons'** and **'Bright One'** as well as a **white flowering maple.**
Write to: Mr. I. Gulliksson, P. Lindestromsv. 91, S. 12146 Johanneshov, Sweden

▼

Seeds or seed source for **Jenny Lind cantaloupe.** Very sweet, greenish white flesh, not a honeydew.
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Elizabeth Tinney harvests along the railroad tracks.
See page 14.

An issue about Garden Structures

THE green scene

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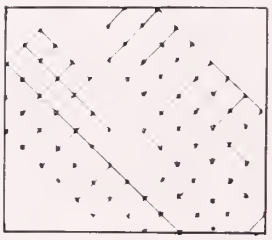

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photo by Edmund B. Gilchrist, Jr

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photo by Jacqueline Denning

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GAZEBOS

by J. Liddon Pennock, Jr.

Most early European gardens were enclosed by walls to protect them from strong winds and to keep out animals. Often, in one corner, a small roofed structure was built so people could sit and gaze at the surrounding countryside and still be protected from the elements.

Gradually these ancillary structures evolved into free standing buildings reflecting the period of the main house. They developed into important features of most well designed gardens, and their diverse shapes and sizes invited many activities including dining, conversing, contemplating nature, children's play, and even courting.

Today gazebos are still important in the garden scene. Like fine old trees they give the feeling of age and venerability, of permanence to the area surrounding the residence itself, often echoing its architecture. They tell us that gardens are made not only to work in but are places where we can relax and enjoy the fruits of our horticultural labors.

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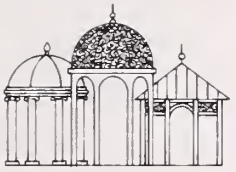

This circular stone columned structure could be called a belvedere as well as a gazebo; it serves as a lookout from its site on the edge of a slight ravine. It is of English origin, probably a Victorian copy of an 18th century structure. The lacy wrought iron dome is a reproduction of the original but accurately done. The doves and the pineapple finial are a Meadowbrook Farm addition. To have it disassembled, crated and shipped from London and then reconstructed here was a major task. Since it had such a look of grandeur when completed, it diminished the rather informal stone dry wall that surrounded the garden in which it stood. We replaced the entire wall with a dressier version, and perennial beds were redesigned with mass plantings edged with clipped virburnum hedges to match the formality of the gazebo.

photos by Edmund B. Gilchrist, Jr.

GAZEBOS

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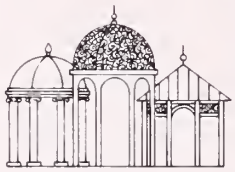


A changing room at the edge of the swimming pool. There's no rule that says a gazebo cannot be used for such practical purposes. Nor is there a rule limiting what materials may be used to construct a gazebo; they can be built with wire, stone, wood, marble and brick, for example.

This facade is made of Chestnut Hill stone, as are the walls of the residence and the garden walls. The roof is copper. The arched doorway features a pair of cast iron doves flanking a decorative urn, purchased years ago in New Orleans.

An example of a true gazebo features masses of hanging plants. The structure is iron, and its open work makes it ideal for the summer blooms.

This is the largest of our gazebos; I designed it for the 1982 Philadelphia Flower Show. It is a perfect lath house and I use it to summer over all kinds of sun and shade loving house plants or greenhouse specimens. It is made from wood and is the terminal feature of a broad allée.

GAZEBOS

continued

This is the first gazebo to come into my life. I inherited it from a dear old friend whose place in Wyncote was called Arboretum. It was featured in one of the garden club gardens at the Philadelphia Flower Show in the early days. Its handsome lead roof is supported by trellis panels. It is now the focal point of a garden that we call the Queen's garden, a sobriquet this great lady was known by.

As shown here, the gazebo is black, giving the appearance of being made of iron slats. When I was recently in England I toured gardens there and was entranced with the gilding I saw on iron gates, fences, facades of buildings and gazebos. So I highlighted this one with gilt when I returned.

The gates open onto a pebble court, shown in the foreground. The gazebo is the terminal feature of the main axis of the garden.

●

J. Liddon Pennock, Jr. is chairman of the 1983 and 1984 Flower Shows. He is a past president of the Pennsylvania Horticultural Society and is president of the Philadelphia Flower Show Inc., the forerunner of the PHS-sponsored Philadelphia Flower Show. He is a member of the Advisory Board of Longwood Gardens and the Harvey Ladew Topiary Gardens in Monkton, Maryland. Pennock is president of the Academy of Music, a member of the Board of Trustees of the Philadelphia Orchestra Association, a board member of the Morris Arboretum and vice-chair and member at large of the Garden Club of America.

lath houses

by Anne S. Cunningham

photo by Doug Mellor

Sally Reath's lath house in summer holds an interesting variety of plants, ranging from succulents and ivies in the front to rare orchids in the back, where the shade is more intense. Note the peat pits along the left and right sides of the structure have been covered with boards to serve as an additional shelf. Throughout the lath house young cuttings in flats are gaining strength before they're put out.

Summer is the time to enjoy outdoor gardening; it is not the time to play nursemaid to potted plants. Instead of spending hours finding just the right spot for houseplants or greenhouse treasures, caring for one under a tree, another on the north side of the house, experienced gardeners put them all in a lath house, sit back, and relax.

Whether a backyard is 50 square feet or 50 acres, a lath house is a valuable addition. Generally it's a simple seven- or eight-foot high structure using open-spaced strips of wood for the flat top and three sides. This structure allows sufficient light and ventilation while providing moderate shade for the plants. As the sun moves, the shade pattern shifts so there is no danger of burning leaves. Professional nurserymen use lath houses as a holding area for stock during the planting and selling seasons. The filtered light keeps their plants looking fresh and permits less frequent watering than if the plants were out in the full sun.

Ideally the open end of the lath house should face north, though experienced horticulturist Sally Reath built hers facing east, and it doesn't seem to make any difference in the superb quality of her plants. Her lath structure is adjacent to her greenhouse and is an architectural extension of the terrace, so it is sturdy and functional as well as visually pleasing. It sits under deciduous trees, which provide additional shade in the summer.

Reath's lath house measures 14 ft. x 8 ft. wide, with modest 12 in. shelves. Because of the terrace design, she has 4 in. wide boards though technically a lath house need not have strips more than ½ in. wide as long as the corner posts are structurally sound and resting in or on cement. Inside the house are two sunken peat pits. In summer these act as babysitters. If she plans to go away, she soaks the peat, then submerges the potted plants in them. The combination of the lath shade and constant moisture keeps her plants healthy until she returns. In winter, potted bulbs are buried in 18 in. of peat then covered with 10 in. of leaves. When it's time for them to be forced, she simply removes them, and they're ready to go. The pits are also an ideal winter home for hardy

Her other mistake, she admits with a smile, was making the shelves too deep so that she had to climb on the bottom shelves just to reach the back pots on top. She found that the pots on the top shelf didn't get as much attention as those within easy reach. Thus if an insect or fungus were to start in the back it could do considerable damage before it became noticeable in the front.

continued

photos by Anne S. Cunningham

Sally Reath's lath house in winter

The Shutt lath house has three sets of graduated shelves.

bonsai and dwarf conifers. In spring the semi-protected area is good for young cuttings, where they can have a period of adjustment from the greenhouse before they are put out on their own.

Sally Reath says her lath house is a "wonderful hospital" for newly pruned or transplanted material that needs time to recover from the shock. She also finds it is a good resting place for plants that have been sprayed for bugs or that might have been put in full sun for a special occasion and need temporary shade and humidity to regain their strength. By autumn the structure is used once again as a transitional home between outdoor and indoor living, while bulbs for the following spring are buried in the peat pits.

deciding on what kind of lath house

There are many ways to build a lath house, depending upon one's carpentry skills and budget. One easy way is to use snow fencing, available at hardware stores in a variety of widths and shade densities. If the fencing has not been treated with a mineral oxide preservative, it should be given at least one coating of Woodlife or a similar weather-resistant finish.

If one is creative and comfortable with hammer and nails, any kind of lath house is possible, with time and space the only limitations. Redwood, cedar, or cypress are more weather-resistant than builder's lath, which is usually pine.

George and Honey Shattuck of Olney made a lath house for her collection of more than 400 orchids. The house measures 8 ft. high by 6 ft. wide by 4 ft. deep and it sits in a yard only 14 ft. x 14 ft. The back of the structure, along the street, is tighter fencing to keep out intruders, while the sides are an attractive open herringbone pattern created by the Shattucks.

Like many home-builders, their initial enthusiasm led to structural over-design. "Our first mistake," says Honey Shattuck, "was putting too many boards across the top. So we kept taking them off until we found just the right amount of light for the orchids. Orchids aren't very pretty in summer," she continues, "it's past their blooming season, so a lath house is perfect. I have them all together where they can be in a humid environment without burning or drying."

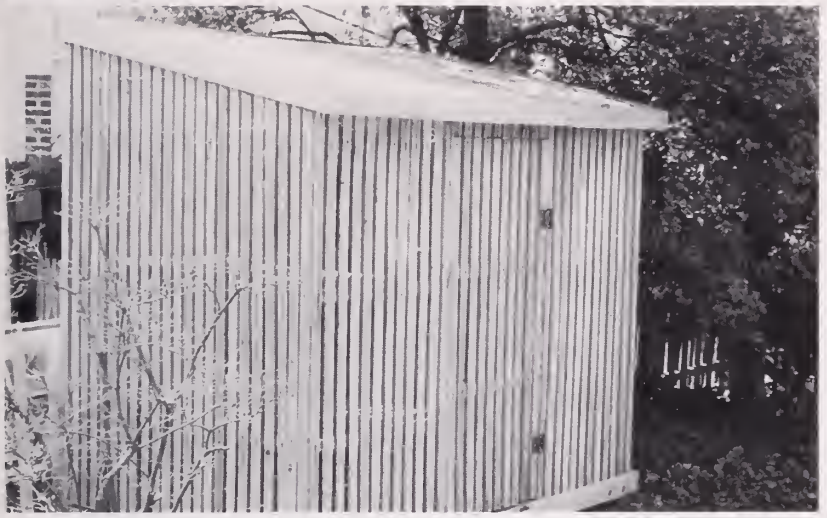
Her other mistake, she admits with a smile, was making the shelves too deep so that she had to climb on the bottom shelves just to reach the back pots on top. She found that the pots on the top shelf didn't get as much attention as those within easy reach. Thus if an insect or fungus were to start in the back it could do considerable damage before it became noticeable in the front. One- or two-foot wide shelves are sufficient for most lath houses.

The Shattucks are moving soon, and the first thing they plan to do is build another lath house; they're convinced it's the perfect solution to caring for a large collection of plants without becoming a slave to them.

There are other methods of constructing lath houses using alternative materials. California commercial growers use a plastic plant shade fabric* instead of wooden lath. This fabric is made of 100% UV stabilized polypropylene fibers, is mildew-proof and resistant to most chemicals. It is available in shade densities from 30% to 73%. Usually 53% or less shade is used for cactus and flowering tropicals; 60% for general foliage plant growth, and 73% for plant rejuvenation and acclimatizing plants for indoors. The main caveat when using plastic shade fabric is to have lots of fans, for the ventilation is not as good as with open wood lath.

Aluminum strips are also available for lath house construction. These have much the same properties as aluminum house-siding, though they're not as

The watering system in the Shutt lath house has five watering nozzles, which are easy to drain in the winter.



The Shutts' lath house, which is in scale with their small garden, can be locked.

An open lath house for nursery use.

strong and can't hold hanging baskets. Nor do they seem to survive heavy winds too well.

designing the inside

Once the lath shell is built, the various levels and shelves need to be worked out. Everything should be within easy reach and have good air all around (not too crowded by other plants). There should be hooks for hanging baskets and possibly a peat pit, like Sally's, 1½ ft. deep. With all the watering and exposure to year-round elements, the flooring has to be carfully considered. The most successful bases seem to be gravel (coarse driveway stone not round pebbles, which can become slimy) or wood chips replenished at regular intervals.

Ann Shutt of Wilmington devised what might be considered the ultimate in functional lath houses. Hers has an automated misting system, which comes on for ten minutes at 10 AM and 3 PM, so she can have a truly carefree summer. By running a copper pipe underground from her basement window to the back of the lath house only a few feet away, she has a simple watering system that is easy to drain in winter. There are five watering nozzles, actually purchased from an oil delivery company, which give a powerful spray that reaches all the plants. While three nozzles saturate the plants inside, two additional ones are placed outside the structure to take care of the hanging baskets.

The lath house itself is relatively small, only 8 ft. x 5 ft., but there is plenty of room for her collection of 150 or more plants. Three sets of graduated shelves fill the inside, with the smallest on top. The house is situated partially under a dense holly tree so the orchids and plants requiring more shade go in the "shadier" side and the plants requiring less shade density go in the "sunnier" side.

Shutt has a lockable door on her lath house and finds that it doesn't impair the air flow. She uses lath construction for the flooring which is set 8 in. above ground by using concrete blocks set under each of the corner posts. While others complain their floor boards become mossy by the end of summer, Ann Shutt has set hers high enough to prevent this.

There is only one problem common to the Reath, Shattuck, and Shutt lath houses. The constant moisture, lush plants, and cool climate attract slugs. They can be controlled by using pellets, a commercial liquid like "Slug-It," or even beer set out in a shallow dish. Since the poisons are harmful to children and animals, they should be used only in a lockable lath house or similarly protected environment.

One final variation on the lath house is the "lath terrace." Using lathing strips for the "roof" yet keeping the sides open, many people consider this the ideal semi-shaded area for plants and people in the summer. It's attractive, requires little maintenance, and actually has a continuous slight draft, because the air underneath is cooler than out in the sun. If there is a summer storm, the plants underneath, particularly hanging baskets, fare better than those left outside.

No matter how the structure is built, from inexpensive snow fencing to an enclosed house complete with automatic watering system, it is one of the easiest ways a gardener can simplify the task of summer maintenance.

●

Anne Cunningham is a freelance writer who specializes in horticultural subjects.

*Plastic lath sheeting is available at local garden supply centers or may be ordered (wholesale only) through Good-Prod Sales, Inc., 825 Fairfield Ave., Kenilworth, NJ 07033. Phone 201-245-5055.

Easy-to-Build Plant Containers & Trellises for the Small Space Garden

by Paul Wolfinger

Space! How precious it is to the city plant enthusiast. Every windowsill and blank outside wall is coveted. Every square inch of outside ground space is cherished. With minimal or non-existent areas for plants, the city gardener resorts to window boxes and other containers for greenery, or to outside wall space for climbing vines.

When I moved into center city Philadelphia six years ago, my landlord, Dan Famiglietti, had a small back yard that he wanted to turn into a parking space. I persuaded him to let me design and plant a garden there (a decision for which he curses himself when he circles the neighborhood for 45 minutes searching for a parking spot).

When the garden was completed, there was little space left on the property for additional in-ground plants, and I did want more plants.

My attention was first drawn to the bare exterior walls of my building. I envisioned lush green vines creeping all over the ancient masonry, climbing skyward until there was no place left to go. Since my landlord wasn't too crazy about ivy covering his newly cleaned and pointed brick, though, I decided to try some flowering vines such as wisteria and clematis. That meant that I would have to provide some framework upon which they could climb.

Let me state right now that I am not a carpenter. My Bachelor of Arts degree did not train me to build with wood and nail, and while growing up, I avoided any construction project that my father proposed. Realizing, therefore, that any intricate wooden trellis was probably beyond my abilities, I just decided to hammer masonry nails into the mortar joints and string fishing line between them.

At the hardware store I found a marvelous little gadget called an "Ammo Driver Tool" that fits over a specially designed masonry nail. Pounding the Ammo Driver Tool with a hammer seems to increase by tenfold the chance that you'll actually hit the head of the nail. It also helps the nail to go into the wall straighter and with less effort.

I placed these nails in a diamond-shaped grid pattern with a distance of approximately 12 in. between the nails. Leaving about 1½ in. of the nail head protruding from the wall, I strung 15 pound test fishing line beween the heads. This line was placed about a full 1½ in. from the wall around the very head of the protruding nail so that there would be space between it and the wall where the plant could grow.

The fishing line, called monofilament, is easy to obtain. If you can't find any in Uncle Harry's tackle box, you can buy it in any sporting goods department. Don't be too alarmed if it has a vibrant aqua hue; with a little weathering it fades to the blandest of colors.

The line itself is extremely durable, enabling my clematis to scale the wall with ease, but it proved less hardy when I used it for wisteria. After about two years it was literally devoured by the lavender-flowered monster. By that time, however, the wisteria's tentacles had found plenty of other protrusions to hug for support.

An even simpler way to support a flowering vine has been successfully used by Blaine Bonham, the director of Philadelphia Green. He merely nailed a large piece of wire mesh to his masonry wall and let his clematis weave its way through the maze in whatever manner it pleased.

roof planter boxes

Having planned the envelopment of my home's exterior walls by a number of flowering vines, I next turned my gardening attentions to the flat roof of my kitchen. I live in a four-story residence with a slanted roof, but a one-story kitchen structure was added to the rear of the building during Victorian times. With access from the second floor of my home, it seemed like an ideal area for garden expansion. Fortunately, I was joined wholeheartedly in this endeavor by Dan Famiglietti; even a landlord realized that a parking space atop the kitchen would be a bit impractical.

We started out by merely keeping potted tropical plants and annuals there during the warm months. We even experimented with plant propagation and growing vegetables. As time went on, though, my landlord's enthusiasm for a rooftop garden even outstripped my own zeal. He laid down a bilevel plank deck across the entire roof and began dragging chairs, benches, tables, and a barbecue grill out through the second floor door. He filled the entire perimeter with potted plants. And he decided to construct six permanent planters for the rooftop.

Now my landlord is much better with a hammer and saw than I am, but he can in no way be called a master cabinetmaker. This means that he too must look for simple ways to build things. For the exterior sides he used "Texture - 111" plywood, which because of its grooved appearance was a wonderful complement to the deck itself. The bottom was made from marine grade plywood, a material built to endure a lot of moisture. The rest of the wood used was standard Idaho pine covered with wood preservative. Pressure-treated materials or a rot-resistant wood such as cedar should be used. These, however, are sometimes difficult to find in odd sizes.

Once he had applied several coats of wood preservative to the parts, Dan started assembling the planter. The trick for a long-lasting container is to use as many things as possible to fasten the pieces. Not only did Dan join the sides with waterproof glue, he also reinforced them with vertical wooden corner braces and screws. The marine plywood "false bottom" was fastened to the sides about 2 in. above floor level. This allowed room for bottom braces, which also served as feet to keep the container from sitting directly on the floor. Exterior trim

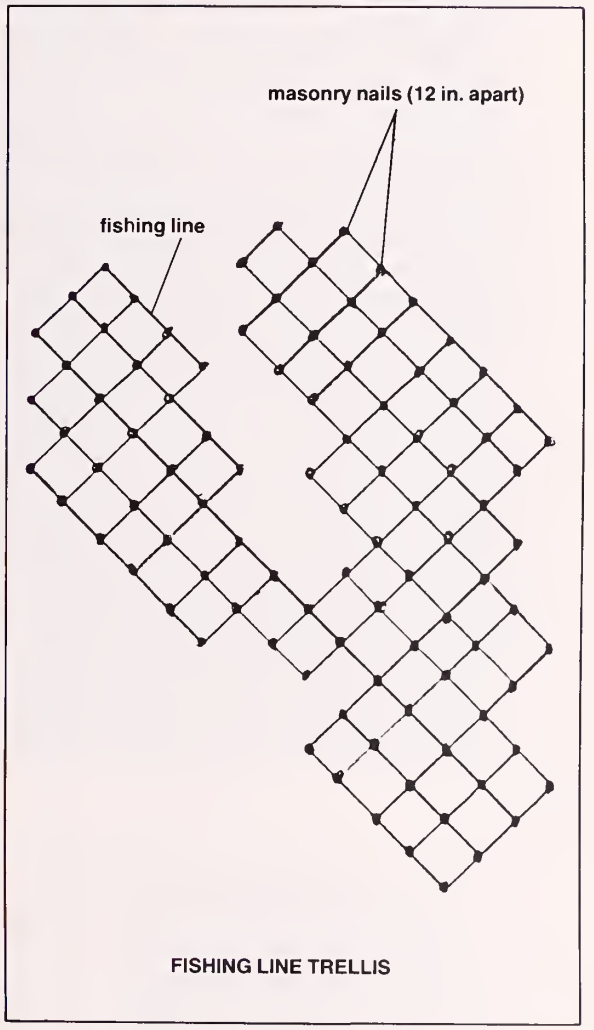
continued

photo by Paul Wolfinger

Clematis scales fishing line trellis at author's home.

Clematis growing on wire mesh trellis on rooftop garden at Blaine Bonham's house.

photo by J. Blaine Bonham, Jr.



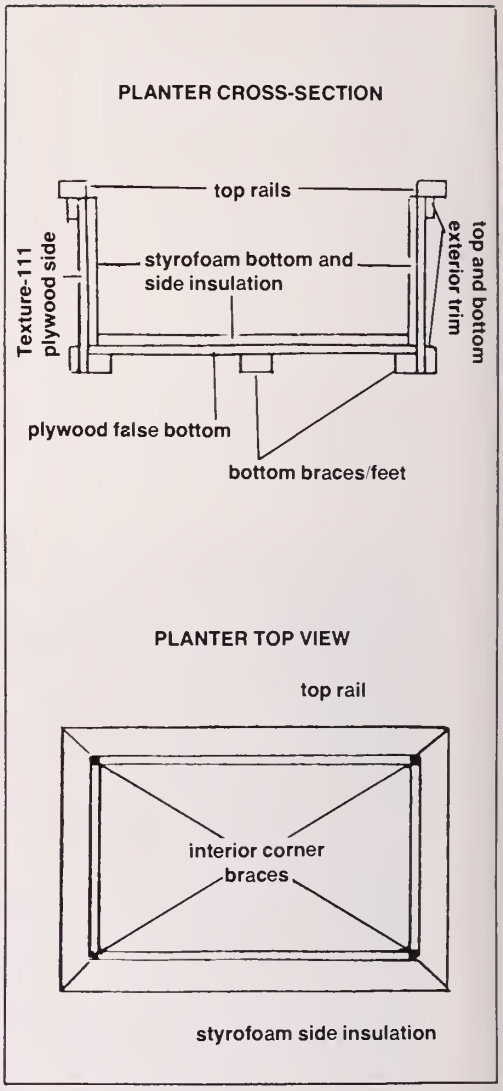
FISHING LINE TRELLIS

photo by Paul Wolfinger

View from street level. Planters on deck at author's home.

photo by Paul Wolfinger

Planter on second floor deck at author's home.



A List of Structural Materials* Used for Each Planter

(Accompanying diagrams show some of the construction detail.)

2	12 in. x 24 in. Texture 111 plywood	-	sides
2	12 in. x 16 in. Texture-111 plywood	-	sides
1	15 in. x 23 in. x ¾ in. marine plywood	-	false bottom
4	1 in. x 3 in. x 26 in. pine (mitred ends)	-	top and bottom exterior trim
4	1 in. x 3 in. x 18 in. pine (mitred ends)	-	top and bottom exterior trim
2	2 in. x 3 in. x 29 in. pine (mitred ends)	-	top rails
2	2 in. x 3 in. x 21 in. pine (mitred ends)	-	top rails
4	1 in. x 1 in. x 9 in. pine	-	inside corner braces
3	2 in. x 3 in. 15 in. pine	-	bottom braces/feet
2	9 in. x 22 in. x ¾ in. styrofoam	-	interior side insulation
2	9 in. x 14 in. x ¾ in. styrofoam	-	interior side insulation
1	15 in. x 23 in. x ¾ in. styrofoam	-	interior bottom insulation

*These materials are available from lumberyards. Plastic roofing cement and Woodlife II are available from both lumberyards and hardware stores.

pieces, 1 in. x 3 in., with mitred joints were screwed around the top and bottom perimeter of the sides, and a 2 in. x 3 in. top rail (again with mitred corners) capped the planter (see illustration).

Since the planters were to sit in an exposed location, we decided that the plant roots might need a little extra insulation. To this end, we lined the bottom and sides of the interior with sheets of ¾ in. styrofoam. Dan then drilled one inch drainage holes in the bottom of the planter and painted the whole interior surface with a layer of plastic roofing cement (tar), making sure not to plug up the holes. Be sure to drill these holes before and not after applying the roofing tar, or your drill bits might never be the same again.

The rooftop planters are now permanent home to six San Jose junipers; the backyard is a landscaped garden; the building walls are covered with flowering vines. Some of the only areas left open for cultivation are the windowsills.

window boxes

My landlord still has not given the green light on outdoor window boxes. My job with PHS, though, has allowed me the vicarious pleasure of overseeing the construction and distribution of thousands of window boxes throughout the city. City houses with no front yards for plantings have become a profusion of color with the addition of window boxes full of flowers.

PHS's Philadelphia Green program has provided hundreds of window boxes each year to interested community groups through its "Garden Block" projects. About 800 such boxes are constructed each winter by the Philadelphia Green crew: foreman Mark Carl, Raul Ocacio, Pablo Espada, and field supervisor Lance Mason. They have developed such a simple design that even I can put a box together. All you have to do is glue, nail, and apply wood preservative.

The Philadelphia Green crew builds a window box with outside dimensions 24 in. long, 8 in. wide, and 7¼ in. high. All wood used is standard Idaho pine. A lumber company cuts the wood to the following sizes:

one piece 1 in. x 8 in. x 22½ in. (base)
two pieces 1 in. x 8 in. x 24 in. (sides)
two pieces 7¼ in. square (ends)
two pieces 1 in. x 1 in. x 8 in. (end handle-braces)

The accompanying diagram shows the positioning of these pieces.

The first thing to do is mix waterproof glue (we use Resourcinol, available from lumber companies or hardware stores) and apply it with a brush to the adjoining areas of the pieces. Fit the pieces together and wipe off the excess glue with a damp cloth. It's best to use a pair of rubber gloves, since the glue can be difficult to get off. Once the glue has set (about 10 minutes), hammer 2-in. resin-coated galvinized nails into the adjoining areas at 3-in. intervals. This nailing makes it twice as likely that your window box will hold together. It's amazing how much pressure a little moist soil can exert on the walls of a window box. In fact, the pressure is so great that the Philadelphia Green crew has found it necessary to put braces on both ends of the window boxes. These braces tie the end piece to the side pieces and prevent them from pulling apart. The braces can also be used as handles for carrying the boxes.

photo courtesy of Philadelphia Green Garden Block Program

Flowers are not the only colorful things about window boxes.

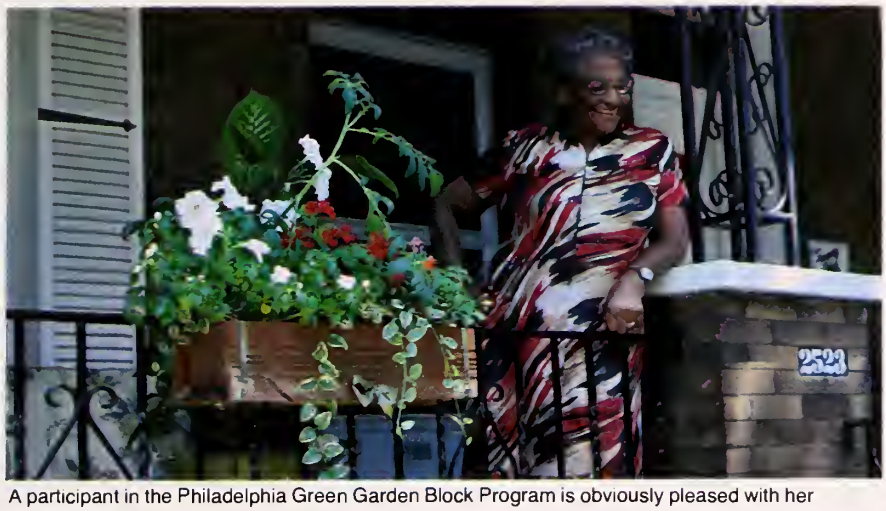
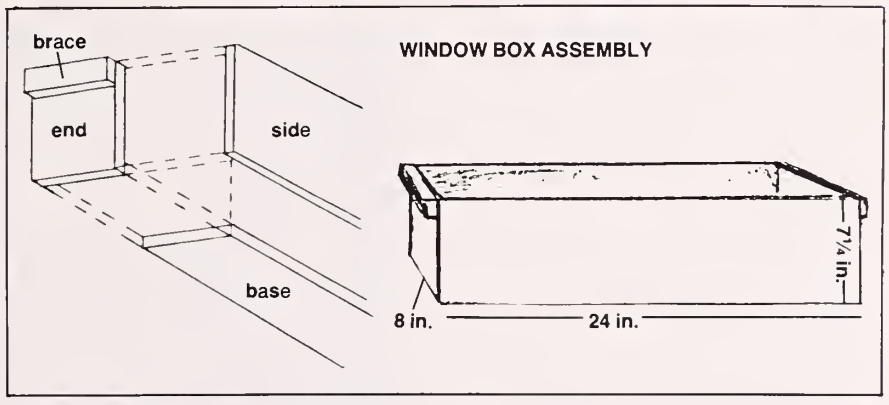


photo by Paul Wolfinger

A participant in the Philadelphia Green Garden Block Program is obviously pleased with her window box.



Once assembled, the box should be treated with wood preservative. Philadelphia Green is currently using a product called "Woodlife II," which does not have the toxicity of regular Woodlife. Drainage holes should be drilled in the bottom of the box so that your plants won't drown during rainy periods or if overwatered. Finally, it's good to paint or stain the window box. Not only does it look good and help preserve the wood, but it also helps to hide a variety of errors by the amateur carpenter.

Meanwhile, this amateur carpenter is looking around his home for new areas to cultivate. Perhaps another simple project, like stripping the slanted tin roof from the fourth floor and replacing it with glass for a greenhouse. I think I'll ask my landlord.

●

The author abandoned office work six years ago to pursue a career in horticulture. Two years later he received an Associate of Science degree in Landscape Design from Temple University and was hired as field supervisor for PHS's Philadelphia Green program shortly thereafter. He is currently programs administrator for Philadelphia Green and is once again doing office work.

A LOOK AT FENCES WITH A DESIGNER'S EYE

Ed Lindemann

Fences are a wonderful invention. They keep the neighbor's dog where it belongs and the children from where they don't belong. Fences hide the trash cans and mark the surveyed boundaries of our domains providing us with a sense of satisfaction in ownership.

Any element in a landscape design, organic or architectural, should have a purpose; fences are no exception. They provide security, privacy, visual distraction and create illusions. Fences provide support and act as backdrops for plants. Depending upon the particular purpose the appearance of the fence is greatly influenced by the added accessories. Gates, locks, latches, footings and finials create the ultimate fence.

Once you have decided that a fence is the solution to your problem take time to consider: Is the use of a fence permitted by your local zoning regulation? What purpose is the fence to fulfill? Can it be found as a ready-made stock item or must it be custom built? If both choices are available, check prices. I have found that it varies with the type of fencing and current lumber costs. Sometimes it is less expensive to purchase ready-made panels than to buy the lumber and construct the fence yourself. Consult with a professional if you have questions regarding the type and quality of building material, type of footings and foundations, paints and stains.

Most of the fences erected today are either wood or metal or a combination of both. To me, wooden fences, while requiring more maintenance, seem to fit better in a home garden. Most modern metal fences tend to have a commercial look. On the market today an assortment of aluminum fences resemble wrought or cast iron fences of years gone by. These modern imitations work well in the landscape and blend especially well with masonry structures.

Regardless of the size of the garden be aware of how a proposed fence will fit in with the existing design. The use of more than one fence style in a single garden can be an interesting design element. Mixing a variety of fence styles

photo by Ed Lindemann

A clumsy area that I had to deal with in planning my own garden was the narrow side yard between our house and the one next door. When we moved in there was a 5 ft. high chainlink fence complete with bright green plastic strips woven through giving it all the charm of the trash enclosure at the local gas station. The area, approximately 12 ft. wide and 35 ft. long, was a good location for a border of shade tolerant perennials backed up by a collection of azaleas and rhododenrons. The shiny green plastic background did nothing for the new planting.

The fence, which belonged to the neighbor, was needed for security and privacy. I needed an attractive backdrop for the planting and wanted the area to seem as long or deep as possible. Another requirement was some form of fencing from the house to the property line that would allow access from the front yard, but keep the dog in the rear and also provide privacy from passing traffic. The photograph shows the solution. Bamboo reed matting in rolls 5 ft. high was attached with wire to the existing chainlink fence. It made a subtle backdrop for the plants and created a long ribbon effect making the area appear longer or deeper than it is. A section of custom-built board on board fencing running between the front corner of the house to the existing property line fence solved the rest of the problem. The dark stain pulls your eye back again making the area seem deeper. A gate in the board on board fence allows access between the front and side yards but is invisible when closed. The 4 ft. height provides enough privacy without a closed-in feeling. The board on board fence matches an identical section that connects the opposite rear corner of the house with a detached garage thus giving complete privacy and a look of uniformity from the street.

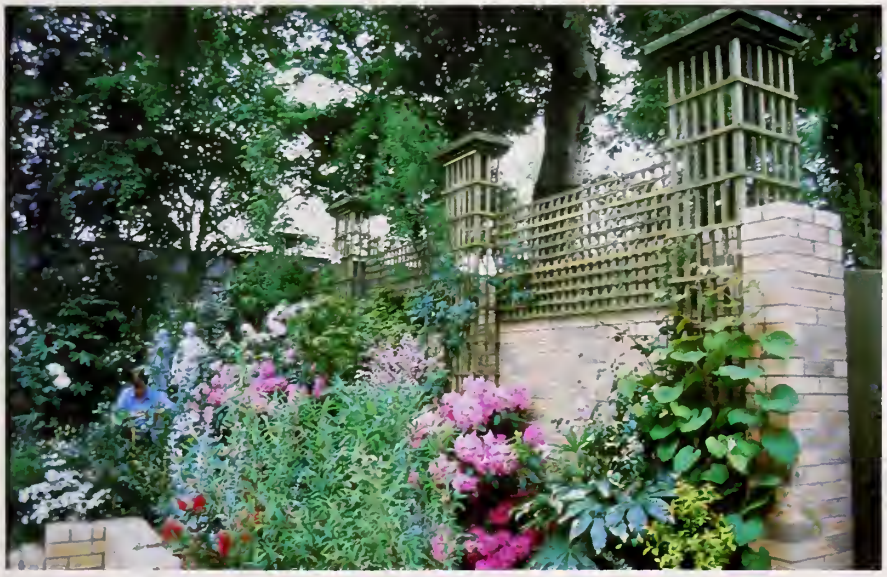
photo by Ed Lindemann

Sections of fencing used alone often provide the solution to an architectural problem. This section of grape stake fencing provides exactly the right texture and color to complete the ambiance of the setting at the end of a garden path. The fence screens the view beyond allowing the viewer to concentrate on the interest created by the artwork and bench. The soft weathered patina of the fence gives the garden visitor a feeling of welcome to this restful.

photo by Richard J. Both

PHS member Richard J. Both admired the original of this fence on a visit to Williamsburg, Virginia. After carefully sketching and photographing and writing to Williamsburg, Dick was able to produce a copy of the 18th Century design. It is authentic in every way down to the use of wooden pegs rather than screws or nails. In the Both garden the three sections of fence provide great architectural interest and the necessary visual division between the formal beds of the patio area and the more natural plantings beyond.

photo by Ed Lindemann



Successful fencing combines functional and aesthetic interest. Here, a combination of brick and wood create a beautiful addition to the garden. The textures and colors of the two materials work well and do not compete with the planting in the raised bed at the base of the fence. The upright wooden panels are actually carefully thought out trellises that give support to the climbing plants. The concept of this fence is simple, but the end result is a spectacular design feature that blends quietly into the rest of the garden.

tends to give the garden the look of a sales display at the lumberyard. From experience I know that your speed and craftsmanship will improve with each new fence you erect or construct. It helps to make a sketch of the fence,

Nothing is more frustrating than to spend an entire weekend building a fence around the vegetable garden and then to discover that neither the wheelbarrow nor the rototiller fit through the gate.

labeling all of the items needed for construction. With privacy fences, the height is often crucial. Setting up a couple of posts and running a string or ribbon across the top will give you an idea of what the fence will block from view. This mock-up will allow you to determine if the fence should be higher or lower. Adjustment at this point is much easier than when the fence is finished.

If a gate is to be incorporated, I have found that it is easier to hang the gate when you come to the location and then proceed with the rest of the fencing than to try and squeeze the gate between two existing sections of fence. Be sure to determine beforehand which way the gate is to open and the width that is needed. Nothing is more frustrating than to spend an entire weekend building a fence around the vegetable garden and then to discover that neither the wheelbarrow nor the rototiller fit through the gate.

Fences in the landscape function the same as walls in planning interior spaces. They can simply exist or they can take on personalities and become interesting assets to the overall design. Carefully consider the possible textures, shapes and colors of the materials that are available. Try working out different combinations to achieve greater interest, or in some cases to deflect attention. Is the fence to be a feature or is it to recede and allow other elements to predominate? Fences in the landscape cannot be ignored. Their use can be subtle or flamboyant; that is the designer's decision. Success is achieved when the end result fulfills the need as well as providing an aesthetic overall design.

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Ed Lindemann is PHS horticulturist and Flower Show designer.

TRELLISES

by Richard J. Both

A trellis is a garden structure that is both pleasing to the eye and practical for growing plants. These structures were first developed in the Middle Ages when people began to lead a more relaxed life and to discover the joys of being outside their fortifications and castle walls. The wealthy built large gardens with mazes, labyrinths, fountains and intricately patterned hedges. Later people began to use space more efficiently by growing plants vertically on wooden frames called trellises or lattices. Today, as in the past, we use a trellis not only for the practical purpose of saving space, but also to give an interesting shape or design to a plant. Balconies, small yards and patios are excellent locations for a trellis. If there is a large expanse of wall, or a certain area to be screened from sight, a trellis is a good answer.

photo courtesy of Hagley Museum

The arbor in full bloom in spring at Eleutherian Mills garden.

photo by Richard J. Both

Peter Lindtner pruning and pleaching lady apples. Lindtner is the pomologist at the Eleutherian Mills Hagley Foundation Garden in Greenville, Delaware.

photo by Richard J. Both

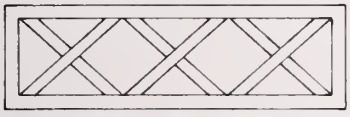
A geometric trellis good for training fruit trees. The mouseguard at the bottom will keep mice from eating the tender bark in the winter.

trellis designs

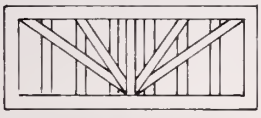
There are three basic trellis designs that can be used to train plants:

• **Geometric.** This is usually made in a series of squares.

• **Diagonal,** sometimes called **diamond shaped.**

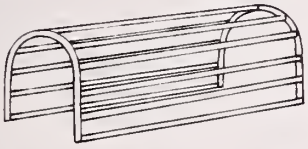


• **Sunburst,** or **fan shaped.**



Each of these can be adapted to your particular situation. The type of plant and the location will usually suggest which design is most appropriate. These same designs may be used whether the frame is attached in the ground or placed in a planter box.

arbors



Large areas can also be used for arched trellises, called arbors. Long before our modern era of fast transportation and communications people still needed to find time to be by themselves. What better way than to walk in the shade of a beautifully constructed arbor and revive memories of the days when love ranked ahead of commerce and industry. It's pleasing to see an arbor in the distance and to anticipate its cooling shade. An arbor is also a sanctuary from the outside world. In some gardens it is the focal pont, so careful attention should be given to its design. It should not overwhelm the garden. The arch should have a height and width proportionate to its length, so the whole structure is balanced with the garden itself.

photo courtesy of Hagley Museum

Red and golden delicious apples are growing on this U cordon. The trees are about four years old.

At the Eleutherian Mills-Hagley Foundation garden near Wilmington, Delaware, an arbor trellis has been built, modeled as closely as possible on one that was in the garden around 1820. On this arbor old-fashioned lady apples have been pleached* over the frame. It may be possible after years of pruning and intertwining the apples to actually remove the wooden frame and this would then be a pleached arbor of living wood rather than a trellis arbor. The photograph shows the present structure, which is 9 ft. wide, the arch 9 ft. high, and along each 60-ft. side are trained seven lady apple trees. It forms a lovely end to the rest of the restored gardens at Hagley.

materials

Most trellises are made of wood. Redwood and cedar are preferred because they will last many years longer than pine or fir. If the latter is used it should be treated to preserve the wood. The size of the wood is also important, as you

*to pleach: to weave, plait, interlace or bend

continued

photos by Richard J. Both

▶ A metal arbor, used for old roses at Eleutherian Mills, was common at the turn of the 19th century. It is made of heavy gauge steel, lasts longer and is easy to assemble. It is not common today because the workmanship makes it too costly.

A diagonal or diamond shaped trellis can also be used to train apples, peaches, pears and even cherries. ▼

want to keep the dimensions in proportion to the size of the structure. Sometimes it is possible to purchase a ready-made trellis, but most often it is necessary to construct one to your own design. Lath or thin wooden strips are available at lumber yards in 1 in. x 1 in. or ⅜ in. x 1⅝ in. bundles. Usually the people in the yard will help you to select the wood size if you bring along a sketch of the design you would like to build. Use regular galvanized nails on the frame pieces as well as the frames that you attach to the posts. If the posts are as large as 4 in. x 4 in. it is best to sink these in 2 ft. of concrete. Most trellises are painted, but this can be a problem to maintain if you're growing a perennial. Natural redwood or cedar mellows beautifully after a few years and blends in with the vines or fruit tree and needs no maintenance.

type of plants

The type of plant used on a trellis depends on the location and purpose of the vertical structure. Some people prefer to grow vegetables on a small sunny balcony or patio where others would want to have a flowering vine or fruit tree. Cucumbers, pole beans, squash and peas are the easiest to grow on a trellis if given the proper soil and sunlight. This is a productive use of space, even when you have a large plot on which to grow vegetables.

Most fruit trees can be trained to grow on a flat, vertical surface. This type of flat pruning is called espalier. It is best to start with a tree that has already been started in your desired design and then continue to prune to the designed shape. Fruit trees can be trained in the geometric design by using a small "U" shape at the start and continuing with a candlelabra pattern. The diamond or diagonal design is called the Belgian espalier. Also fruit trees can be pruned to the fan shape. Apples, peaches, pears and even cherries can be espaliered either in the ground or in containers to any of these designs. At the Eleutherian Mills Garden you will see examples of all three of these designs.

The natural plants for a trellis are vines and since these plants climb, the grower need only select a suitable specimen. The important factor in choosing a vining plant is to remember that a vine wants to grow and grow so it should be pruned often to keep it in bounds. In the Delaware Valley typical vining plants on a trellis are roses, wisteria, grapes and clematis. You may also want to try *Jasminum nudiflorum, Akebia quinata* or *Bignonia capreolata,* which are also hardy in this area.

A trellis is a practical way to grow plants in either a small or a large garden. It will not only increase the efficient use of your available space but will add beauty for all to enjoy.

●

Richard Both is a greenhouse volunteer at Winterthur Museum and Gardens and the Eleutherian Mills-Hagley Foundation Garden. He is fond of propagating wild flowers. Both serves on the PHS Council.

A Small Window Greenhouse in the City

by Joseph Kerwin

photo by Joseph Kerwin

A city gardening environment. A window greenhouse and espaliered fruit trees (in background) hug the walls of the Pattison house.

I first noticed the house off Pine Street when I was visiting here from New York three years ago. Espaliered fruit trees and a trained pyracantha lined the white wall, and a small enchanting greenhouse unit hugged the side of the building.

When I moved to Philadelphia to work at PHS this past September, I settled just a block away from these horticultural attractions. And when this issue on garden structures was being planned, I seized the opportunity to learn more about the greenhouse and to have some of my questions about it answered: Why would anyone construct such a vulnerable unit in a city environment? What kind of maintenance was involved in upkeep? Does the street tree shade the unit in summer to keep temperature and humidity down? How is the unit heated in winter and cooled in the summer? I spoke with Suzie Pattison about the greenhouse and had these and other questions answered.

The greenhouse was conceived by Jay and Suzie Pattison back when they first built their house. The Pattisons were looking for something other than iron bars to secure the kitchen and also give it some privacy from the outside world. They came up with the greenhouse idea; Jay Pattison designed the unit, which was milled and assembled by Stremme and Schweder, Philadelphia cabinet workers. When everything was in place, Jay did the glazing.

The greenhouse sits on the east side of the building but has a good southern exposure. The framework is redwood and the panels include both glass and Plexiglas. The greenhouse is separated from the kitchen by the original windows, totally enclosing the unit. The unit contains three glass shelves, two drain holes, two spotlights and a spigot.

The redwood frame has been painted to match the exterior fixtures of the house. The panels of Plexiglas replaced glass panes, which were broken on two separate occasions over the last 10 years. Although glass is more fragile, the Pattisons prefer it because it does not expand or contract with the elements, so now they are replacing broken panes with glass rather than Plexiglas.

The unit is equipped with two spotlights, connected to an automatic timer. The lights go on in early evening and remain on until early morning. The light illuminates the plants, giving a very

continued

photo by author

Looking from kitchen window through greenhouse unit. The spotlight (bottom, second pane from left) illuminates the plants from dusk to early morning, generating enough energy in winter to keep the greenhouse warm.

pleasant effect both inside and outside of the house.

The unit does not have a true heating or cooling system. During the winter the spotlights generate enough heat to keep the temperature constant (40°) with that of a cool greenhouse. After an extremely cold night frost forms on the panels; the Pattisons correct that by opening the kitchen windows and allowing the warm air to penetrate the unit. In the future, they plan to add an electric heating cable to prevent frost and to keep the temperature constant through the night.

In the summer the windows are open again to allow the cool air to circulate through the unit. While the greenhouse is not covered during the summer, a Kwanzan cherry outside provides some light shade. Because the humidity is high in summer, the plants in the greenhouse are only watered once a week.

These plants are dracena, chlorophytum or spider plant, spathiphyllum, ferns and others. Most of them have been living in the unit for at least two years. The permanent planting is accompanied by chrysanthemums in the fall, poinsettia for Christmas and throughout the winter, flowering bulbs in spring and geraniums during the summer. Because space is at a premium, the permanent plants are periodically pruned and snipped. Fertilization is kept to a minimum because the high humidity and temperatures in the summer keep the plants in a good growing environment. The only insect problem has been scale on the chlorophytum, which has been corrected by applications of malathion.

The Pattisons have come up with a very attractive way to extend the kitchen into the outside environment. They enjoy it the way it is but often become frustrated about the plants that grow too large for their home.

Plants for Unheated Window Greenhouse

All the plants prefer night temperatures below 60°. Experimentation is the key to success with an unheated place, as no two are exactly alike.

At least five hours of winter sun needed for flowers and best growth.

- Cactus
- Campanula
- Jasmine
- Primula
- Sedum

At least two hours of winter sun needed for flowers and best growth.

- Agave
- Aloe
- Cyclamen
- Hebe
- Myrtus
- Punica
- Rosmarinus

North light sufficient year-round.

- Ardisia
- Aucuba
- Hedera
- Hoya
- Pittosporum
- Podocarpus

These partial lists are reprinted with permission from *Growing Plants Indoors* by Ernesta D. Ballard, Barnes & Noble (Paperback, 1973. Reprinted from hardcover *Garden in Your House*, Harper & Row, revised edition 1971).

●

Joe Kerwin received his B.S. in agriculture from the University of Tennessee. He worked for two years as horticulturist for Columbia University and also worked for the Horticultural Society of New York in the community gardening program. Joe is now assistant horticulturist and floor manager for the Society's Flower Show.

AN A-FRAME FOR CONTAINER GARDENING

by Julie Morris

photo by Edmund B. Gilchrist, Jr.

The author's vertical planter, an A-frame shelving unit, on display at the Harvest Show several years ago. This container can accommodate a large number of plants using only a small portion of the floor area.

Gardening in containers became a way of life for me during the 10 years that I lived in Chestnut Hill. My tiny (18 ft. x 20 ft.) backyard was the ideal place to practice the art of gardening in small spaces. I grew many more plants in pots than I could have planted in the ground. My garden was never static, and I enjoyed rearranging the containers and trying new plants or techniques from time to time.

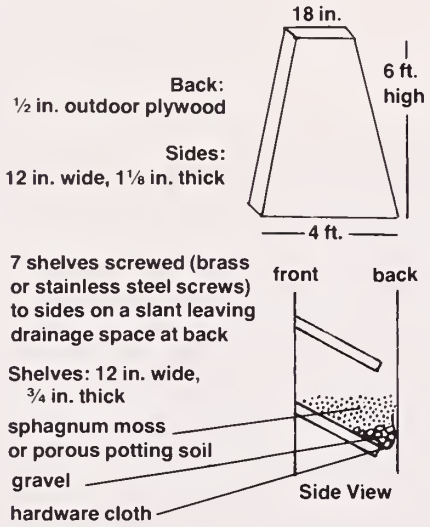
One of my special containers was a 6-ft. high A-frame structure with shelves made of redwood. I had first seen this vertical garden featured in a magazine article on terrace gardening; it was filled with alpine plants. A short time later PHS activities coordinator Charlotte Archer staged an exhibit at PHS with all sorts of wonderful containers, including the redwood A-frame. I decided I had to have one for my very own.

Thanks to Charlotte and a good carpenter it wasn't long before the A-frame was in my garden. The structure with seven shelves was made from redwood and exterior plywood. The top shelf was 18 in. long and the bottom one was 48 in. long. The redwood for each shelf was 12 in. wide by 1⅛ in. thick. The sides were 12 in. wide and ¾ in. thick. The sheet of plywood was ½ in. thick and was fastened to the sides with brass screws that wouldn't rust.

The shelves were attached to the sides on a 45° angle slant leaving a drainage space between each shelf and the back. The deeply slanted shelves allowed room for root growth.

I lined the bottom of each shelf with hardware cloth to fit the space between the bottom of the shelf and the back. I put a layer of gravel on top of the hardware cloth to insure good drainage. When I first used the A-frame, I filled it with ferns and other foliage plants that I left in their pots. I packed moist long fiber sphagnum moss around the pots so they wouldn't show and to hold in moisture.

The second summer that I had the A-frame I decided to plant tuberous begonias in the shelves. I used Pro-Mix potting soil in each shelf with good results.



However, since that time I haven't used any soil other than what is around the plants when I unpot them. Instead of soil I use the sphagnum moss and plant each shelf almost as I would plant a hanging basket. I pack in moist, long fiber sphagnum over the layer of gravel, put in the plants and add more sphagnum. Weekly additions of a water soluble fertilizer keep the plants healthy. There is little danger of overwatering because of the good drainage space so I can easily keep the sphagnum moist.

Over the past few years I have successfully planted either impatiens or blue and white browallia in the A-frame. In a sunnier spot other annuals such as petunias, nasturtiums or a combination of other flowering plants would grow as well.

The addition of handles on the sides made it easier to move for exhibition in the PHS Harvest Show and to change its location in the garden.

The A-frame lasted nearly a dozen years and even made the move to Newport, RI, with me where I used it until last year when the plywood back finally rotted. The redwood shelves, however, are still in super shape and as soon as I have a new piece of plywood cut it will be back in business again. Who knows, maybe I'll try planting the alpines that first attracted my attention in that magazine article of long ago.

●

Julie Morris is horticulturist at Blithewold Gardens and Arboretum in Bristol, Rhode Island, and a garden consultant in Newport.

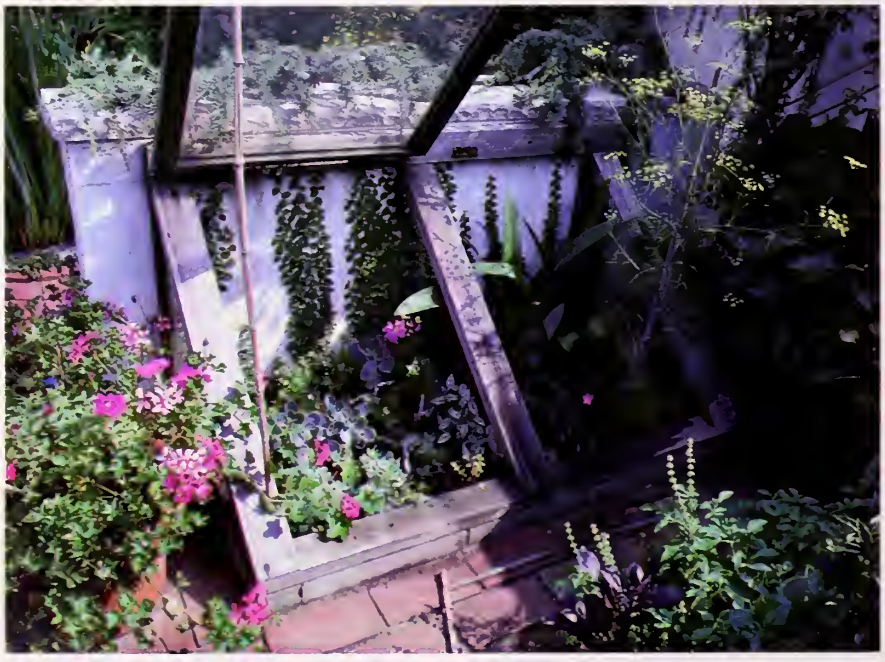
Part of the pavilion is set up for relaxation and for outdoor dining. The workshop and storage areas are in the back of the pavilion.

photos by Ann E. McPhail

A PAVILION:

A Practical Structure for City Gardening

by Ann E. McPhail



Coldframes are propagation beds and holding area for bonsai through the winter. In the summer, they become a holding area for amaryllis bulbs (shown here).

I first wrote about our pavilion in the September/October 1978 issue of *The Green Scene*. One or two of my original opinions have been revised but essentially the use of its structures remains the same: an area for relaxation and storage and maintenance areas.

By combining utility with pleasure, we were able to design a building that provides the essentials in gardening maintenance and a secluded place in which to sit and read or dine with a full view of the garden. And as the building is designed to fit into a corner its bulk is minimized with the two level roof line giving needed height for proportion as well as for practical reasons. An exit to the rear street is also accommodated under the roof. Positioning the building at the rear of the lot creates a high back wall and roof to cut down on the inner-city noise of Philadelphia and gives almost complete privacy. In addition, the seated viewer has a panoramic view of the garden. It is

almost like being in the country. I do not feel that the building is a luxury, instead I feel that it is a very practical solution to a number of problems.

The garden consists of parts of three house lots (see *Green Scene*, May/June 1977). Next to the pavilion is space for a pair of coldframes and a small propagating bed. I once kept a compost storage bin but I have stopped using it. I felt that because my garden is located in a high pollution area of the city, using compost made from clippings from this garden would contribute to the number of virus and fungus related diseases that plague city gardens.

storage

A garden of this size and complexity requires a variety of insecticides, fertilizers, potting soil, pots, tools, hoses, etc. A set of garden furniture used on the side patio must be stored in the winter. Owning a typically high and narrow town house requires a number of ladders of varying lengths. My husband and I enjoy bicycling in the park in the summer hence the need to store two bicycles. I grow and dry my own herbs and have found the pavilion room (which is concrete block) a dry place to hang them. These are some of the reasons for having such a work-storage room.

How can all this be going on in a triangular area approximately 18 ft. x 10 ft x 10 ft.? It does get a little wild at times and has to be reorganized like any work-storage area. The high roof accommodates the ladders, and hooks placed along the roof beams are used for hanging up the aluminum patio furniture. On the back or street wall there are two windows placed high over a series of shelves used for pot storage, insecticide and liquid fertilizer. The room, including the roof, is painted white to create additional light. There is also a fluorescent light over the work bench. The work bench fits snugly into two angles of the room next to the shelves. Pegboard for hanging small tools, hose fittings, twine, etc., have been attached to the walls above the bench. Bags of fertilizer and compost are stored under the bench. Under part of the shelf area next to the bench is a place for a large trash can of potting soil mix. We always cut sterilized commercial potting soil with gritty sand and peatmoss. Also in this area are extra bags of peatmoss, potting soil and sand. Our bicycles hang on brackets off

continued

A view of the pavilion and garden from an upstairs window. (See map on p. 25 for structure of the pavilion.)

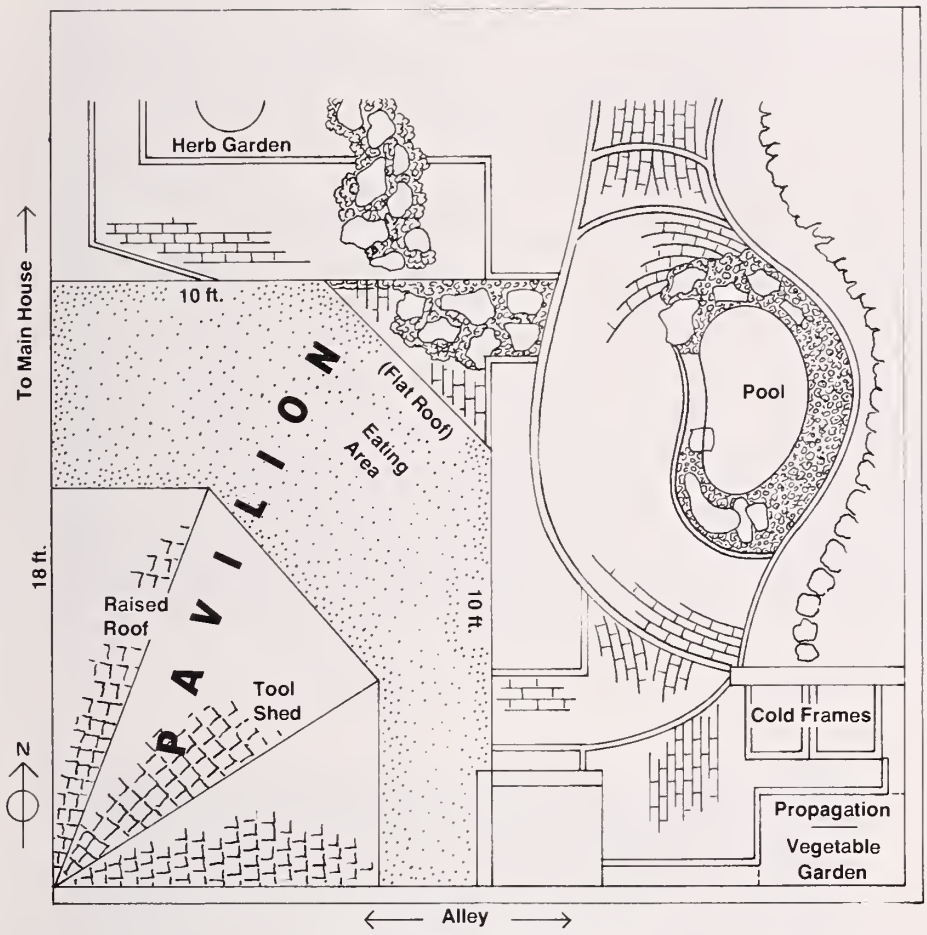
The Work and Storage Area to the Rear of the Pavilion

Drying herbs

Storing large equipment

A workshop

A place for fertilizers, potting soils, pots, and other garden necessities.



Plan of the pavilion area of the garden

the floor on the fourth wall. Next to them on the last wall are pegs for hanging larger garden tools, brooms and sprinklers. Room is left over for a wheelbarrow, garden cart and space for me to work.

An added feature to drying herbs in the pavilion has been the wonderfully pungent aroma that pervades the building all summer. It begins as soon as the herbs start to form flowers, an advantageous time to harvest many of them as the aromatic oils in the leaves become most concentrated. My husband, Don, found some narrow but sturdy plastic strips in a hardware store, and he screwed them onto the front edge of several shelves. Here small bunches (smaller the better) of herbs are held by the strips. Larger herbs such as woody stalks of basil and fennel are suspended from the ceiling beams. The only problem here is when Don wants to get a ladder out. There have been times shortly after harvesting the larger herbs in the fall when he has threatened to use a machete to cut his way to the ladders. This work-storage room is not pretty but I enjoy it because I like the convenience of having the proper tools and materials around me. For a number of years before the pavilion was constructed, on the days I worked in the garden, I had to go down into the basement of the main house countless times for tools and supplies. To say the least I found it a rather self-defeating exercise.

outside structures

As I have indicated earlier the coldframes and small propagation-vegetable garden adjacent to the pavilion are an intrinsic part of it. The coldframes are used most of the year as either holding or propagation beds. During the winter months the few bonsais that I play around with are taken out of their pots and sunk in the coldframes; the pots are stored in the pavilion. In early spring when new growth starts the bonsais are removed and placed in the propagation bed to hold them until the weather moderates a little. Then they are pruned and potted in fresh soil and moved to the side patio. Cuttings taken last fall of herbs and scented geraniums that I particularly liked are brought out from a large light unit in the basement of the main house and put in the coldframes, later to be placed in the herb garden. Marketpacs of petunias, coleus and bedding begonias are put in the coldframes to plant out after the small bulbs and pansies have died back. During the summer this area is used for chrysanthemums and amaryllis bulbs. In the fall the cycle starts all over again. The coldframes are ony 5 ft. x 2½ ft. and are constructed with cinder block footings and redwood frames with removable lids that have plexiglass inserts to reduce their weight.

After the bonsais are removed, the propagation-vegetable garden has parsley and lettuce plants set in and later basil seed sown for the summer. It is such a tiny area, 8½ ft. x 4½ ft. But it offers a service throughout the growing season: holding and producing. Against the rear wall I keep a large topiary hibiscus. Its coral-pink flowers keep my dining room in bloom all summer. (I do remove it from its pot and plant it in the ground for the season.) Hibiscus seem to retain a relatively small root ball. Other plants and cuttings are lined up beside it. The shadow cast by the rear wall helps to keep the cuttings moist. Often I start cuttings of house plants early in the summer so that I can discard the old plant in the fall.

Even on a city lot, there's room for luxuries. So many things can be accomplished in a relatively small area that the structures discussed here are not only feasible, they are architecturally integrated and disguised, attractive and yet function efficiently with the pavilion.

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Ann E. McPhail's city garden story in the May 1977 issue of *Green Scene* so impressed the gardening editor of the *New York Times* that she came to Philadelphia to interview Ann and write a story about the garden. Among Ann's many horticultural activities, including active involvement with the 18th Century Garden at PHS, she lectures on the history of herbs and on city gardens. For many years she has been a guide at the Philadelphia Museum of Art and now trains guides for special exhibitions relating to the Orient.

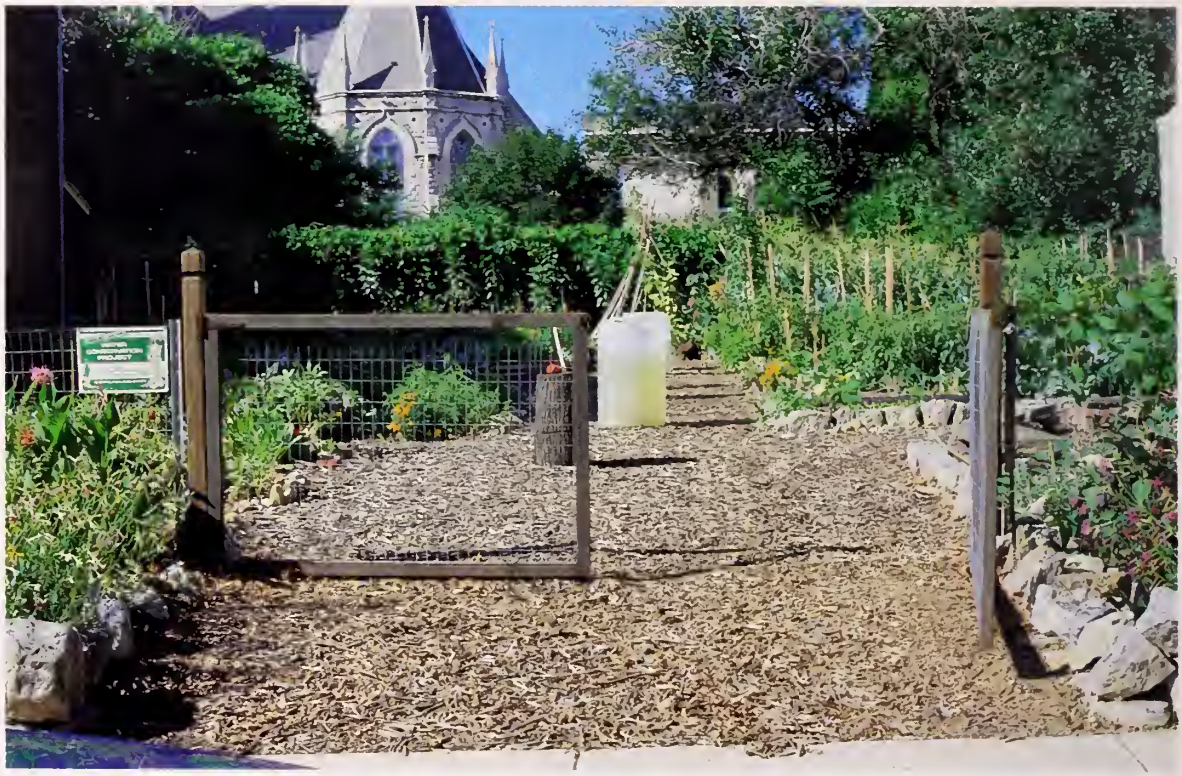

photo by Charles A. Evers

The Brickyard Farm Tepee is somewhat obscured by the water barrels in the foreground, but you can get an idea of its scale in the garden. The first year the tepee was in place, the gardeners planted beans and squash; the beans didn't do very well but the squash was successful. The following year golden plum tomatoes did well.

Vine Peach

My catalog from Nichols Garden Nursery (1190 North Pacific Hwy., Albany, Oregon 97321) described the vine peach as being the size and color of peaches with a flavor and texture like mangoes. The description in the Burgess Seed & Plant Co. catalog (Bloomington, IL 61701) is virtually identical. The ripe vine peaches I grew from their seed were larger than peaches and perfectly yellow on the outside. The green flesh had rather crispy texture and tasted very much like a muskmelon even though it was not nearly so sweet.

Since my cucurbits almost always succumb to borers, squash bugs and or bacterial wilt, I was attracted by Nichols' description of the vine peach as a native American. Perhaps a native would be more resistant to pests and to my peculiar gardening schedule. Indeed it was. I started it indoors with my tomatoes and set it out with them in mid-May.

Since the vine was new to me, I set out only three plants, and grew them 5 ft. apart on a trellis. Each one finally covered five feet of trellis, and they all produced over 50 pounds of fruit. The overwhelming harvest resulted in pints and pints of chutneys all of which were based on vine peach. This year I'll try some marmalades, if the beasts don't get there first.

photo by Pete Ferretti, Pennsylvania State University

Vine peaches, shown here on a permanent trellis made from pipe and bird net, are good candidates for tepees.

GROWING UP ON THE TEPEES

by Libby J. Goldstein

For some reason gardeners, who are perfectly comfortable growing in the fourth dimension – time – using succession planting and crop rotation as routinely as brushing their teeth, rarely use the third dimension – vertical space. Of course, one can grow more in less space by growing bush squash and cucumbers or planting beds or wide rows of the new snap beans and bush beans. But when you grow up into the unused air-space over your garden you save both space and effort. I may never grow the shorter snap peas like 'Sugar Rae' and 'Sugar Bon' again. Why crawl on your belly like a reptile picking peas when you can just walk along your trellis or around your tepee and snap peas off the vine into your harvest basket?

A tepee may not be the most efficient way of growing up. After all, there can be anywhere from three square feet plus up under the tepee, and when the tepee is fully covered, it's *very* shady inside. Good for summer lettuces and a spinach trial maybe, but not much else. Still, tepees are fun for children to play in, and a really big one is a wonderful shady retreat from the heat of a summer's day.

From a designer's point of view, a tepee, properly placed, is a spot of vertical interest on an otherwide horizontal garden plane. The gardeners at The Brickyard Community Garden built a really large tepee opposite their garden gate at the end of their major walkway. (It was originally going to be the site of their neighborhood fish farm so it was quite high in order to cover 38 square feet at ground level.) It drew the eyes and the feet right into the garden.

Most people think of tepees as pole bean supports, and they do very well at that. All you do is plant three or four beans an inch or two apart at the base of each leg and then let them twine their way up to the top. 'Scarlet Runner' beans grow taller and since most varieties have bright red flowers, they are especially decorative on the tepee. Black-eye peas and yard-long beans grow exceptionally well on tepees, too, but one word of warning about the yard-long beans: they are prolific. I have harvested 17 pounds of yard-longs from six plants. If you're not sure whether you and your family will truly love them, use a four-legged tepee and plant two seeds per leg.

If you are planning to grow two crops in succession on your tepee, don't follow peas or snap peas with yard-long beans. The beans will go all to leaf because of the extra nitrogen the peas leave in the soil.

Indeterminate tomatoes can be trained to a tepee as they did last year at The Brickyard. I'd use small fruited varieties like 'Gardeners Delight,' 'Yellow Plum' or 'Yellow Pear' and probably wouldn't bother to pinch them. If you plant one seedling at the base of every other leg, they'll have plenty of root run, and you can tie your sideshoots to the unplanted legs of the tepee.

Plants that hold themselves up on tendrils like peas, cucumbers, squashes and vine peaches will find it hard to get a purchase on the tepee legs. If you wrap your tepee with strings or drape it with trellis netting, however, they'll do very well indeed. The fruit of large squash and melons may have to be supported with slings to keep them from pulling the vines down. Old tee shirts torn into four-inch wide strips are terrific squash slings. They're soft and give a bit so they don't deform the young fruit.

Cucumbers don't need slings. In fact, the newer, long, sweet types like 'Sweet Success,' 'County Fair,' 'Yamato Extra Long' and 'Euro-America' need to be grown up if they are to set lovely straight fruit. If the fruit aren't allowed to hang free, they'll taste fine, but they will grow into exceptionally weird shapes.

Sweet potatoes are a wonderful tepee cover. Their leaves are lovely and practically never touched by beasts and diseases. They just look super all season. Assuming the legs of your tepee are a foot apart, you can just plant one sweet potato shoot or plant at the base of each leg and tie string or twine to the legs every six inches up to the top. The vines will climb. They climbed all over my tomato cage one year, and looked much prettier than the tomatoes.

continued

photo by Charles A. Evers

Four-year-old Elizabeth Flounders waters sugar snap peas growing on the Brickyard tepee at 42nd and Sansom Streets. A simple lacework of string is woven between the poles for the beans to clasp on to. Later this season, gardeners Danny and Louisa McCoubrey will grow pole beans and a few gardener's delight tomatoes.

Louisa and Daniel McCoubrey built the tepee from ailanthus saplings found in the lot behind the garden. The saplings are stuck in the ground and bound together with twine at the top.

In the first year, lima beans and butternut squash were planted. The limas succumbed to drought and insect damage, but the squash did very well in spite of mildew and vine borer. In the second year the yellow plum tomato crop was impressive; clusters of fruit hung down the poles and were tied as they grew.

You can make your tepee out of any fairly straight material from electrical conduit or pipe to Christmas tree trunks and from recycled lath to ailanthus or bamboo; you will need a minimum of three legs. The legs should be sunk a foot into the soil to make sure the structure is stable. They can be nailed, tied or wired together at the top. While a 10 ft. high tepee is exceptionally handsome and will give you a fair amount of interior seating space, don't plan on harvesting much from the peak. Lots of vining vegetables just won't grow that high, and if you choose ones that can (like vine peaches and lagenaria (bottle gourds), you may have a bit of trouble reaching them.

Who needs an expensive gazebo or garden house? A tepee and a couple of beach chairs will serve the same purpose, and you can grow food on the tepee, too.

That caveat out of the way, your tepee can be as large or as small as you want. You can even drape it with plastic and use it for growing super early and super late crops, e.g., bok choy and other Asian greens. It won't be as efficient as a coldframe, but it will help the soil warm up earlier in the spring and keep it warmer in fall. And it will provide some frost protection for flats of seedlings and such like.

Still I love to think of a tepee as a mysterious green and shady place that can be built and planted by and for kids – or checker players, or even Romeo and Juliet. Who needs an expensive gazebo or garden house? A tepee and a couple of beach chairs will serve the same purpose, and you can grow food on the tepee, too.

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Libby J. Goldstein is Philadelphia County Extension Director of the Pennsylvania State University Cooperative Extension Service. She has been gardening at the Southwark/Queen Village Community Garden since it was founded and writes about it in the "City Gardener" column in the *Philadelphia Daily News*.

photo by Lynn Kippax

On the white structure to the left, Kentucky Wonder string beans begin to move up in July on the same structure that supported the spring crop of sugar snap peas. The structure on the right supports a heavy crop of Dr. Martin lima beans.

POLY POLES

by Lynn Kippax

For years wooden structures supported our sugar snap peas, pole string beans and lima beans. Damage from splitting, warping, heavy winds, rot and insects, plus the periodic need to paint, however, drove me to search for a wood substitute. The solution was polyvinyl chloride pipe.

My costs for the pipe, fittings, and cement (no pay for the helper) ran about $90 per rig – a lot of jack for a bean stalk.

A trip to a plumbing supply store was an adventure in semantics. I had great trouble explaining my idea. The owner looked as though he would like to plant *me* somewhere – with no PVC pipe to mark the spot. Finally, however, we had a meeting of the minds. I bought my PVC pipe, fittings and cement. (My new friend even gave me some sound advice about using a special clear cement to glue the pieces of pipe and fittings together.)

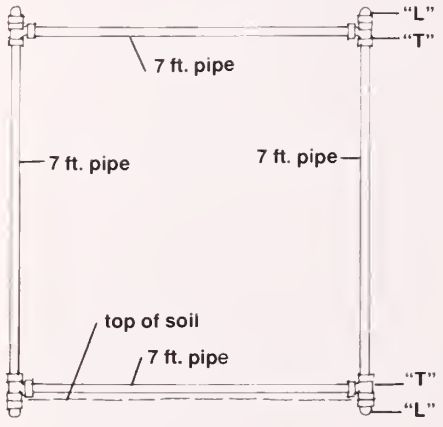
I chose a pipe 1¼ in. inside diameter because of its strength. All joints *must* be glued with the clear PVC cement or the whole thing will come tumbling down. Where the T and L fittings are glued together, a 1½ in. length of pipe, easily cut with a hacksaw, must be used to connect them. Gluing must be done properly. A holding-helper is essential, the taller the better.

I constructed a trial rig two years ago and a mate for it last year. The rigs are 7 ft. tall (because that is about as far as I can reach), 9 ft. long and 7 ft. wide so they will fit in my raised beds. They can be made longer, but if so would require vertical supports every 5 or 6 ft. for added strength – Dr. Martin lima beans

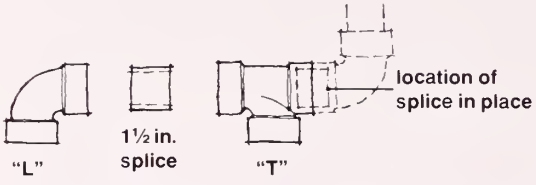
continued

NECESSARY MATERIALS

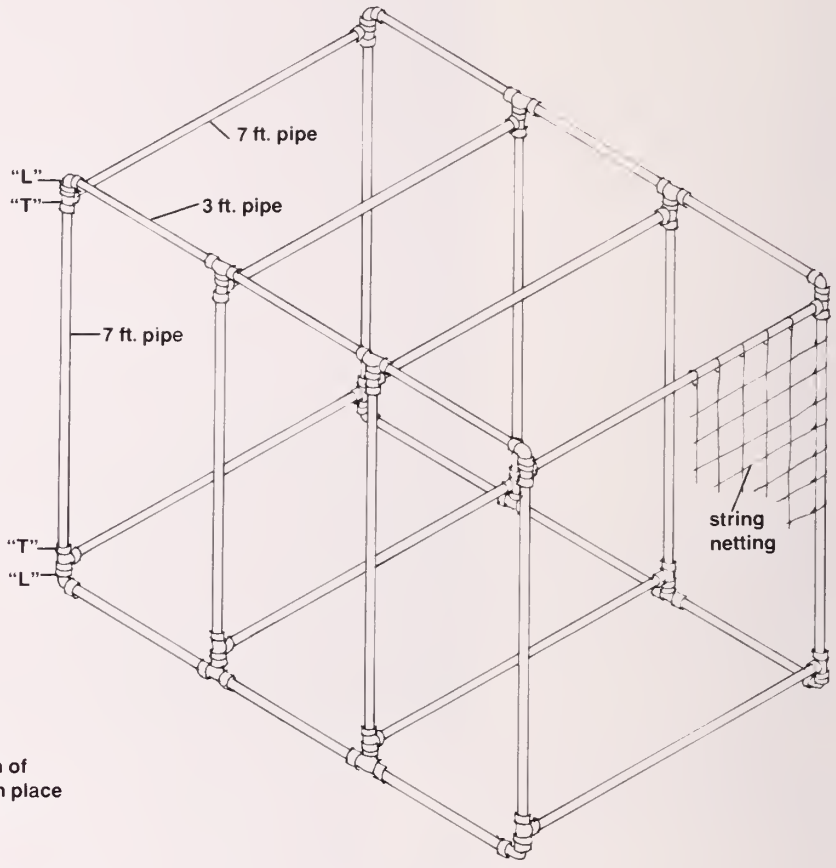
No. of Pieces	Designation
8	1¼ in. I.D. "L" fitting
24	1¼ in. I.D. "T" fitting
12	1¼ in. pipe - 3 ft. length
16	1¼ in. pipe - 7 ft. length
16	1¼ in. pipe - 1½ in. length (splice pieces)
	PVC clear cement



End View



Fittings



Isometric View

are a weighty crop. Larger rigs would also be difficult to move.

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I have successfully used nylon netting (available at most garden supply stores), which can be tied securely to the horizontal and vertical pipes with nylon mason cord (any good hardware store). The tying job is tedious and a step ladder is useful. A bonus – nylon netting can weather the winter.

An advantage to not making the rigs too long or too wide is that it makes "bed-hopping" much easier. One must rotate crops. I planted peas by one rig in 1981, followed by string beans. In 1982 I planted lima beans by that same rig and string beans by the new one. This year I moved both to a new bed. These lightweight rigs rest directly on the ground and can be moved easily by two people.

My costs for the pipe, fittings, and cement (no pay for the helper) ran about $90 per rig – a lot of jack for a bean stalk. However, four 7-ft. rows provide peas and beans for family, friends and freezer for years.

Don't worry about the effect of PVC piping on your vegetables and soil. PVC piping is highly resistant to acids, alkalies, alcohols and many other corrosive liquids. It is listed with the National Sanitation Foundation as being suitable for use with potable water.

These PVC structures have worked well for us – no maintenance required. Even so, I still secretly prefer the appearance of wood. Perhaps next year I'll find a turkey feather and paint the pipes to simulate wood. Some gardeners are never satisfied.

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Lynn Kippax is a homespun gardener with a particular interest in innovative vegetable gardening. He is president of the Associates of the Scott Horticultural Foundation of Swarthmore College. Before retiring, he was an executive in the chemical business in the Delaware Valley.

MORE ABOUT GARDEN STRUCTURES

from past issues of Green Scene

Listed below are some stories that include garden structures that have appeared in past issues of* Green Scene. *If you would like to have a copy of the story mail $1.00 and a self-addressed, stamped envelope to Jean Byrne, Editor, Green Scene, PHS, 325 Walnut Street, and we'll send you a xerox copy of the story.

Some Light on the Garden in Your House, Libby Stephenson, Volume 2 No. 2 (Nov. '73), page 14.
For the indoor gardener, a handsome three-tiered light unit, as well as a set-in unit in the library.

Rub-A-Dub-Dub, Some Zucchini in a Tub, M. M. Brubaker, Volume 2 No. 4 (Mar. '74), page 12.
The title says it all; portability is the name of the game.

Not a Woodland: A 7 Foot Terrarium, William C. Judd, Volume 3 No. 3 (Jan. '75), page 10.
Bill Judd likes to do things on a large scale at the Flower Show and in his living room. The cover for this 7-ft. terrarium is a storm door, which should give you some idea of the scale of the project.

Espaliers for Ornamentation and Fruit, L. Wilbur Zimmerman, Volume 3 No. 3 (Jan. '75), page 13.
Structures for creating espaliers against walls.

Vines as Urban Garlands, Gary Koller, Volume 3 No. 4 (Mar. '75), page 15.
Structures for supporting vines include trellises, chains, arbors, and canopies.

The Elevated Container Garden, Doris Joiner, Volume 3 No. 5 (May '75), page 13.
Created as a means to garden for a devoted horticulturist who has difficulty bending and stooping, the elevated garden offers vegetables and flowers in containers throughout the season.

Tomatoes: The Fruit of the Year, from the Ortho Lawn & Garden Book, Volume 3 No. 5 (May '75), page 7.
All about tomatoes, with suggestions for growing tomatoes on balconies in containers, in a fisherman's swivel, in cylinders, and on other frames and supports.

Lettuce in Containers, Charlotte Archer, Volume 3 No. 5 (May '75), page 19
Lettuce, tomatoes and herbs grown in baskets are pictured in this one-page article. (Send only 50¢.)

Winter Gardening Under Polyethylene, Jan Riemer, Volume 5 No. 1 (Sept. '76), page 12.
Onions, chard, lettuce, herbs grew through the winter in an easily constructed polyurethane tent.

Building Your Own Greenhouse, Susan W. Plimpton, Volume 5 No. 3 (Jan. '77), page 4.
Experience in building their Gladwyne greenhouse taught the Plimptons a lot that was useful when they designed their Rhode Island potting shed and greenhouse, which include a fish pool and expanded bench space.

Now is the Time for All Coldframes to Come to the Aid of Gardeners, Joanna and George Reed, Volume 5 No. 3 (Jan. '77), page 23.
A blueprint and complete instructions for building a coldframe.

Up on the Farm, Roland C. Davies, Volume 5 No. 4 (Mar. '77), page 9.
An architect creates some structures, boxlike units, with hoops for climbing plants and for shading and wind protection on his city roof. The author reports successfully growing tomatoes, broccoli, cabbage, some cantaloupe and peppers.

A City Enclave: Three Lots is Not a Lot, Ann McPhail, Volume 5 No. 5 (May '77), page 3.
The construction of a city garden over three lots, includes a pavilion (see Ann McPhail's article in this issue), brick walks and a watergarden.

Pyramiding Your Garden, Eli C. Schmidt, Jr., Volume 5 No. 5 (May '77), page 10.
A structure created with aluminum or plastic lawn edging provides a garden on five levels, using pyramiding ring shapes. The author grew strawberries, radishes, beets, lettuce, kohlrabi, onions, peas, parsley. He claims the system eliminates or reduces weeding, and makes early planting easier when the ground can't be cultivated.

An Indoor Garden Room, Cathy and Edward Foulks, Volume 6 No. 4 (Mar. '78), page 3.
An indoor garden room began life as a sunny outdoor courtyard. The authors wanted a place to enjoy their houseplants year-round. They created a permanent green living area, an enclosed garden that the family can enjoy from several areas in the house.

An Errant Design, Albert J. Webb, Volume 7 No. 2 (Nov. '78), page 3.
For $100 the author created a dome-covered sun pit in which he grew flowers year-round, including camellias, geraniums, orange trees and nicotianas in the dead of winter. Polyethylene, bamboo and styrofoam are the main elements in the structure.

Growing Plants in Containers (complete issue), Volume 7 No. 6 (July '79).
Edibles in containers, potted plant sculptures, miniature gardens, strawberry jars, barrels. (We have a limited number of this issue left and it's yours for $1.50 to cover handling and postage.)

People Who Live in Glass Houses, Mary Lou Wolfe, Volume 8 No. 2 (Nov. '79), page 4.
The author shares the trauma of a heating failure in her greenhouse and recommends a plan for such an emergency.

Greenhouse Alternative, Barbara Bruno, Volume 8 No. 2 (Nov. '79), page 14.
Growing plants in a window greenhouse, a cellar door garden and under lights in the basement, a way to double growing space and expand temperature range for house plants.

Solar Greenhouses, Rick Fredette III, Volume 8 No. 3 (Jan. '80), page 3.
A greenhouse that can supply heat in the home creates an energy efficient space for raising and enjoying plants. How to select a site, some design principles, insulation and heat storage are discussed.

continued

A Mountain in My House, Roxie Gevjan, Volume 8 No. 3 (Jan. '80), page 16

Benches in an alpine house, fitted with piping for watering, provide a place for growing rock garden plants through the year. One bench measures 59 in. x 155 in.

The 1979 Wonder Vegetable: The Sugar Snap Pea, Jane Pepper, Volume 8 No. 3 (Jan. '80), page 20.

Four support systems are illustrated for growing this marvelous newcomer to the vegetable garden.

Constructing a Mountain Brook with a Rock Garden, Werner Kirmse, Volume 8 No. 4 (Mar. '80), page 26.

A plan for a garden that includes a small waterfall, terraces and brook. The author disusses briefly the mechanical and electrical aspects of the project.

Summering the Houseplants under the Grape Arbor at Wyck, Ann Newlin Thompson, Volume 8 No. 5 (May '80), page 10.

A grape arbor does double duty.

Gardening Three Stories Up: Some Lessons Learned, J. Blaine Bonham, Volume 8 No. 5 (May '80), page 17.

A city roof garden for flowers, herbs and vegetables includes a deck, containers, windowboxes and the beginnings of a solar greenhouse,

The Ugly Roof Drain, Glenn B. Geer, Volume 8 No. 5 (May '80). page 34.

A plan for hiding the ugly thing. (Send only 50¢ and self-addressed, stamped envelope.)

A Case for the Wardian Case, Robert W. Preucel, Volume 9 No. 2 (Nov. '80), page 8.

A display case for orchids and how the author came to have it.

Indoor Garden Pools, Helen Tower Brunet, Volume 8 No. 4 (Nov. '80), page 10.

Some suggestions for indoor pools, a wall pool or a big one that transforms an old toilet and Queen Anne tub into a garden.

High Yields in a Small Space, A Hydroponic Roof Garden, Art Hutchinson, Volume 9 No. 4 (Mar. '81), page 20.

How to assemble a unit for a soilless roof garden. Includes schedule for planting and harvesting vegetables that grow well in such a garden.

A Barrel of Atmosphere, Ed Lindemann, Volume 9 No. 4 (Mar. '81), page 23.

How to assemble a burbling barrel with a tiny fountain, water for fish and plants for the garden.

Espaliers at Chanticleer and Minder House, Adolph G. Rosengarten, Jr., Volume 9 No. 5 (May '81), page 5.

Walls and structures for espaliers.

Designing a Vegetable Garden to Save Space, Time and Energy, Lynn Kippax, Volume 9 No. 6 (July '81), page 3.

Thirty-two ft. long beds with wooden frames and wire cages allow this gardener to grow up rather than out.

A California Transplant Survives First Bleak Eastern Winter, Gwen Gilens, Volume 10 No. 1 (Sept. '81), page 9.

A 23 ft. x 11 ft. basement garden with six fluorescent lights and timers, an area for aquatic plants, eases the winter transition from sunny California to the Delaware Valley.

Growing Solar, Nancy A. Sierens and William J. Collins, Volume 10 No. 2 (Nov. '81), page 26.

How to set up a solar greenhouse to grow vegetables in the winter.

Specializing in Dr. Martin Pole Lima Beans, Jane G. Pepper, Volume 10 No. 3 (Jan. '82), page 3.

Four pole lima support systems are illustrated in this article.

A Second Story Window Box for Herbs, Patricia Schrieber, Volume 10 No. 3 (Jan. '82), page 10.

Window boxes for the city house; herbs to grow in them.

Where Do Your Gardens Grow? Upstairs and Downstairs and on the Patio-o-o, Jane G. Pepper, Volume 10 No. 4 (Mar. '82), page 13

The author describes a West Philadelphia woman's five gardens, which include a roof garden with a deck, fences and container-grown plants as well as a basement garden, built after a late night nursing shift.

Small Fruits, Jane G. Pepper, Volume 10 No. 6 (July '82), page 10.

Sketches for raspberry cane supports and blueberry propagating boxes.

What Would Johnny Appleseed Think: Espaliered Dwarf Apple Trees, Helen H. Gemmill, Volume 10 No. 6 (July '82), page 34.

Structures for training dwarf apple trees to simplify harvest.

Troughs: Making Them Lightweight and Portable, Jane G. Pepper, Volume 11 No. 1 (Sept. '82), page 14.

An alternative to stone sinks and watering troughs for rock gardeners.

Building Your Own Passive Solar Pit Greenhouse, Lisa and Robert Freeman, Volume 11 No. 1 (Sept. '82), page 30.

How to build your own A-frame wooden structure with polyethylene cover. Two year tests show you can harvest vegetables throughout the year.

Fresh Herbs for Restaurants in the Winter and Any Other Time, Marcus Pollack, Volume 11 No. 3 (Jan. '83), page 3.

A system designed for growing herbs year-round for restaurants can work in the home.

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Books about Structures from the PHS Library

The Backyard Builder's Bible. Charles R. Self. Blue Ridge Summit, PA, TAB Books, 1980.

Benches. Kenneth Lynch. Canterbury, CT, Canterbury Publishing, 1971.

Building in Your Backyard: the suburban guide to making birdhouses, garden sheds, doghouses, playhouses, treehouses, privies, greenhouses and gazebos. Victor H. Lane. New York, Workman, 1979.

Construction Work in Your Garden. R. I. Morgan. London, Blandford Press, 1962.

The D-I-Y Guide to Natural Stonework. J. Harrison. Newton Abbot, England, David & Charles, 1979.

Do-It Yourself Garden Construction Know-How: a guide to building decks, patios, walks, steps, fences and walls. Ortho Books, San Francisco, Chevron, 1976.

English Garden Ornament. Paul Edwards. New York, A. S. Barnes, 1965.

Fences, Gates and Garden Houses. Carl F. Schmidt. Rochester, NY 1963.

Garden Construction in Pictures. Adrienne Oldale. New York, Drake, 1974.

Gardening Techniques: soil and climate, growing plants, tools, design and construction, renovation. Alan Titchmarsh. New York, Simon & Schuster, 1981.

Homeowner's Complete Outdoor Building Book. John Burton Brimer. New York, Popular Science Pub. Co., Harper & Row, 1971.

How to Build Garden Structures: grills, terraces, shelters, arbors, fences, gates. Henry B. Aul. New York, Sheridan House, 1950.

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